

PN-ACE-287
100916

REPUBLIC OF MOLDOVA

**MASTER PLAN FOR
CHISINAU GAS NETWORK**

**NIS Institutional Based Services Under the Energy
Efficiency and Market Reform Project
Contract No CCN-Q-00-93-00152-00**

**Ukraine Energy Sector Reform
Delivery Order No 19**

Final Report

Prepared for

U S Agency for International Development
Bureau for Europe and NIS
Office of Environment Energy and Urban Development
Energy and Infrastructure Division

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September 1998

CONTENTS

Executive Summary

S 1 Background	S1
S 2 Moldovagaz As A Strategic Asset	S1
S 3 Sustainable International Participation In Industrial Development	S2
S 4 Restructuring The Gas Industry	S2
S 5 Moldova as a Key Gas Transit Country	S3
S 6 Issues Related To Payment Arrears	S3
S 7 Chisinau Gas Distribution Company	S4
S 8 Risk Assessment	S4
1 Introduction	
1 1 Background	1
1 2 Purpose of the master plan	1
2 Findings	2
3 Recommendations	
3 1 Republic of Moldova	4
3 2 Moldovagaz	5
4 Moldova	
4 1 General Overview	6
4 2 Economic Situation	6
4 3 Comparative Analysis Of The Countries	7
4 4 Foreign exchange stability	7
4 5 Moldova Credit Rating	8
4 6 Energy Balance for Moldova	9
5 Moldovagaz	
5 1 General Description	9
5 2 Basic Activities	9
5 3 Personnel	10
5 4 Infrastructure	10
5 5 Sales Performance	10
5 6 Impact Of Oil Price On Gas Prices	11
5 7 Gas Transport Contracting	11
5 8 Proposed Moldovagaz – Gazprom Joint Stock company	13

ANNEXES

- Annex 1 Gas consumption in Turkey, Romania, and Bulgaria
- Annex 2 World Natural Gas Consumption by Regions
- Annex 3 Moldova Gas Pipeline Network Map
- Annex 4 World Natural Gas Trade Movements
- Annex 5 Country Comparison
- Annex 6 World Bank report
- Annex 7 Exchange Rate of Moldovan Leu
- Annex 8 Exchange Rate Comparison by Countries
- Annex 9 Moldovagaz – Gazprom Contract
- Annex 10 Moldovan Gas System Analysis
- Annex 11 Chisinau DC Customer Profile - 1996
- Annex 12 Chisinau DC Customer Profile - 1997
- Annex 13 Chisinau DC Debts Profile – 1995-1997
- Annex 14 Chisinau DC Debts Profile – charts
- Annex 15 List of Laws
- Annex 16 Proposed Purchasing Contracting Scheme
- Annex 17 Proposed Transportation Contracting Scheme
- Annex 18 Caspian Basin Oil & Gas Exports Routs
- Annex 19 Energy Balance for Moldova
- Annex 20 Moldovagaz & Chisinau DC organizational Structure
- Annex 21 Existing Gas Ownership Structure
- Annex 22 Moldovagaz Pipeline Characteristics
- Annex 23 Gas Compressor Stations Characteristics
- Annex 24 Energy Flow
- Annex 25 Gas Load
- Annex 26 Discos Technical Characteristics
- Annex 27 Moldova Gas Consumption
- Annex 28 Moldovagaz Customer Profile
- Annex 29 Gas Prices vs Oil & LNG Prices
- Annex 30 World Natural Gas Reserves
- Annex 31 World Natural Gas Production
- Annex 32 World Natural Gas Trends
- Annex 33 U S Principles of Gas Transporting & Rate Polices
- Annex 34 Service Contract for Transportation Service
- Annex 35 Gas Tariff Costs Allocation (table)
- Annex 36 Gas Tariff Costs Allocation (chart)
- Annex 37 GoM Resolution No 212
- Annex 38 Chisinau DC Gas Load
- Annex 39 Chisinau DC Residential Customers Metering
- Annex 40 Proposed Functions & Responsibilities for MG
- Annex 41 Proposed Functions & Responsibilities for Chisinau DC
- Annex 42 Risk Analysis & Mitigation
- Annex 43 Privatization Implication on the Gas Company
- Annex 44 Gas Storage in Central Europe
- Annex 45 Comparison of Different Heating Options
- Annex 46 Energy costs and comparison of different cooking options

APPENDICES

- Appendix 1 Definition of Regions
- Appendix 2 Definitions & Terms
- Appendix 3 Conversion Factors
- Appendix 4 World Households Energy Prices

ABBREVIATIONS AND ACRONYMS

atm	Atmospheres (pressure)
bcm	billion cubic meters
CHP	Combined Heat and Power plant
CIS	Commonwealth of Independent States
CNG	Compressed Natural Gas
CS	Compressor station
DC	Distribution Company
Disco	Distribution Company
EBRD	European Bank for Reconstruction and Development
GDP	Gross Domestic Product
GoM	Government of Moldova
IBRD	International Bank for Reconstruction and Development –World Bank
JSC	Joint Stock Company
Mcm	million cubic meters
Moldova (RB)	Moldova area on the right bank
NIS	New Independent States
ROM	Republic of Moldova
Transnistria (LB)	Transnistria on the left bank

EXECUTIVE SUMMARY

S.1 Background

This Master Plan for the Chisinau Distribution Network forms a part of the contract being performed by Hagler Bailly for USAID “New Independent States Energy Sector Institutional Reform Project”, Moldova, Delivery Order No 19, Contract CCN-Q-19-93-00152-00. The primary reason for the Master Plan is to provide guidance in developing the technical, management and organizational structures for commercialization. The commercialization of the natural gas sector will assist in creating the environment and conditions necessary to stimulate private capital flow, thereby supplementing current funds and multilateral loans to meet the need of Government of Moldova to increase economic growth and meet political objectives.

Commercialization of the gas sector offers the potential to minimize the impact of sovereign guarantees, through “limited-recourse” (“off-balance-sheet”) lending to “corporatized” entities of the state. Significant additional benefits will accrue because of the corporate discipline required to achieve commercial operations and the indirect positive signals (often referred to as the “additionality”) provided by the participation of foreign investors. This is particularly significant when these foreign owners are “strategic” investors representing companies which are recognized leaders in the energy industry. The Master Plan suggests an approach for organizational restructuring of the gas sector to achieve these goals.

The body of the report discusses the existing situation for Moldova and Moldovagaz and the Chisinau Distribution Network in the context of the domestic and regional international economic and energy conditions. Suggestions are made for organizational and management restructuring to reflect the principal functions of gas transit services for RAO Gazprom, gas procurement, internal transmission and distribution. The Annex, as an integral part of the Master Plan, provides additional detailed information supporting the recommendations and conclusions and forms the basis for implementing the commercialization activities.

S.2 Moldovagaz As A Strategic Asset

Moldovagaz is a strategic asset for the Government of Moldova and further development of the gas industry will provide one of the main drivers for overall economic development. The Government of Moldova has committed to commercialization and, where economically viable, privatization of companies within the energy sectors. One of the goals for future efforts should be directed toward structuring the industry to provide for creation of entities within the energy infrastructure sector to provide “privatization viability”.

“Privatization viability” refers to the ability of the utility to survive on its own, commercially and financially, and without outside support from government.

The recommendations presented are directed toward

- Improving the potential for access to Foreign Direct Investment in Moldova thereby reducing the Government's foreign and domestic debt burden
- Improving the quality of life for Moldovans
- Maximizing the value of the strategic location of Moldova as gas transit corridor for gas flowing from the former Soviet Union to markets in the Balkans and Turkey. Additional transit pipelines are in the planning stage for a spur line (4 bcm) connecting Balti to Iasi to serve the Northern Romanian region (2.5 bcm) and provide gas to the neighboring region of Balti (1.5 bcm). Gazprom is also considering looping the North-South transit line with a 9-bcm line to Turkey. While Moldova currently represents a key transit country for supply of gas to Turkey, Turkey has committed to new gas supplies from the Caspian Region which may find alternative routes to this market. However, Moldova has also had discussions regarding a possible energy transit line from the Caspian Region to Europe.
- Encouraging Foreign Direct Investment in the energy sector for hydrocarbon exploration and production, pipelines, storage facilities, transmission, distribution and end-use applications.

It should be noted that as the gas and electric sectors reach commercialization, economic competition would develop between the gas and electric sectors for customers and load.

S 3 Sustainable International Participation In Industrial Development

When evaluating the potential for international investment, foreign investors consider the following to be critical:

Human Resources Initially foreign investors evaluate the cost of labor and seek rapid return utilizing the available "human capital." However, the advantages obtained are usually non-sustainable, unless a full commitment is made to development of the human-capital through appropriate training.

Energy supply Reliable, abundant and competitive energy supply is required for foreign investment in manufacturing and agroindustry. Moldova is totally dependent on imported primary energy supplies and does not have alternatives to provide minimum requirements for energy security from independent, sovereign sources. The lack of reliable energy supplies, which is driven by a complex mix of technical, political and non-payment issues, has a serious negative impact on sustainable economic development, as indicated by a drop of 6% in the manufacturing sector for the first half of 1998 alone. Additionally, electric power and total energy per inhabitant and per USD of GNP is extremely high and results in a significant drain on the economy for foreign exchange.

S.4 Restructuring The Gas Industry

It is recommended that the current contract for gas between RAO Gazprom and Gazsnabtranzit be restructured. Currently the gas price charged to Moldova includes an unspecified

allowance/credit for providing transit services. The credit for transit services to Moldova is a function of the gas off-take by Moldova and not related to the actual utilization or value of the pipeline facilities used for gas transit throughput. The strategic location of Moldova as a transit country and the transportation services provided should reflect the true value of these services. The gas procurement contracts for gas consumed in Moldova should reflect delivered cost of gas to Moldova. One of the results of this improper pricing is that downstream decisions on gas utilization are based on incorrect “price signals” and, because gas revenues are understated, there are less VAT taxes collected by Moldova.

Additionally, the Government of Moldova currently provides sovereign guarantees for all gas purchased by Moldova which may not continue if Moldovagaz becomes a privately-owned entity. Currently, Moldova is also liable for any gas lost in transit to other countries. Corporatization of the gas sector and “open access” should include careful consideration of the potential impact of the loss of such guarantee provisions on gas procurement and on gas service security and reliability.

The Master Plan recognizes that the regulatory framework requires that the internal transportation system provides “open access” for transportation between suppliers and major consumers. Therefore, we recommend direct contracting of gas supplies between major customers – Discos, CHP’s, Transnistria (LB), etc. and RAO Gazprom or other potential suppliers in the future. The internal transportation services will be provided under separate tariffs and should also be contracted for directly. RAO Gazprom should contract separately for its transit service requirements from Moldovagaz based on full recovery of transportation costs and value added provided by Moldova.

The principle functions of Moldovagaz are transit services, internal transmission and distribution to customers (through 36 Discos). As such, its role is that of owning pipes, compressor stations, meters and related facilities and the collection of tariffs for services related to gas delivery only. Except for Chisinau Network, the Discos are not of economic size for technical and management viability.

S.5 Moldova as a Key Gas Transit Country

Moldova, geographically located between Ukraine and Romania, provides a natural corridor for transit of about 20% of the natural gas exports of the FSU. The natural gas from RAO Gazprom (FSU) transits Moldova and Transnistria en-route to the Balkans and Turkey.

The target market for the gas should be Turkey. Several independent estimates forecast Turkey’s gas consumption increasing from by 191% between 1997 and 2000 and by 364% in the year 2020. Gas consumption in Romania and Bulgaria has been declining. The competition for the Turkish market is the Caspian region.

S.6 Issues Related To Payment Arrears

Payments for gas delivered to customers reached only 56% in 1997. The payment arrears over the last years and continuing lack of payments by energy customers has resulted in accumulating

very large debts with RAO Gazprom. A variety of options are being considered for restructuring the debt in the gas sector. Options include further sovereign debt obligation assumed by the Government of Moldova and forming a Joint Stock Company including most of the gas infrastructure of Moldova (RB) and Transnistria (LB). The payments for past energy and current payment collection issues, including payments in the form of barter, result in a serious financial domestic and foreign debt burden for the government.

S.7 Chisinau Gas Distribution Company

Over 50% of the gas sales of the Chisinau DC are to the CHP's. These gas sales need to be converted to transmission services only, under the new license framework, with CHPs and major industrial customers purchasing their gas supplies directly from Gazprom. The amount of gas costs and revenues associated with transmission and distribution services of the company to residential, commercial, industrial and CHP loads is insufficient to sustain commercial viability. Further, we recommend that the Chisinau DC be restructured to reflect the functional activities of the company.

S.8 Risk Assessment

A number of risks associated with the proposed commercialization and potential privatization have been identified. The Master Plan addresses the risks relating to energy supply security, Republic of Moldova and state entity creditworthiness, and the regulatory and legal framework. A further effort should be directed to the development of a comprehensive risk assessment and analysis and recommendations for risk mitigation actions. Where possible, suggestions were made for facilities and organizational restructuring to reduce risk and requirements for sovereign guarantees.

1. INTRODUCTION

1.1 Background

This Master Plan for the Chisinau Distribution Network forms a part of the contract being performed by Hagler Bailly for USAID “New Independent States Energy Sector Institutional Reform Project”, Moldova, Delivery Order No 19, Contract CCN-Q-19-93-00152-00. The primary reason for the Master Plan is to provide guidance in developing the technical, management and organizational structures for commercialization. The commercialization of the natural gas sector will assist in creating the environment and conditions necessary to stimulate private capital flow, thereby supplementing current funds and multilateral loans to meet the need of Government of Moldova to increase economic growth and meet political objectives.

Commercialization of the gas sector offers the potential to minimize the impact of sovereign guarantees, through “limited-recourse” lending (“off-balance-sheet”) to “corporatized” entities of the state. Significant additional benefits will accrue because of the corporate discipline required to achieve commercial operations and the indirect positive signals (often referred to as the “additionality”) provided by the participation of foreign investors, particularly if these are “strategic” investors representing companies which are recognized leaders in the energy industry. The Master Plan suggests an approach for organizational restructuring of the gas sector to achieve these goals.

1.2. Purpose of the master plan

The purpose of the Master Plan is to identify issues and in some cases to suggest recommendations to assist the Government of Moldova, Moldovagaz and the Discos in commercializing their operations. We have addressed the following issues:

- Suggestions for clarification of the structure of Moldovagaz and the Chisinau Gas Distribution Network as commercial operating entities,
- Alternatives to corporate organization to improve service, reduce operating costs and prepare for potential privatization and foreign investment,
- Means to improve the economic condition for the energy sector by restructuring Moldovagaz,
- Restoring the gas sector’s financial equilibrium, and stopping and/or reducing the build-up of energy-related external debt,
- Areas for operational improvement of Chisinau Gas Distribution Network system,
- Identification of laws, data and reports required for commercialization and solicitation of tenders for future international investment/participation in Chisinau Gas Distribution Network,
- Suggestions to increase energy security for Moldova,
- Potential opportunities for expanded business in the gas sector,
- Potential opportunities for reduction in “net” foreign exchange cost of energy to Moldova, and,

- Contracting forms to each sector of gas industry

2. FINDINGS

- 2 1 Moldovagaz is a strategic asset for the Republic of Moldova and further development of the gas industry will provide one of the main drivers for economic development
- 2 2 While gas shipments will decline to Romania and Bulgaria, the primary growth country for gas transit is Turkey (Annex 1 & 2)
- 2 3 The Moldova gas system plays a critical transit role, or “Hot Spot”, in the delivery of about 20% of the gas delivered from the FSU to Western Europe, the Balkans and Turkey (Annex 3 & 4)
- 2 4 The Government of Moldova has committed to commercialization/ corporatization of the gas sector, and where economically viable, privatization of companies within the energy sectors
- 2 5 The gas delivery contract between Gazsnabtranzit and RAO Gazprom (Annex 9) provides for the take-or-pay delivery of 3 bcm of gas annually at a blended price including transit services and gas The gas provided under the Contract serves Moldova (RB) and Transnistria (LB)
- 2 6 There is no transit contract between Moldova and RAO Gazprom for transit of the gas through Moldova, and actual transit price may not reflect the commercial value of Moldova for using transit rights and other direct costs
- 2 7 Because of very high energy consumption (approaching 30% of GDP) (Annex 5), debts associated with the energy sector have contributed significantly to the buildup of high domestic and foreign debt Further, the low collection rate of payments due (approximately 50%) for energy/gas and gas losses have contributed to this deficit (Annex 6)
- 2 8 The apparent difference between the real and nominal exchange rate of the lei to the USD has limited export and resulted in very high domestic interest rates (Annex 7 & 8)
- 2 9 Energy reliability, security (lack of gas storage capacity) and quality of service are inadequate to attract foreign private investors in the utility and manufacturing sectors
- 2 10 Moldovagaz commingles services, staff and funds for gas transit, internal transmission and distribution services Moldova links potential benefits from gas transit tariff to gas procurements rather than tariff/cost-of-service linked to gas transited
- 2 11 Government of Moldova is providing sovereign guarantee for purchasing the energy from foreign sources

- 2 12 Very high energy consumption per GNP, gas losses in the Chisinau DC exceeding sales to industrial customers, and payment arrears associated with the energy sector have contributed significantly to build-up of high domestic and foreign debt
- 2 13 The arrears resulting from poor collection of payments are approximately 50%. The arrears in payment occur in all sectors of the economy. Non-payment from Government entities and State Corporations are significant. A significant portion of the payments is in the form of barter, which is not valued according to international prices. These factors have resulted in a lack of creditworthiness for Moldova and the gas entities
- 2 14 The gas tariff structure does not provide full cost recovery of all the costs associated with the operation of the distribution system (Annex 10). Tariffs do not reflect an appropriate allocation of costs of providing service to each customer class
- 2 15 Current debt, including sovereign guarantees, of Moldova to Gazprom is in excess of USD 600 mln
- 2 16 The biggest non-payer in the gas network system for the Right Bank is the electric and heating generation sector, however the significant nonpayment exists among residential, industrial, commercial and other consumers (Annex 11 – 14)
- 2 17 Moldova has not concluded bilateral tax agreements with western countries
- 2 18 Foreign investors or joint ventures cannot own the land, thus limiting opportunities for project financing of energy infrastructure (Annex 15)
- 2 19 The Gas Distribution companies (35), with the exception of possibly the Chisinau system, are not of sufficient size to be commercially viable for international participation in privatization
- 2 20 Legal, Regulatory and Accounting Standards Framework for corporatization/commercialization and privatization requires additional effort to reach international standards for privatization (Annex 15)
- 2 21 Moldova has very high-energy consumption per GNP. Moldova has not implemented energy conservation technologies to reduce energy consumption (Annex 5). The tariff structure is not designed to induce energy conservation
- 2 22 Moldova has not utilized potential biogas energy sources to increase domestic energy
- 2 23 Moldova could potentially increase utilization of CNG transport fuels
- 2 24 Moldova does not have sufficient means to evaluate the social, State budget and economic impact of implementing commercialization and/or privatization of the energy sector

3. RECOMMENDATIONS

3 1 Republic of Moldova

3 1.1 Payment Arrears

Payment arrears in all sectors of the economy must be reduced. However, the payment arrears issues can only be resolved in a coordinated effort with Government payments by the GoM in accordance with its budget. Resolutions of the issues of GoM payments are critical as initial steps to corporatization and ultimate privatization.

3 1.2 Maximize the Value of the Strategic Location of Moldova

Maximize the value of the strategic location of Moldova as gas transit country for gas to the Balkans and Turkey (Annex 1), by concluding separate gas purchase and transit contracts with RAO Gazprom.

3 1.3 Separation of Gas Procurement and Gas Transit Services

Establish long-term contract for gas transit services to Gazprom based on cost of service and market.

3 1.4 Energy Supply Security

Provide reliable and non-interruptible gas supplies of uniform quality, develop strategic gas storage or contract the storage capacity with Ukraine.

3 1.5 Foreign Direct Investment

Encourage Foreign Direct Investment in the Energy Sector for hydrocarbon exploration and production, pipelines, storage facilities, transmission, distribution and end-use applications. Invite international developers/investors to participate with Moldova in the development of additional transit pipeline and storage capacity and marketing.

3 1.6 Increased International Development of Compressed Natural Gas for Transport Vehicles

Invite international participation in further development of CNG for vehicular transport needs.

3 1.7 Increase energy efficiency and conservation measures

Gas losses in the transit, transmission and distribution systems must be reduced.

3 1.8 Invite international participation in utilization of biogas for power generation

3 1.9 Promote distributed power generation with co-generation for industrial development

3 1.10 Reduce gas losses and improve efficiency of gas compression for transit gas facilities

3 1 11 Contracting Out

Retain international contractor as operator for Discos

3.2 Moldovagaz**3 2 1 Open Access for Transmission System**

Provide “open access” by Moldovagaz to the transmission system and recommend that large gas consumers (energy sector, Chisinau DC, and Transnistria) contract directly for the gas supply with Gazprom (Annex 16, 17)

3 2 2 Tariff

Restructure the tariff in order to provide a full recovery of costs and services

3 2 3 Restructure Organization of Distribution Systems

Combine the Distribution system, currently 36 companies, in a minimum number of companies, preferably one, to make them commercially viable

3 2 4 Independent Organization to Provide “Revenue Cycle Services”

The establishment of an independent organization to provide Revenue Cycle services is to improve collection of payments for gas from all sectors and hence improve opportunity to securitize the revenue streams. A securitized revenue stream significantly increases the value of a distribution company for privatization. Consideration should be considered for “contracting out” the revenue cycle services as the initial step toward privatization.

Revenue Cycle Services may include

- Measurement Information Meter Ownership, Meter Installation, Meter Reading, Field Services, Communications
- Bill Processing Customer Billing, Multi-site-customer Billing, Service Provider Services
- Call Center Operations Customer Account Initiation, Service Provider Verification, Billing Follow-up, Service Problem Solutions, Emergency Response Center, Telemarketing
- Cash Management Financial Services, Collection, Disbursement
- Information Technology Services Integration, Software, Data Center, Call Center System, Internet, Customer Services Center

4. MOLDOVA

4.1 General Overview

The Republic of Moldova is one of the young newly independent states and is a member of the Commonwealth of Independent States. Moldova is still facing an ongoing, arduous road of transformation. In a short period of time the Republic of Moldova has managed to attain strategic economic achievements which have been appraised and supported by the International Monetary Fund, the World Bank and the European Bank for Reconstruction and Development.

Chisinau is Moldova's biggest economic center, which produces more than half of the nation's gross domestic product.

There are four significant factors influencing and contributing to the changes in Moldova: first its geographic and multi-ethnic character, second its significant agricultural potential, based upon its highly fertile soil, third its industrial development, most significantly advanced in electronics, agroindustry and fourth - most important of all - Moldova's human potential.

Moldova is a major transit country for moving gas from Russia (Gazprom) to Romania, Bulgaria and Turkey (Annex 3). Approximately 20 bcm moves through Moldova plus the 3 bcm consumed in Moldova. The flows represented almost 20% of the gas exports from Russia in 1997. While gas deliveries to Bulgaria and Romania have declined in recent years, Turkey has increased shipments (Annex 1). Competition for the Turkey market will be the Caspian Region (Annex 18). Gazprom is currently planning to expand the capacity of gas transit via Moldova by an additional 9 bcm.

The strength of the Moldovan lei (nominal exchange rate to the USD), which is already an international convertible currency, low inflation, privatization of the enterprises and the comparative advantages of their agroindustrial production are important assets for investors wishing to cooperate in developing Moldova.

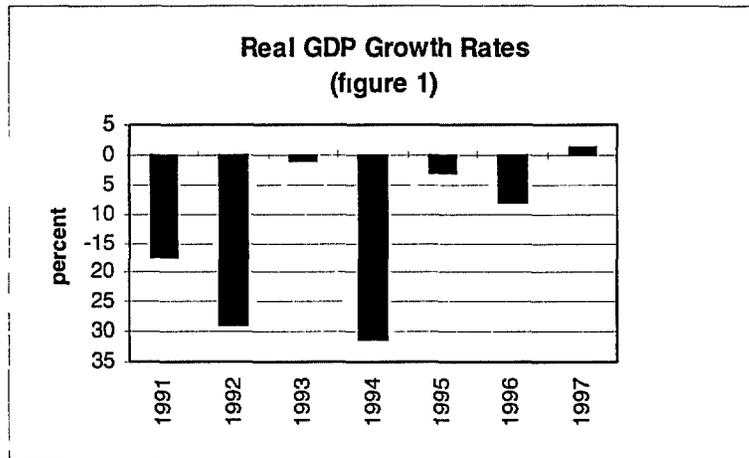
However, currently the strength of the Moldovan lei is negatively impacting exports, as is the lack of reliability of energy supply. Maintaining the stability of the lei and lack of hard foreign currency exports is resulting in very high domestic interest rates, limiting investment for economic growth. Increasing foreign debt and inability to pay for imported energy will limit future growth.

4.2 Economic Situation

Moldova currently faces two daunting macroeconomic challenges: to increase GDP growth and to keep its external debt at sustainable levels. The 1.3% real GDP growth (official estimates) achieved last year was the first positive rate since independence (figure 1). External debt stock (sovereign debt excluding energy arrears) stands at \$1.08 billion, or 58 percent of GDP, a ratio that was second only to Tajikistan among the FSU countries, and increasing at an unsustainable pace (1). Poor performances on both fronts are undermining progress made in other areas--e.g., substantial reduction in controls over prices, privatization of a high proportion of production.

units, and financial stability--and are beginning to threaten the macroeconomic stability of the country. Projections show that unless important structural reforms are implemented without delay, GDP growth would remain low and external debt would reach unsustainable levels (Annex 6)

Fig 1.



(1) Inclusion of energy arrears that might be settled by further issuance of external debt increases the debt to GDP ratio to over 65 percent

4.3 Comparative Analysis Of The Countries

In the Annex 5 we have evaluated the Electric Energy Consumption and Total Energy per person and Electric Energy Consumption per USD of GNP

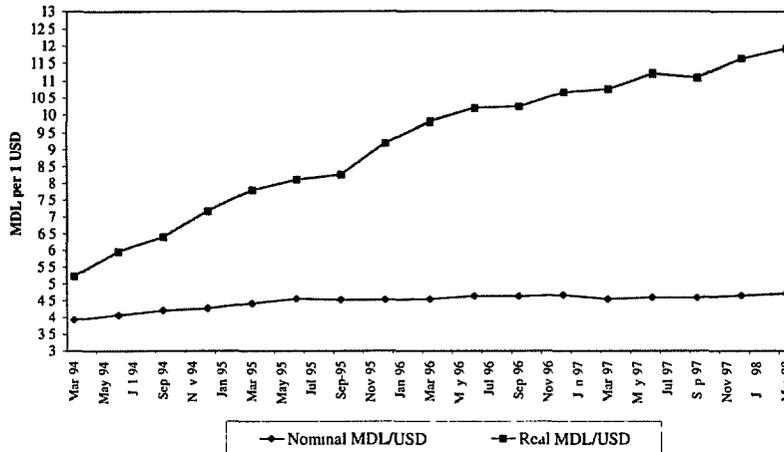
4.4 Foreign exchange stability

Moldova’s currency, lei, was introduced at the end of 1993 (Annex 7, 8). At that time, the National Bank of Moldova started a program of tight monetary policy, which resulted in a declining inflation rate reaching just 1.3% per month in January of 1998. Increasing foreign reserves, which went up from just \$77 million at the end of 1993 to \$288 million at the end of April of 1997, helped this¹

¹ National Bank of Moldova, “Macroeconomic and Financial Stability”

Fig 2

**Nominal and Real Exchange Rate of Moldovan Leu to US dollar
(base year 1993)**



Source: calculated based on the data from the TACIS Report on Moldova Economic Trends and data of the US Government

Following is an excerpt from a National Bank of Moldova report discussing Moldovan lei convertibility

“The Moldovan lei is a convertible currency for all current account purposes under the criteria of Article 8 of the Articles of Agreement of the International Monetary Fund. The National Bank of Moldova sets the daily exchange rate with reference to an interbank market. Since 1993 the currency has remained fairly stable, depreciating 5% in 1995 and about 3.4% in the 1997. The strengthening of the lei has reinforced price stability, although over the longer term further depreciation may be required to counter the widening trade deficit.”

It should be added that the Moldovan lei exchange rate is established on the Moldova interbank market against the US dollar. Exchange rates in relation to other currencies are established as a cross-rate via the US dollar.

As Fig 2 shows, although the lei has been relatively stable against the dollar in nominal terms, the lei-dollar exchange rate has been constantly on the rise in real terms.

4.5 Moldova Credit Rating

The FITCH IBCA has awarded a B+ rating for Chisinau long-term commitments in foreign currencies and a B rating for short-term commitments in foreign currencies (June 1998).

In early 1997, Moody’s rating agency awarded a Ba2 rating to Moldova, which allowed the Ministry of Finance to place at the international market the first issue of Eurobonds worth \$75 million at a 9.75% interest rate with a 5-year maturity (Appendix 2).

On July 14, 1998, Moody's downgraded Moldova's country ceiling for foreign currency bonds and notes to B2. Consequently, all bonds and notes previously issued by Moldova are now rated B2.

4.6 Energy Balance for Moldova

All fossil fuel resources, necessary to cover the energy demand of the Republic of Moldova, are imported (Annex 19). In 1997 there began domestic gas production in the Southern part of the Republic of Moldova. Currently domestic gas production constitutes a very insignificant share in the total energy demand of the Republic of Moldova and is used locally. Domestic gas production is not connected to the transmission system.

Of a particular importance is the fact that the gas imports constitute more than 50% of the total energy consumption of the Republic of Moldova and this gas is imported only from one country – Russia.

Hydro resources in the form of electricity constitute a small part of the total electricity production.

5. MOLDOVAGAZ

5.1 General Description

Concern Moldovagaz has its headquarters in Chisinau on 38 str. Albisoara. Tel. 373 2 277-055.

The chairman and the president of Moldovagaz is Mr. Mihail Lesnic. The organization charts for Moldovagaz are presented in Annex 20.

Currently Moldovagaz with RAO Gazprom owns the Joint Stock Company – Gazsnabtranzit JSC (Annex 21). This is the company which signed the gas contract with Gazprom for delivery of gas to Moldova (RB) and Transnistria (LB) and includes the transit of the Russian gas through Moldova and Transnistria territory.

5.2 Basic Activities

Basic functions of Moldovagaz are:

- Transit of Russian gas for RAO Gazprom to the Balkan countries, and Turkey,
- Transit of the Russian gas for the storage in Ukraine (last storage took place in 1996 of about 3 bcm),
- Transmission and delivering the gas for Moldova domestic consumption,
- Distribution of gas to final consumers,
- Distribution of LPG,
- CNG vehicle fueling stations,

- Design and construction services

5.3 Personnel

There are about 3500 employees working for Moldovagaz at the Right Bank, and about 1500 working in Transnistria

5.4 Infrastructure

5.4.1 Transit System

Moldova, geographically being located between Ukraine and Romania, has a strategic position for the transit of natural gas to Balkan countries and Turkey. This transit activity is provided by a natural gas pipeline network, which consists of one pipeline going East – West in the Northern part of Moldova and the three parallel pipelines going North-South, located along the south border with Ukraine (Annex 22)

The designed annual capacity of E-W pipeline is about 11 bcm, and N-S pipeline designed annual capacity is 27 bcm. There are five compressor stations on those pipelines (Annex 23)

The schematic gas flows and gas loads are shown in the Annex 24 and 25

5.4.2 Transportation System

The transportation system transports the gas from the transit line to the City gates of DC's. The high-pressure transmission system is operating at a pressure of 55 atm. There are no compressor stations in the transmission system. The technical characteristics of this transportation system are in Annex 22

5.4.3 Distribution System

There are 36 distribution companies including, Chisinau DC which delivers over 50% of the total gas load to customers in Moldova (RB). The location of DC's and their technical characteristics are shown in Annex 22 and 26

5.5 Sales Performance

In 1998, the forecast gas load for the Moldova (RB) is 2150 mcm. The 1998 forecast deliveries represent a 3% increase over 1997. Historic gas consumption by year is shown in Annex 27

The total sales volume (Moldova RB), revenue and customer payments for 1996 and 1997 are shown in Annex 28, 28a. In 1997, only 57% of total customer billings were collected

5.6 Impact Of Oil Price On Gas Prices

Because of inter-fuel competition (Annex 29), crude oil prices and oil product prices remain very important factors influencing gas prices in most markets. However, in North America gas prices are to an increasing degree the result of gas to gas competition. Oil price fluctuations could shift the supply-demand balance. In recent years, a low level of oil prices, along with increased competition in gas markets, has created a strong incentive to reduce costs in all parts of the gas chain. More efficient and cheaper technology is of course the proper response here.

Looking at world end-user gas prices, we find that in some cases transportation costs in a wide sense could account for 70% of the total, reflecting that delivered gas cost to a large extent is transportation cost. To secure future supplies it is therefore of paramount importance that technological progress is made leading to reduced transportation costs.

In the case of Moldova, gas losses contribute to higher delivered gas cost. The present gas procurement contract with RAO Gazprom, with provisions for including the gas transit allowance in the gas price, gives false signals as to the actual cost of gas. (See Section 5.7)

For reference about the world reserves, production, consumption and gas transfers see Annex 2, 4, 30-32

5.7 Gas Transport Contracting

5.7.1 Unbundling Gas Transit and Procurement Contracts

Currently gas transit and procurement are included in a single contract between RAO Gazprom and Gazsnabtranzit JSC (RAO Gazprom and Moldovagaz own Gazsnabtranzit JSC 50 / 50) (Annex 9). The Contract does not unbundle the transit and purchase activity. Interestingly, the transit revenue (cost for 1000 cm/km) is tied to the amount of gas consumed by Moldova and not the amount and/or conditions of gas transit.

Gazprom assigns the technical implementation of the Contract to “Mostransgaz” and Gazsnabtranzit to “Moldovatransgaz” through separate agreement with Gazsnabtranzit.

The Contract calls for delivery to Moldova border of approximately 21 bcm for the transit purpose and about 3 bcm for internal use, including Left Bank. The price stipulated in the Contract is USD58/1000 cm. Based on private communication, it is assumed that USD 58/1000 cm was derived by Gazprom allowing a transit discount of USD 22/1000 cm based on 3 bcm internal consumption by Moldova (RB) and Transnistria (LB).

We propose that Moldovagaz contract directly with Gazprom for transit services under a long-term commercial contract. The contract

- Should be for a minimum of 5 years and preferably 20 years to permit a proper basis for investment in plant betterment projects and allow for Project Financing

(financing based on the use of limited recourse lending based on project revenues) of the investment program,

- Should include in the tariff considerations of
 - Transit tariff for right-of-way provided by Government of Moldova,
 - Return-on-investment for installed plant and facilities,
 - Maintenance and operation,
 - Energy consumption for compression and gas transit loss,
 - Metering of gas transit should be improved to account for losses,
 - Investment in expansion projects, and
 - Value Added Tax liability for transit services

For reference we included US “Principles of gas transporting and rate policies” (Annex 33) and example of contract for transportation services (Annex 34)

In this Master Plan, we analyzed the commercial delivered gas tariff structure for all end-use sectors, based on ANRE 1998 data assuming a real gas price, at the Moldovan border, of USD 80/1000 cm. For the purpose of tariff analysis, the tariff has been unbundled into three components: transit costs, transmission costs and distribution costs (Annex 35 and Annex 36). In the allocation of the ANRE costs for transit, the tariffs do not identify costs associated with

- Right-of-way in Moldovan territory,
- The recovery of capital and allowance plant betterment,
- Moldovan taxes,
- Environmental Protection,
- Insurance, and
- VAT on transit services

With regard to transit tariff, we recommend that the tariff should be re-examined to reflect the true costs of transit services. Also we recommend unbundling the basic gas tariff into two separate tariffs, under contracts for gas transit and gas procurement.

Gas procurement and transport contracts should be directly between major consumers and Gazprom. Major consumers include, for example the Discos, Energy producers (CHP1 & 2) and Tiraspol TC (Annex 16). The internal transmission services should be provided in accordance with individual contracts between Moldovatrangaz and large consumers (Annex 17).

A very important issue is that transit tariff should not be based on the amount of gas purchased by Moldova, but should be based on the amount of the gas moved, i.e. USD/1000cm x 1 km.

5.7.2 The Role of Unbundling Services in the Gas Chain

Deregulation and introduction of competition are on the agenda in the gas industry worldwide. Third party access (open access) to pipelines and unbundling of the various services in the gas chain, normally the prerequisites for introduction of real competition, were introduced in North America during the 1980s. Today there is a fierce discussion on these issues in Europe, and more and more countries are going in the direction of more open markets. The Asia/Pacific, OECD region, New Zealand and Australia are more advanced than Europe in this respect.

Large industrial consumers and power producers increasingly want to buy their gas supplies directly from producers. A first step towards competition in the sector could be the right for Discos to shop around for supplies. As a consequence of easier access to transportation one will probably see additional international Exploration and Production operators seeking to enter the Moldovan market.

5.8 Proposed Moldovagaz – Gazprom Joint Stock company

The Moldova Parliament has received, for approval, a Government Resolution - N 212 (Annex 37) which describes the proposed formation of a Joint Stock Company (JSC) for the ownership management and operation of the gas sector in Moldova (RB) and Transnistria (LB).

Forecast value and shares of shareholders of Moldovagaz JSC are as follows

Shareholders	Mln Lei	No of shares (000)	%
Republic of Moldova Including	683	6 830	50
Transnistria	187	1 870	14
Private persons	17	170	01
Russian JSC "Gazprom"	683	6 830	50
Total Statutory capital	1 366	13 660	100

6. CHISINAU GAS DISTRIBUTION COMPANY (DISCO)

6.1 General description

Chisinau JSC is the largest Distribution Company among the 35 DC's in the gas sector (Annex 28, 28a) The Company delivers gas from the City Gate over about 1245 km of medium and low-pressure lines In 1997 the total load for Chisinau DC was 870 mcm (Tab 1), which represents an increase of 22% as compared to 1996 and 24% as compared to 1995 Company estimates the gas deliveries for 1998 of approximately 916 mcm, which represents an increase of 2% as compared to 1997 The increase in the gas load results exclusively from increased consumption by Energy Producers (Annex 38) Industrial and commercial gas consumption did not increase

Table1 Chisinau DC gas load by years, mcm

	1995	1996	1997	1998
Total Load	699	713	870	916

The system is 100 % metered for non-residential customers A break down of residential customers metering is presented in Annex 39

Gas demand can, in many cases, partly be driven by the technological development itself One obvious example is the development in combined cycle technology in recent years which has been a condition for the expansion in use of natural gas for power generation, making gas fired power stations commercially more interesting than for instance coal fired capacity Other emerging technologies that could influence future demand significantly are fuel cell technology and natural gas vehicle technology

Currently the system losses in the Chisinau system for 1997 are about 35 mcm (Annex 38) The losses are about equal to consumption of industrial customers and about 50% of residential load Chisinau is making progress on loss reduction and has reduced losses by 50% in 1997 over 1996 Additional progress should be pursued for economic, environmental and safety reasons

Essentially the gas system is built out at about 95% and hence no further expansion is expected from increased system coverage Expansion will have to result from increased commercial and industrial expansion and increased gas fired power production

6.2 Functional Organization for Chisinau DC

Existing Organizational Structure for the Chisinau DC is described in Annex 20 It reflects the fact that currently Moldovagaz operates as a vertically integrated transit, transmission and distribution company In Annex 40 we propose a structure for unbundling the company into three separate functional entities We address for Chisinau DC (Annex 41) the following functional service organizations

- Revenue cycle services

- Operating services
- Gas sales & Services
- Administration Services
- Other Businesses

6.3 Differential Tariff for Customers

Chisinau DC accounts for more than 50% of gas distributed to final customers in Moldova (RB). The analysis of customer profile (see Annex 10, 10a, 10b) shows that the two largest customers of Chisinau DC are CHP-1 and CHP-2 accounting for more than 50% of gas delivered. The CHPs and other major consumers are connected to a level of pressure in the pipeline that can be considered as high pressure and hence part of the transmission system (excluded from Chisinau DC). More than 75% of the revenue recorded for Chisinau DC is obtained from supplying gas to CHP-1 and CHP-2. Based on separation of revenues obtained from CHP1 and CHP2, the remaining tariff allocated for residential customers does not cover even the costs of gas delivered to Chisinau DC. That is why the company loses revenue from the activity of gas supply to residential customers. The average tariff paid by residential customers covers only about 95% of the costs of gas delivered to DC.

Assuming “open access”, CHP-1 and CHP-2 get the right to contract gas directly from the wholesale suppliers (Gazprom) and they will have to pay only for the transmission services. Chisinau DC will have to re-design tariffs for other customers in order to obtain enough revenue to cover reasonable costs and obtain a profit margin. In such a case the tariff of gas used by CHP-1 and CHP-2 will be lower and the gas tariff for residential customers will significantly increase if the cross subsidies are eliminated. Of course, the Government will have to take some measures in order to protect disabled customers, those with low income, etc (generally referred to as “privileged customers”) from such dramatic tariff increases.

The costs of service for supply of gas to major customers will be less than to residential and commercial customers. The proposed structure allows major customers and energy generation companies to purchase directly from the supplier. The Disco will not be the supplier of services.

The cost of ownership, maintenance and operations, and revenue cycle services is greater for small customers and this should be reflected in the tariffs.

7. COMMERCIALIZATION AND PRIVATIZATION RISK ANALYSIS

In Annex 42 we discuss commercialization and privatization risk analysis. Annex 15 includes a reference list of the relevant laws. The Government of Moldova currently faces a crisis of domestic and foreign debt obligations. One of the primary reasons for reorganization and commercialization of the energy sector is to reduce the debt burden and reduce sovereign guarantees related to energy purchases and future privatization actions. Understanding unbundling and mitigating risk is critical to future energy sector restructuring. It is proposed to unbundle risk into

- Commercial risks
- Political or country risks
- Non-political or force majeure risks

A well structured commercialization/privatization process while satisfying the investment criteria for investors will reduce the requirements for GoM sovereign guarantees which impact the lending credit capacity for the Government. The privatization process must also meet the social and political needs of the GoM.

A prerequisite of a successful utility commercialization/privatization process, therefore, is commitment by the government to improved legal infrastructure and the opening of capital markets that will encourage private investment in the utility sector.

Prerequisites For Successful Implementation Of Different Private Sector Options

In developing a Master Plan for the commercialization of the gas system for Moldova, alternative strategies may be considered. There are risks and considerations, which must be addressed for successful implementation of the commercialization process. In Fig 3 the prerequisites for successful implementation of different private sector options are presented.

FIGURE 3 PREREQUISITES FOR SUCCESSFUL IMPLEMENTATION OF DIFFERENT PRIVATE SECTOR OPTIONS

Option	Stakeholders support and political commitments	Cost recovering tariffs	Good information about the system	Develop regulatory framework	Good country credit rating	Potential benefit of the option
Service Contract	Unimportant	Not necessary in the short term	Possible to proceed with only limited information	Minimal monitoring capacity needed	Not necessary	Low
Management Contract	Low to moderate levels needed	Preferred but not necessary in the short term	Sufficient information required to set incentives	Moderate monitoring capacity needed	Not necessary	
Lease	Moderate to high levels needed	Necessary	Good information required	Strong capacity for regulation and coordination needed	Not necessary	
Build operate transfer	Moderate to high levels needed	Preferred	Good information required	Strong capacity for regulation and coordination needed	Higher rating will reduce the cost	
Concession	High levels needed	Necessary	Good information required	Strong regulatory capacity needed	Higher rating will reduce the cost	
Divestiture	High levels needed	Necessary	Good information required	Strong regulatory capacity needed	Higher rating will reduce the cost	

Note: The shading signals the degree of importance

	not significant		moderate
	low		high

Reference Private Sector – Note 126 – World Bank

8. LONG-TERM SECURITY OF SUPPLY

No matter what future demand and the future structure of the gas market may be, security of supply will continue to be a preoccupation within the gas industry. The term “security of supply” is used to mean different things in the context of particular settings and scenarios. In this study we have identified three classes of risk:

- a Technical risk. That is the risk that supply facilities are put out of action as a result of technical breakdown, natural catastrophe or terrorist action. Failures to mobilize long-term supply or ensure deliverability will result in great difficulties to Moldova. This describes the situation of “non-availability” of supply where gas demand or economic gas-consuming investment outpaces gas supply or gas-producing investment and deliverability.
- b Political risk. Includes both the possibility of a disruption to an existing supply, for a shorter or longer period, for political reasons, and
- c Supply risk. The possibility that gas supplies, which are economically available from a particular source, will not be mobilized because the political risks are too high.

The first two types of risk have obvious implications for technology. Technical reliability will always remain crucial for day to day security of supplies, better and cheaper technology all along the gas chain could contribute to reduce the risk of any failure to mobilize long-term supply.

There exist a number of reasons to review the Gazprom reconstruction strategy for pipelines in this perspective (from the year of 2000):

- The ever-growing percentage of the pipelines approaching the normative life length of 33 years (after the year of 2025 it will include practically all the pipelines)
- Today 37% of gas pipelines have life length less than 10 years, 38% 10-12 years and 25% - more than 20 years. Several pipelines are in operation for more than 33 years.

9. REQUIREMENTS FOR GAS STORAGE

Total world storage of working gas amounts to some 245 bcm, which corresponds to about 11% of world consumption. In mature gas markets the relationship between working storage capacity and total consumption seems to be around 20%. We can therefore expect the need for storage to increase substantially over the next 15 to 20 years. The main factors driving this development will be the expanding world gas demand with a strong emphasis on gas in power generation where it could be used in mid-load and a higher share of residential/commercial demand in many markets, which will mean an increased need for seasonal and daily swing.

Increased international trade in natural gas will be supported by construction of storage both in exporting countries and transit countries to enhance security of supply. Deregulation of gas

markets and introduction of competition will, as shown by experience in North America, increase the need for storage as it is used also for taking advantage of price fluctuations and catering for the needs of new actors on the market. Gas storage is expensive. Gas storage, if employed, accounts for a substantial share of transmission and distribution costs. Annex 44 describes alternative gas storage technology and gas storage facility in Central Europe.

10. INTERNATIONAL GAS TRANSPORT CONTRACTING

Gas transportation determines the structure of gas markets and, as a consequence, their regulation, it accounts for a large proportion of the end-user price and is growing in significance and complexity.

International trade in and transit of gas is increasing but there are not yet any generally accepted, legally binding rules for transit as such or for the setting of transit fees. Nor are there any generally accepted procedures for the solution of disputes in this area. The development of such rules and procedures would help assure the continued flow of gas during any disputes.

According to most forecasts, the dependence of the OECD countries (Turkey as an example) on external gas supplies will increase over the next 20 years. This development raises a number of issues that need to be addressed, including those relating to security of supply.

Many different models exist for the organization of pipeline ownership and operation, depending on such national circumstances as regulatory history, natural resource endowment and market structures. The tendency in this area is for a reduction of direct involvement by the state, and in a number of cases, privatization.

For economic and environmental reasons, governments may wish to regulate construction of, and access to, gas pipelines. As part of general structural reform aimed at increasing economic efficiency, however, many governments are taking steps to increase competition generally in the utility sectors, including the gas sector. In gas transportation this may mean allowing pipeline construction so as to create competition. In some cases, it implies forms of third party access, whether negotiated or mandatory, to transportation facilities.

Experience to date does not support the notion that increased access to transportation facilities is necessarily incompatible with the development of new long-term gas purchase contracts, although circumstances vary substantially between countries.

Financing is a key element in the development of transportation infrastructure. Future major trenches of new gas supply hinge upon the financeability of transportation. The development of competition will influence the approach and requirements of investors and lenders but need not constitute a bar to external financing.

Unbundling transmission from the buying and selling of gas, and unbundling transportation services themselves, is often linked with the introduction of competition. Advantages and disadvantages in this area need to be weighed carefully depending upon the circumstances.

There are different approaches to tariff setting for gas transportation, major issues include ensuring that costs are reflected properly in prices while retaining incentives to greater efficiency. Regulation in this area has both costs and benefits that should be carefully evaluated.

The infrastructure installed to bring gas to the market is enormous both in physical and economic terms. IEA Member countries, for example, have 702,716 km of transmission pipeline and 25 LNG regasification terminals. Total IEA consumption of natural gas in 1992 was 1,023 bcm. On average, 690 km of transmission pipeline are installed per bcm of gas. The spread around this average is considerable, however, primarily because of geography and share of gas in the energy mix of various sectors. The Netherlands, a small country with a mature gas market and very high gas penetration in most sectors, has less transmission pipeline kilometers than any IEA country except Japan and Turkey (Japan is a special case since its gas consumption consists almost entirely of LNG imports, chiefly burnt near the import terminals for power generation). Countries at the other extreme are either larger and/or have relatively low gas penetration rates.

11. ENERGY CONSERVATION AND ENVIRONMENT

Gas tariffs (particularly in a country such as Moldova where the electric power and total energy consumption per USD of GDP is very high) should also be designed to reduce gas consumption because of very large impact on foreign exchange and environmental considerations. Tariffs should give clear price signals which make practical the installation of energy conserving measures, such as thermostats, efficient lighting and insulation for commercial and residential customers. Considerations should be given to include provisions for deferred payment for conservation measures within the overall tariff structure.

Increased use of gas compared to liquid fuels is environmentally friendly. Government policy makers should consider expansion of CNG for busses and commercial vehicles. Future expansion of the energy industry should be consistent with meeting the requirements of World Bank and OECD.

11.1 Gas Tariffs

During 1997, the average annual residential gas tariff was lower than the price of gas delivered to the Chisinau Distribution Company. Analysis shows that the company experienced losses on supplying gas to residential customers compared to full recovery of costs. Based on 1997 figures, residential customers paid only 80% of the costs incurred by the Disco to supply gas service. These losses from residential customers equal about 8 million lei. In order to obtain some profit margin the company should increase the retail tariff for other customers to cover these costs or substantially increase the tariff.

Cross subsidies between customer classes create false price signals, distorting incentives for efficient utilization of energy. Further, if we take into account the losses due to non-payment, the situation becomes more difficult. To permit the utility to recover all of its costs, when establishing gas tariffs it is necessary to take into account some percentage of uncollected

consumer bills. This means an increase in the tariffs for customers who pay their bills, improperly subsidizing those who are allowed not to pay.

11.2 Gas Heating

A simple comparison of the costs of different energy options for meeting heating requirements has been prepared. The results show that the costs of decentralized gas heating are lower than the costs of central district heating (Annex 45). Calculations are presented for different gas heating efficiencies, which show that gas is less expensive even at an efficiency as low as 70%, even though modern gas fired boilers achieve efficiencies higher than 90%.

These results suggest that further study should be made to consider different policy options for covering the thermal heat demand in Moldova. Competition should be promoted in the heat market as well as energy efficiency. Customers should be faced with the correct price signals based on full cost-recovery energy supply tariffs. For economic efficiency, tariffs must be based on market values without distortions.

If Moldova were to reach a policy conclusion and commitment to a transition from the existing central heating system to a decentralized one based on gas for heating in the future, this would also have significant implications for future CHP operations.

11.3 Cooking

From the analysis of different fuel options for cooking – electric, gas and LPG, it was concluded that in the Republic of Moldova, the price of Liquefied Petroleum Gas (LPG) does not keep pace with the price of natural gas and oil as it is in other countries. As a conclusion, natural gas for cooking is the lowest cost option at present. However, the tariff of natural gas used per proposed ANRE tariff is significantly lower than the tariff that will have to be used in order to deliver gas for cooking based on full recovery. That is why there shall have to be reconsidered the cooking fuel options and full recovery tariff for all energy options.

In Moldova due to LPG distribution inefficiency and subsidized tariff for residential gas customers per heating, the cost of a unit of LPG is significantly higher than the same indicator for natural gas (Annex 46).

11.4 Hot Water Supply

Another important issue related to efficient usage of energy is the supply of hot water during the summer time when the centralized hot water supply system is turned off in the city of Chisinau. The households, which are not connected to gas network, use electricity to cover their hot water needs. The utilization of electricity for meeting the hot water demand is a very inefficient consumption of energy. Further analysis of hot water supply during the summer period should be performed to estimate the losses and environmental impact as a result of this practice as well as to promote more efficient ways of heating water, such as natural gas.

12. PROPOSED ACTIVITIES FOR FUTURE STUDIES

Continuation of studies of issues addressed in this report

12.1 Commercialization activities

- Finalize strategy for gas network ownership structure,
- Promote policy decision by GoM on local heating vs central plant,
- Resolve non-payments issue related to energy utilization by Government and State Corporations,
- Development of the regulatory framework for gas transit, transmission and distribution,
- Development of contracts for each sector of gas system,
- Develop Revenue Cycle Services, including cash management, as an autonomous functional unit Consider using the “contracting out” for these services as an initial step in the privatization process,
- Evaluation and establishment of the legal liabilities and responsibilities for each sector of the gas system,
- Finalize the corporate structures and organization for the companies in the gas system,
- Analysis of customer base and needs for the future expansion of the gas distribution system,
- Valuation of Fixed and financial assets as basis for corporatization,
- Technical evaluation of fixed assets,
- Establish requirements for cash reserves required for operations,
- Prepare plan and cost estimates for plant betterment, supply security and potential expansion,
- Energy sector organization,
- Evaluation of the impact of the existing pension system on corporatization,
- Organization staffing – redundancy planning and liabilities
- Prepare strategic plan,
- Prepare business plan and balance sheets,
- Third country marketing of services – need to obtain necessary approvals to sell transmission services and storage using, and not using, Gazprom gas
- Identify funding for transmission expansion, and
- Establish role of foreign investor in seeking financing and alliance partners

12.2 Moldova and Regional Energy Strategy

- Development of energy supply balance,
- Strategies for fuel mix to minimize foreign currency risk
- Regulatory and tariff design for encouragement of conservation and use of domestic reserves,
- Develop options for maximizing the potential strategic advantages of Moldova’s location as a gas transit corridor

12.3 Contracting of Near Term Improvement of Energy Sector

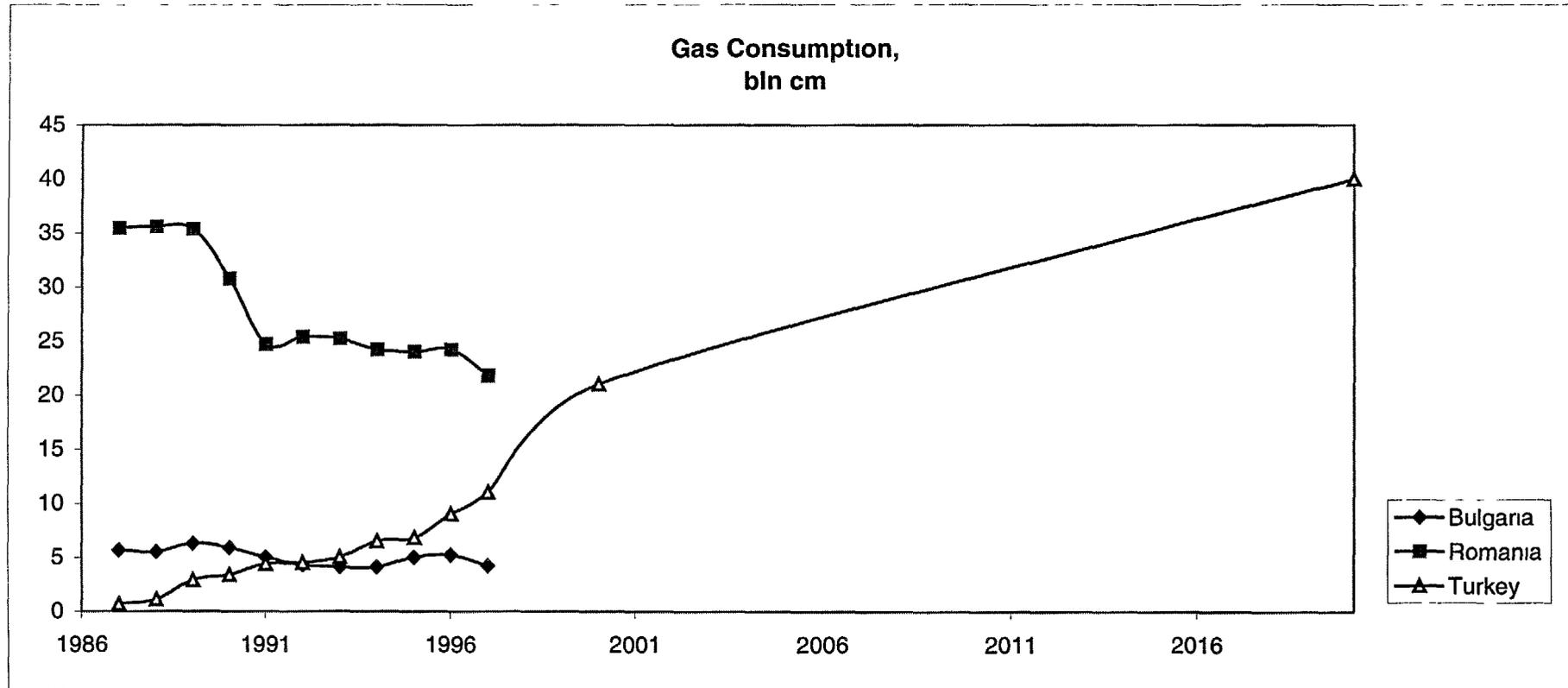
- Advisory services for tendering and establishment of contracts for sector commercialization,
- Contracts for exploration and development of hydrocarbon reserves,
- Joint Venture development for developing transit and storage capacity,
- Joint Venture development to implement CNG vehicle use,
- Joint Venture development of biogas power generation,
- Joint Venture for implementation of energy supply management and conservation technologies, and
- Contract of Chisinau DC operation, management, training, plant betterment and technology transfer

12.4 Risk assessment and Recommended Mitigation

A number of risks associated with the proposed commercialization and potential privatization have been identified. A further effort should be directed to develop a comprehensive risk assessment and analysis and recommendations for mitigation actions. The analysis should include a complete assessment of the energy and gas chain identifying all the interfaces between entities/parties, the responsibilities and risks of the parties and the transfer pricing philosophy (including subsidies) along the chain. Mitigating programs should be developed for facilities and organizational restructuring to reduce risk (social, environmental, safety, security, political and economic) and requirements for sovereign guarantees. The analysis should result in a model for the energy (gas and electric) sector, which can be used for continuing evaluation of sustainable success. The model and mitigation plan should serve as the basis for the implementation of the commercialization program.

ANNEXES

Actual and Estimated Natural Gas Consumption by Balkan States and Turkey



Natural Gas Consumption
Billion cubic metres

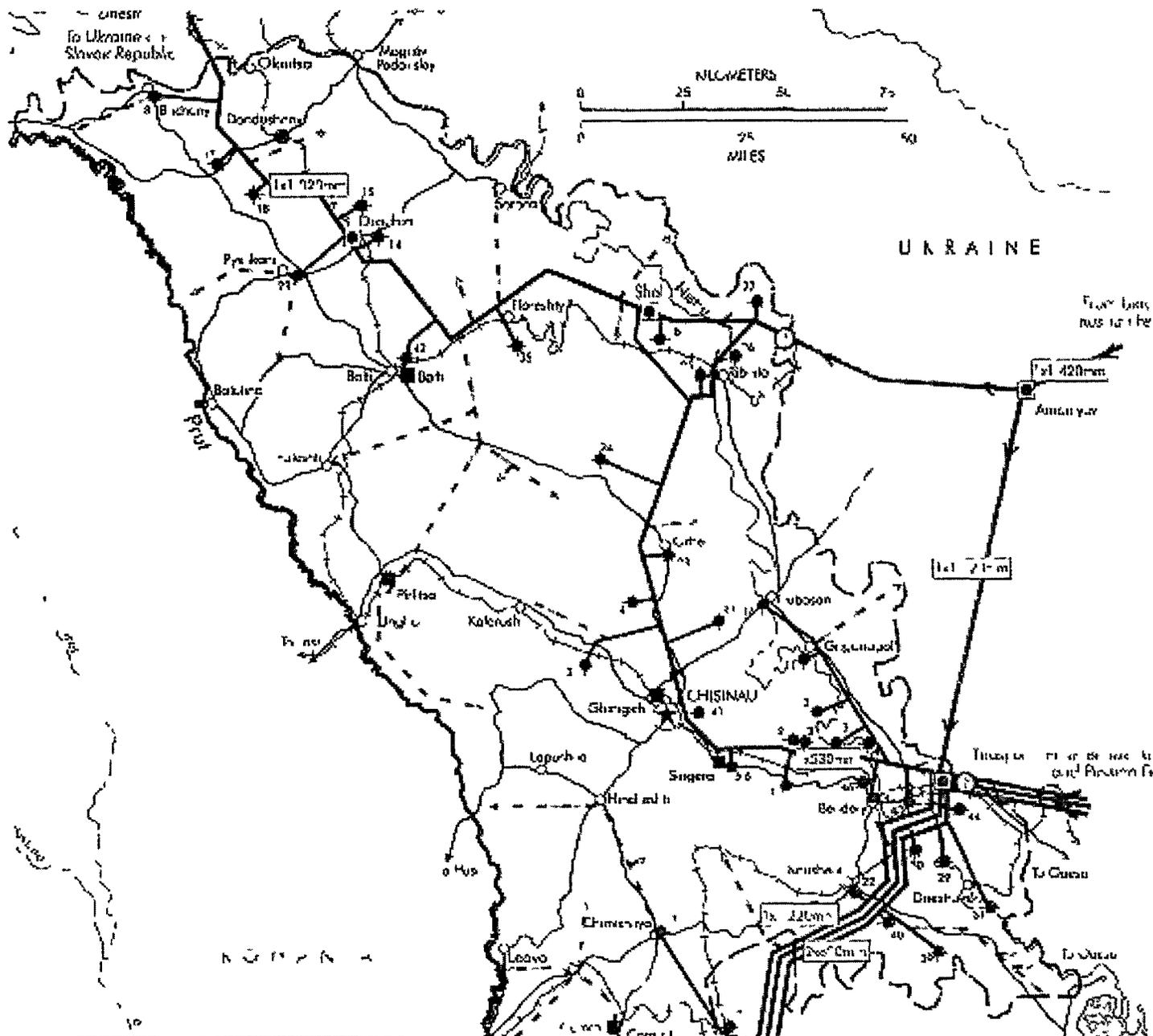
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Change 1997 over 1996	1997 share of total
USA	496.9	519.5	542.8	540.3	549.0	563.7	583.2	596.1	620.6	631.7	632.5	0.1%	28.8%
Canada	45.7	58.7	63.9	61.8	63.0	66.8	68.4	70.8	70.9	74.3	74.9	0.8%	3.4%
Mexico	26.3	26.3	27.0	27.8	27.7	27.7	28.2	29.4	29.7	31.2	32.8	5.0%	1.5%
Total North America	568.9	604.5	633.7	629.9	639.7	658.2	679.8	696.3	721.2	737.2	740.2	0.4%	33.7%
Argentina	17.3	20.2	21.2	20.3	22.1	22.3	23.6	24.3	27.0	31.0	32.9	6.4%	1.5%
Brazil	3.3	3.7	3.8	3.8	3.9	4.0	4.5	4.5	4.8	5.4	5.9	8.4%	0.3%
Chile	0.7	1.0	1.6	1.7	1.5	1.7	1.6	1.7	1.6	1.7	1.7	2.5%	0.1%
Colombia	4.2	4.3	4.0	4.1	4.3	4.4	4.7	4.6	4.4	4.2	5.3	25.7%	0.2%
Venezuela	18.6	19.0	19.5	22.0	21.9	21.6	23.3	24.7	30.0	29.7	30.9	4.0%	1.4%
Other S & Cent. America	5.8	6.4	6.4	6.7	7.1	7.6	7.5	8.3	8.3	9.3	9.7	4.3%	0.4%
Total S & Cent. America	48.9	54.6	56.5	58.6	60.8	61.6	65.2	68.1	76.1	81.3	86.4	6.3%	3.9%
Austria	5.1	4.9	5.2	5.7	6.1	6.0	6.4	6.5	6.8	7.3	6.9	5.6%	0.3%
Belgium & Luxembourg	9.4	9.3	10.4	10.6	10.0	10.0	11.0	10.8	11.8	13.1	12.5	4.6%	0.6%
Bulgaria	5.7	5.5	6.3	5.9	5.0	4.3	4.1	4.1	5.0	5.2	4.2	-18.1%	0.2%
Czech Republic	4.9	4.9	5.1	5.4	5.9	5.8	5.9	6.0	6.6	7.7	7.6	1.6%	0.3%
Denmark	1.5	1.8	1.9	2.0	2.1	2.2	2.5	2.7	3.2	3.7	3.9	5.1%	0.2%
Finland	1.5	1.6	2.1	2.5	2.6	2.7	2.8	3.1	3.2	3.3	3.2	2.1%	0.1%
France	27.8	26.2	27.1	29.3	30.6	31.4	32.3	30.9	32.9	36.1	34.7	3.9%	1.6%
Germany	59.1	58.2	59.5	59.9	62.9	63.0	66.4	67.9	74.4	83.6	79.0	5.6%	3.6%
Greece	0.1	0.2	0.2	0.2	0.1	0.1	0.1					10.3%	
Hungary	10.1	9.8	10.2	9.6	9.6	8.2	9.0	9.4	10.2	11.3	10.8	4.9%	0.5%
Iceland													
Republic of Ireland	1.5	1.8	2.1	2.1	2.1	2.1	2.4	2.4	2.6	3.0	3.3	11.3%	0.2%
Italy	35.8	37.9	41.0	43.4	46.1	45.8	47.0	45.3	49.9	51.5	53.9	4.5%	2.5%
Netherlands	37.3	34.0	34.8	34.4	38.1	36.7	37.9	36.9	37.8	41.7	39.1	6.1%	1.8%
Norway												0.4	100%
Poland	10.9	10.8	10.6	9.9	8.8	8.7	9.0	9.2	9.9	10.6	11.1	4.8%	0.5%
Portugal												0.2	
Romania	35.5	35.6	35.4	30.8	24.7	25.4	25.2	24.2	24.0	24.2	21.8	-9.9%	1.0%
Slovakia	4.2	4.3	4.6	5.3	5.1	4.7	4.5	4.6	4.8	5.0	5.2	5.1%	0.2%
Spain	3.0	3.9	5.0	5.6	6.1	6.5	6.5	7.2	8.3	9.3	12.3	31.6%	0.6%
Sweden	0.3	0.5	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.8	7.1%	
Switzerland	1.0	1.3	1.4	1.5	1.7	2.1	2.2	2.2	2.4	2.6	2.8	6.7%	0.1%
Turkey	0.7	1.1	2.9	3.4	4.4	4.5	5.0	6.5	6.8	9.0	11.0	22.2%	0.5%
United Kingdom	54.1	51.5	50.9	52.7	56.8	56.7	64.5	67.2	72.7	84.9	85.8	1.1%	3.9%
Other Europe	6.7	6.6	6.9	6.9	6.8	5.7	5.3	4.1	4.2	6.6	6.7	1.7%	0.3%
Total Europe	316.2	311.7	324.3	327.8	336.3	333.3	350.8	352.0	378.3	420.6	417.2	0.8%	19.0%
Azerbaijan	14.9	14.7	15.5	15.8	15.1	11.8	8.7	8.1	8.0	8.0	7.4	6.9%	0.3%
Belarus	10.6	12.3	13.0	13.8	14.5	16.8	15.6	13.6	12.3	12.9	12.0	6.9%	0.5%
Kazakhstan	10.9	11.4	11.8	12.5	13.2	13.5	13.0	10.3	10.8	10.6	9.8	7.4%	0.4%
Russian Federation	386.5	407.8	413.9	420.1	431.1	417.3	400.7	372.2	353.2	352.2	331.1	6.0%	15.1%
Turkmenistan	13.9	14.1	14.6	9.8	9.6	9.3	9.3	10.2	8.0	8.4	7.8	7.9%	0.4%
Ukraine	96.8	102.6	103.7	127.8	121.5	103.5	92.9	81.3	76.2	78.2	72.2	7.7%	3.3%
Uzbekistan	33.2	32.7	34.6	36.8	37.1	37.3	40.7	41.3	42.4	44.4	41.7	6.3%	1.9%
Other Former Soviet Union	21.6	24.9	26.8	26.1	23.6	18.7	12.8	11.3	11.5	11.5	10.7	7.2%	0.5%
Total Former Soviet Union	588.4	620.5	633.9	662.7	665.7	628.2	593.7	548.3	522.4	526.2	492.7	6.4%	22.4%
Iran	16.0	20.0	22.2	22.7	22.7	25.0	26.6	31.8	35.0	40.1	42.9	7.0%	2.0%
Kuwait	7.5	9.9	11.8	6.2	0.5	2.6	5.4	6.0	9.3	9.3	9.4	1.5%	0.4%
Saudi Arabia	26.8	29.1	29.8	30.5	32.0	34.0	35.9	37.7	38.3	41.3	43.9	6.2%	2.0%
United Arab Emirates	14.0	14.2	17.3	16.9	20.4	18.8	19.6	21.7	24.8	29.0	30.0	3.4%	1.4%
Other Middle East	14.8	16.9	18.1	18.2	19.2	26.0	27.4	28.4	29.6	30.7	32.5	5.7%	1.5%
Total Middle East	79.1	90.1	99.2	94.5	94.8	106.4	114.9	125.6	137.0	150.4	158.7	5.5%	7.3%
Algeria	13.9	15.2	14.8	16.1	17.0	17.8	18.6	19.6	21.0	21.3	22.4	4.8%	1.0%
Egypt	5.3	5.9	6.5	6.8	7.7	8.4	9.7	10.4	11.0	11.5	11.8	2.0%	0.5%
South Africa													
Other Africa	8.7	9.3	11.2	10.5	10.0	10.7	10.5	11.4	11.2	12.7	16.8	31.6%	0.8%
Total Africa	27.9	30.4	32.5	33.4	34.7	36.9	38.8	41.4	43.2	45.5	51.0	11.6%	2.3%
Australia	15.5	15.9	17.5	18.4	17.0	16.9	17.4	19.4	19.5	19.9	19.6	1.2%	0.9%
Bangladesh	3.9	4.3	4.6	4.8	5.1	5.7	6.1	6.6	7.4	7.6	7.5	0.8%	0.3%
China	14.2	14.1	14.3	14.7	14.9	15.1	16.2	16.6	17.7	17.7	19.3	9.0%	0.9%
China Hong Kong SAR										1.7	2.6	56.2%	0.1%
India	6.3	7.3	10.7	12.5	14.1	15.8	16.3	17.4	19.6	21.7	24.4	12.8%	1.1%
Indonesia	14.4	13.9	18.4	20.1	21.7	22.6	23.9	27.3	30.1	31.4	32.8	4.5%	1.5%
Japan	42.2	44.8	47.9	51.2	54.7	56.0	56.3	60.3	61.2	66.1	65.1	1.5%	3.0%
Malaysia	5.3	6.2	7.4	7.6	9.0	10.6	13.0	13.6	13.7	17.8	17.8		0.8%
New Zealand	3.8	4.2	4.3	4.3	4.7	4.9	4.8	4.4	4.2	4.8	5.0	5.0%	0.2%
Pakistan	9.2	9.8	10.6	11.2	11.1	11.5	12.0	13.2	14.5	15.2	15.8	3.9%	0.7%
Philippines												50.0%	
Singapore						1.1	1.5	1.5	1.5	1.5	1.5		0.1%
South Korea	2.3	3.0	2.9	3.4	3.9	5.1	6.4	8.5	10.2	13.5	16.4	21.6%	0.8%
Taiwan	1.1	1.1	1.2	1.9	3.0	3.2	3.1	4.0	4.3	4.5	5.2	15.6%	0.2%
Thailand	4.4	5.2	5.4	5.5	7.0	7.5	8.4	9.5	10.0	11.8	13.3	12.6%	0.6%
Other Asia Pacific	3.1	2.9	2.6	2.7	2.5	2.7	3.1	3.3	3.4	3.8	4.2	11.0%	0.2%
Total Asia Pacific	125.7	132.8	147.8	158.2	168.7	178.7	188.4	205.6	217.3	239.0	250.5	4.9%	11.4%
Total World	1756.1	1844.6	1927.9	1965.1	2000.7	2003.3	2031.6	2037.3	2095.5	2200.2	2196.7	0.2%	100.0%
Of which OECD	896.8	932.1	977.4	986.1	1014.7	1034.3	1076.4	1103.9	1156.6	1221.1	1225.6	0.4%	55.8%
European Union 15	236.5	231.8	240.9	249.1	264.3	263.9	280.6	281.7	304.4	338.4	335.6	0.8%	15.3%
Other EMES E	218.8	239.9	263.4	267.5	278.7	300.7	322.5	348.1	378.5	411.9	440.5	6.9%	20.1%

Less than 0.05

E Excludes Central Europe and Former Soviet Union

Note: The difference between these consumption figures and the production statistics on page 23 is due to variations in stocks at storage facilities and liquefaction plants together with unavoidable disparities in the definition, measurement or conversion of gas supply and demand data

25



NETWORK OF MAIN GAS IMPORT AND DISTRIBUTION PIPELINES AND OIL STORAGE DEPOTS

- Existing major import pipelines and diameter in millimeters
- Existing distribution pipelines
- Future distribution extensions
- Border gas metering stations
- Gas compression stations
- Gas distribution stations
- Gas fields
- Oil storage depots
- Tank wagon repair shops
- Secured areas
- National capital
- Rivers
- Railroads
- Roads
- International boundaries

Natural Gas Trade Movements 1997 by pipeline

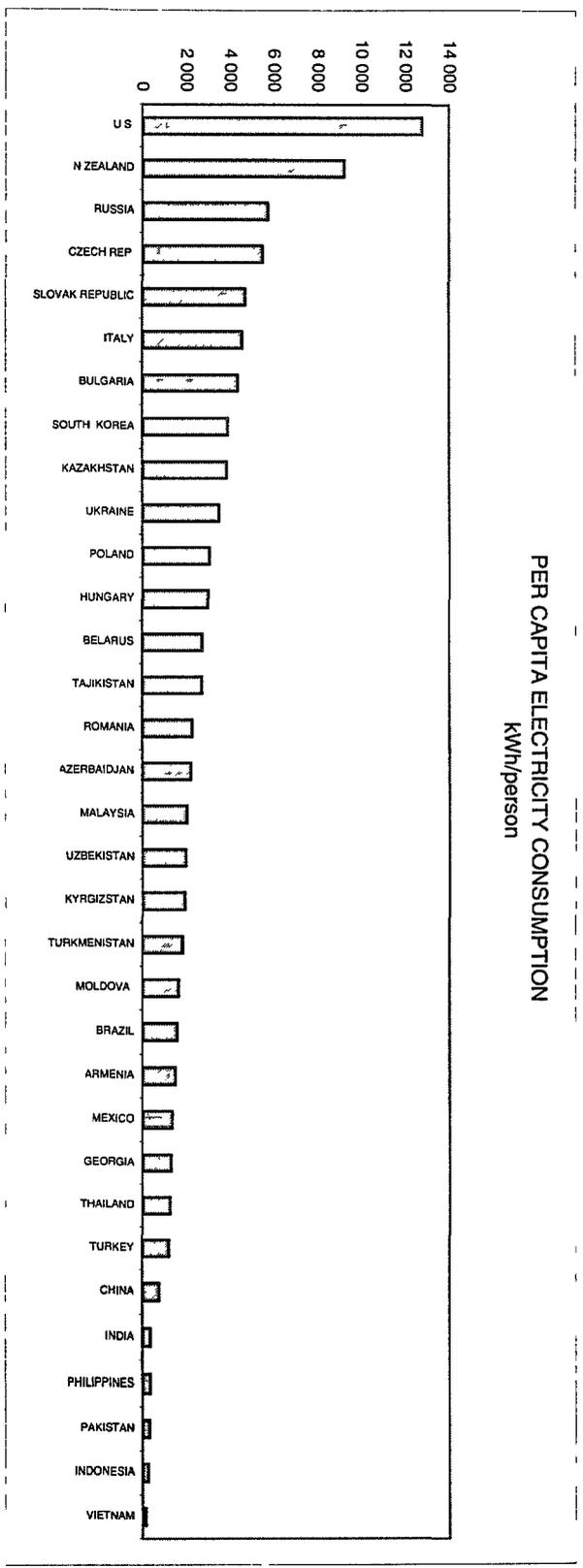
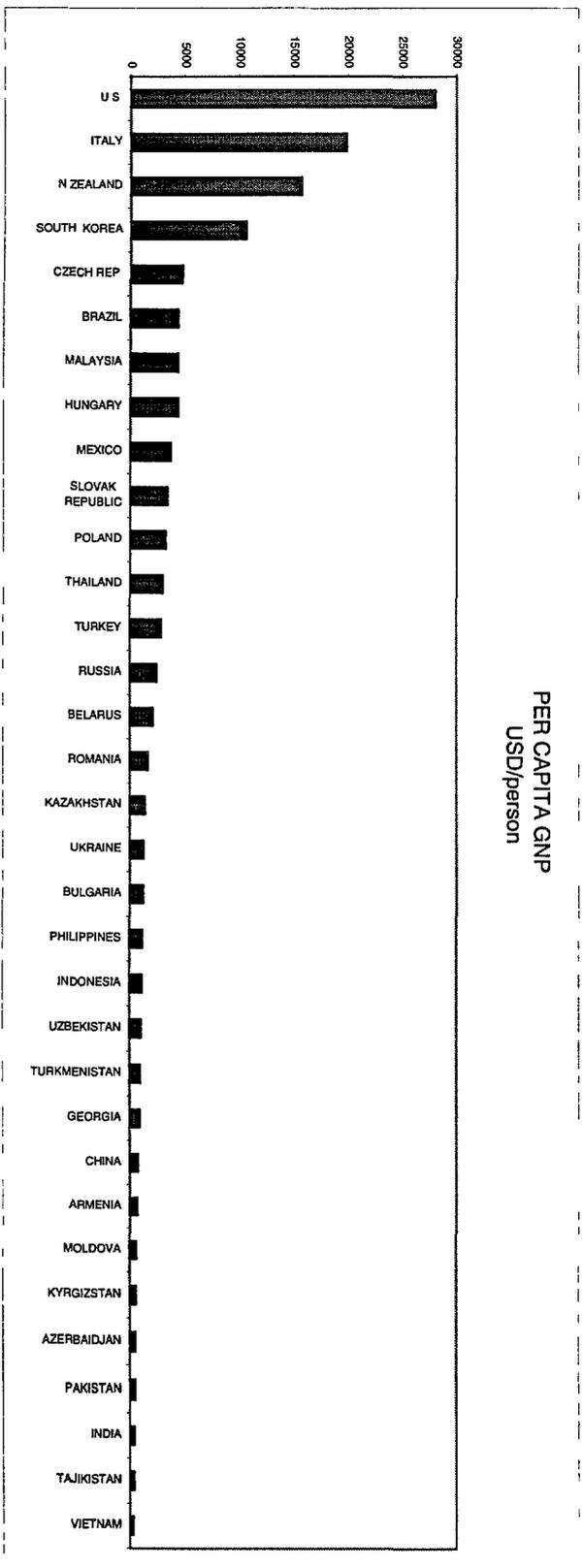
Billion cubic metres

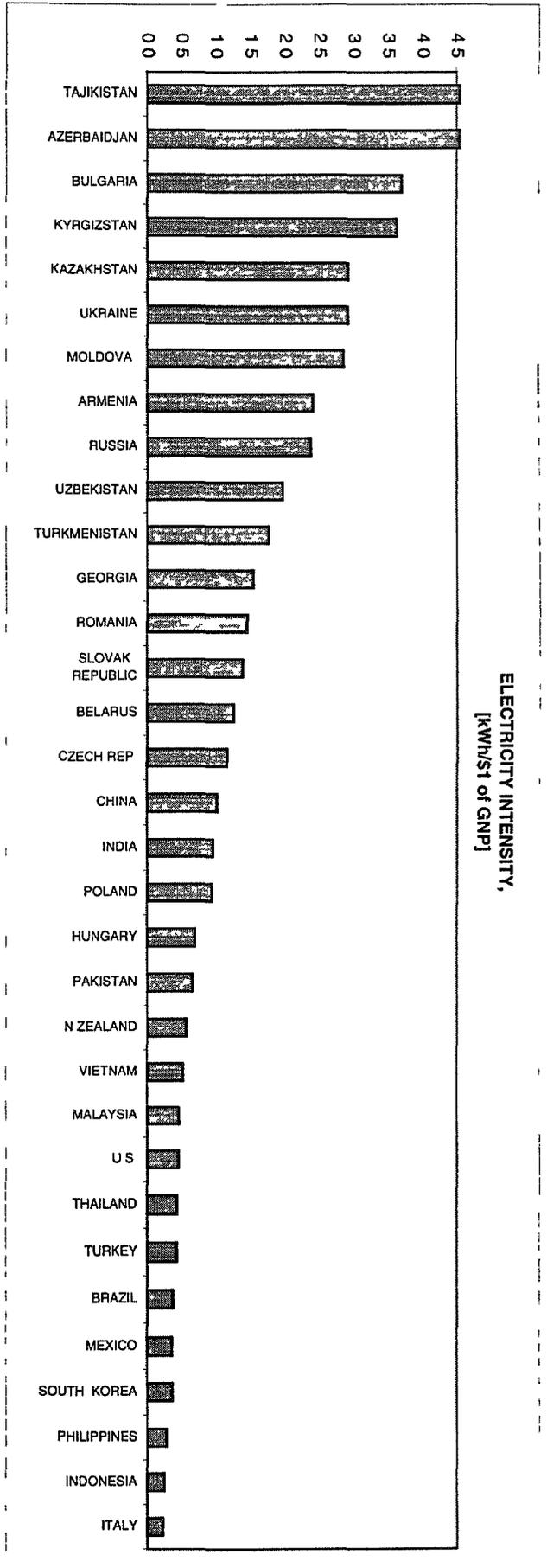
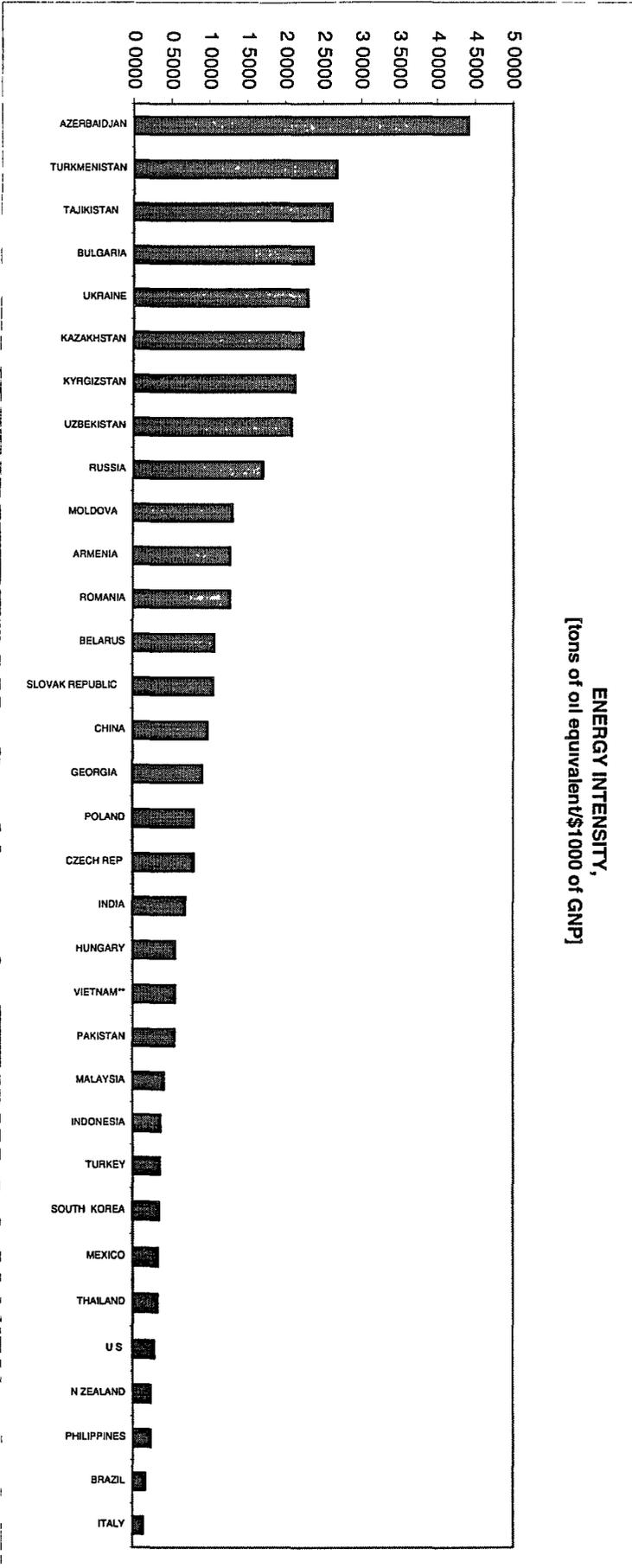
	From	USA	Canada	Mexico	Argentina	Bolivia	Denmark	Germany	Netherlands	Norway	UK	Russia	Iran	Oman	Algeria	Malaysia	TOTAL IMPORTS
To																	
North America																	
USA			83.4	0.4													83.8
Canada		1.2															1.2
Mexico		1.1															1.1
S & Cent America																	
Argentina						1.8											1.8
Chile					0.5												0.5
Europe																	
Austria								0.3		0.4		5.3					6.0
Belgium								0.7	4.9	4.3							9.9
Bulgaria												6.6					6.6
Czech R & Slovakia										0.7		16.3					17.0
Finland												4.0					4.0
France									5.2	10.4		10.1					25.7
Germany							2.1		23.6	17.6	0.7	28.0					72.0
Greece												0.9					0.9
Hungary								0.4				6.9					7.3
Ireland											0.8						0.8
Italy									5.1			13.8			18.4		37.3
Luxembourg									0.7								0.7
Netherlands										5.6	0.3						5.9
Poland												7.5					7.5
Portugal															0.3		0.3
Romania												5.5					5.5
Spain										1.9					4.2		6.1
Sweden							0.9										0.9
Switzerland								1.6	0.6			0.4					2.6
Turkey												6.8					6.8
United Kingdom										1.4							1.4
Others												4.7			0.4		5.1
Former Soviet Union																	
Azerbaijan													0.1				0.1
Middle East																	
United Arab Emirates														0.5			0.5
Africa																	
Tunisia															0.9		0.9
Asia Pacific																	
Singapore																1.5	1.5
Total		2.3	83.4	0.4	0.5	1.8	3.0	3.0	40.1	42.3	1.8	116.8	0.1	0.5	24.2	1.5	321.7

Source Cedigaz

COUNTRY COMPARISON (1996 data)

COUNTRY	POPULATION	GNP	GNP GROWTH	PER CAPITA GNP	CURRENT ACCOUNT BALANCE	FOREIGN DEBT	INFLATION	PER CAPITA ELECTRICITY CONSUMPTION	ELECTRIC GENERATING CAPACITY	ELECTRICITY INTENSITY
	(million)	bUSD	(%)	USD	bUSD		%	kWh/person	MW	kWh/USD
ARMENIA	3.8	2.4	7.8	630			20	1 526	4 000	2.4
AZERBAIDJAN	8	3.6	0.4	480			28	2 234	5 000	5.0
BELARUS	10.3	22.5	2.6	2 070				2 750	7 000	1.3
BRAZIL	164.5	709.6	8.2	4 400	17.8	132.7	20	1 608	59 000	0.4
BULGARIA	8.4	9.9	9.2	1 190		10	20.30	4 364	12 000	3.7
CHINA	1 215	906	10.0	750	16.5	106	9.7	764	204 000	1.0
CZECH REP	10.4	48.9	4.4	4 740	1.5	10.3	10	5 469	13 000	1.2
GEORGIA	5.4	4.6	n/a	850				1 314	4 400	1.5
HUNGARY	10.3	44.3	2.2	4 340		33	24	3 012	6 740	0.7
INDIA	933.9	358	6.9	380	5.1	85.2	9	367	94 000	1.0
INDONESIA	197.6	213.4	7.5	1 080	-7.5	90	8.2	277	20 000	0.3
ITALY	57.4	1 141	1.0	19 880	17.5	88	4.5	4 562	59 000	0.2
KAZAKHSTAN	16.9	22.2	0.9	1 350			29	3 846	19 000	2.9
KYRGIZSTAN	4.7	2.5	5.5	550			32	1 936	4 000	3.6
MALAYSIA	20.3	89.8	8.3	4 370	7.2	27.1	3.6	2 038	11 000	0.5
MEXICO	91.7	341.7	6.6	3 670	0.6	118	36.9	1 371	36 000	0.4
MOLDOVA*	4.3	2.5	-10.0	590**		1 192	1.6	1 658	3 000	2.9
N ZEALAND	3.5	57.1	0.6	15 720	2.5	35	3.5	9 223	8 000	0.6
PAKISTAN	132	63.6	3.1	480	3	26.1	10.3	317	14 000	0.7
PHILIPPINES	68.5	88.3	6.9	1 160	1.8	37.3	11.3	363	8 000	0.3
POLAND	38.4	124.7	6.3	3 230		38.7	17.5	3 059	29 000	0.9
ROMANIA	23.1	36.2	4.4	1 600	-1.1		62	2 287	22 180	1.5
RUSSIA	148	356	5.3	2 410			22	5 729	211 000	2.4
SLOVAK REPUBLIC	5.4	18.2	6.6	3 410		4.8	12	4 694	6 300	1.4
SOUTH KOREA	45.2	483.1	6.9	10 610	9.4	18	4.6	3 907	11 000	0.4
TAJKISTAN	6	2	7.0	340			38	2 718	3 800	8.2
THAILAND	61	177.5	5.4	2 960	-13.5	62	6.9	1 273	18 000	0.4
TURKEY	63	177.5	6.8	2 830	2.3	59.8	80.9	1 212	21 000	0.4
TURKMENISTAN	4.1	4.3	-2.4	940			100	1 853	4 000	1.8
U S	265	7 434	2.3	28 020	152.9	681	2.9	12 796	770 000	0.5
UKRAINE	50.9	60.9	9.9	1 200			40	3 500	54 200	2.9
UZBEKISTAN	23.4	23.5	1.1	1 010			64	1 987	11 800	2.0
VIETNAM	75.5	21.9	9.3	290	-1.7	24.7	9	153	5 000	0.5

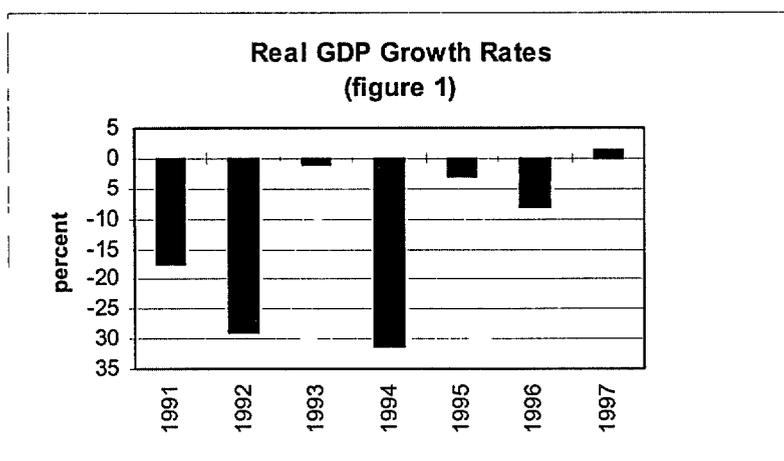




MOLDOVA MACROECONOMIC FRAMEWORK¹
GROWTH AND EXTERNAL DEBT SUSTAINABILITY²
2nd Draft--June 05, 1998

A INTRODUCTION

1 **Moldova currently faces two daunting macroeconomic challenges to increase GDP growth and to keep its external debt at sustainable levels** The 1.3 percent real GDP growth (official estimates) achieved last year was the first positive rate since independence (figure 1) External debt stock stands at \$1.08 billion, or 58 percent of GDP, a ratio that was second only to Tajikistan among the FSU countries, and increasing at an unsustainable pace³ Poor performances on both fronts are undermining progress made in other areas--e.g., substantial reduction in controls over prices, privatization of a high proportion of production units, and financial stability--and are beginning to threaten the macroeconomic stability of the country Projections show that unless important structural reforms are implemented without delay, GDP growth would remain low and external debt would reach unsustainable levels



2 **Negative/low real GDP growth rates have resulted in a more than 60 percent drop in real GDP since independence** As a result, poverty has grown significantly According to World Bank estimates (using the Atlas conversion factor), Moldova's per capita GNP fell from US\$790 in 1993 to US\$540 in 1997, **making it one of the poorest countries in Europe** An estimated 84 percent of the population is living on less than US\$2 per day and 53 percent on less than US\$1 per day A fall in real incomes by more

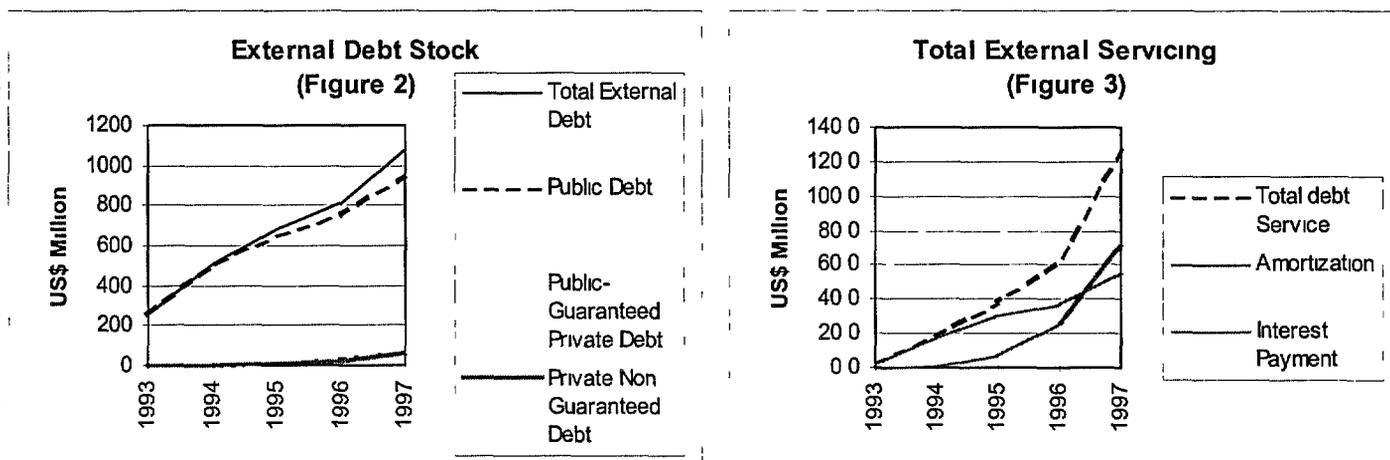
¹ This Policy Note was prepared as background for the forthcoming Moldova CAS It was prepared by Sandeep Mahajan in collaboration from James Parks, during a mission to Chisinau between April 29th and May 16th, 1998 The Note benefited from comments by Arup Banerji and overall assistance by Maya Sandu

² All debt numbers, unless mentioned otherwise, are NBM and Ministry of Finance estimates All data exclude Transnistria

³ Inclusion of energy arrears that might be settled by further issuance of external debt increases the debt to GDP ratio to over 65 percent

than 40 percent since independence and a rapid rise in the unemployment rate to more than 10 percent have weakened social stability. The collapse in output has also had an uneven impact on the population, increasing income inequality, skewed income distribution is evidenced in a consumption gini coefficient of 42. Unfortunately, the government lacks the capacity to effectively implement poverty alleviation programs, and has been unable to target the right social assistance programs.

3 Debt accumulation is a recent phenomenon in Moldova. Moldova had no external debt obligations at the time of its independence. Since 1993, however, external debt has increased at an unsustainable pace. **Debt stock in dollar terms grew by 330 percent between end-1993 and end-1997** (figure 2), at an annual compound growth rate of 44 percent, increasing the debt to GDP ratio from 20 percent in 1993 to 58 percent in 1997. Total debt servicing on external debt has shown an even steeper trend, increasing from \$2 million in end-1993 to approx \$126 million in 1997 (Figure 3) at an annual compound growth rate of 123 percent. Debt servicing to total exports increased from 4 percent in 1994 to 15 in 1997, while debt servicing to gross external reserves increased from 11 percent to 39 percent over the same period.



4 **Continued no/slow growth and rapid accumulation of external debt could have serious implications for Moldova's macroeconomic stability.** Poor growth performance would further increase poverty and income inequality, exacerbating the risk of social instability, while debt accumulation would push the external debt to unsustainable levels. There is an urgent need for immediate corrective action. This Policy Note develops an overall macroeconomic policy framework in which improved growth performance and external debt sustainability are the two end-objectives. Other macroeconomic issues--such as high fiscal cash deficit and a high current account deficit--will be incorporated into the framework as contributing to the growth and external debt problems. The Note uses the following four-step approach to analyzing the macro situation and recommending policies that would minimize the macroeconomic risks emanating from the two fore-mentioned sources:

- Identify the sources of poor growth performance and of the recent rapid build-up of external debt

- Develop a medium-term macro strategy to increase growth and improve the external debt situation
- Develop a mechanism to implement the macro strategy and identify the key structural reforms that would be needed for the strategy to be effective
- Determine the optimal timing of implementation of the macro strategy and the accompanying reforms

B. SOURCES OF POOR GROWTH PERFORMANCE AND DEBT ACCUMULATION

Poor Growth Performance

5 **GDP growth remains hampered mainly by a weak supply-side structure**, and to a lesser extent by weakened demand for domestic goods due to loss of traditional FSU markets. Productivity of investment has declined significantly since independence. For the first five years since independence, positive rates of fixed investment produced negative GDP growth rates. Productivity increased marginally in 1997--when fixed investment rate of approx 20 percent in 1996 (ministry of finance) resulted in 1 percent GDP growth (official estimates)--but remains low.

6 **Productivity has remained low in the agriculture sector mainly due to slow/partial implementation of land reforms**. Only a small fraction of land belonging to large-scale enterprises, that was identified for privatization, has actually been transferred into private property. Collective and State farms from pre-independence days still account for 40 percent of arable land and 50 percent of production. Ownership of the land that has been privatized remains scattered over many small plots (individual peasants, on average, own less than two hectares of land), making it difficult to reap the benefits of economies of scale. The lack of a country-wide land cadastre and accompanying registry system has prevented the development of a market for agricultural land. Productivity in the agriculture sector also declined due to sharp price increases of key inputs such as energy and fertilizers, and limited access to rural credit. As a result of all these factors, along with extremely adverse climatic conditions in 1992, 1994 and 1996, agricultural output dropped by more than 40 percent between 1990 and 1997.

7 **The industrial sector has taken the biggest hit since independence**. Transition to a new market structure, loss of traditional external (mainly FSU) markets, and use of obsolete technology and land management techniques resulted in a 55 percent drop in industrial output between 1991 and 1997. After independence most prices were not market-determined, which resulted in inefficient resource allocation and further contributed to the decline in industrial output. Overall, the industrial sector remains inefficient due to the lack of international competition, large share of public sector ownership, lack of marketing skills, poor management, and a weak corporate governance structure⁴. Also, the economy lacks the infrastructure--especially in energy,

⁴ The mass privatization of enterprises that was carried out through the voucher system resulted in diffused ownership of enterprises. This resulted in a weak corporate governance structure, under which there is little incentive for the managers to be efficient in maximizing the value of the firm (as

9 **External debt accumulation remains mainly a fiscal problem**, since government borrowing accounted for 77 percent of the net increase in external debt in 1997 (table 1) In 1997, 66 percent of outstanding external debt was government debt A large fiscal cash deficit (8 percent of GDP in 1997) and a continuing build-up of energy arrears are putting excessive upward pressures on the government's debt-financing needs The government is borrowing heavily from external sources because, on average, foreign credit is much cheaper than domestic credit⁶ Underdeveloped domestic capital markets also deter the government from relying more on domestic borrowing

10 **Poor generation of cash revenues and high public expenditure are the major problems on the fiscal budgetary side** In 1997, total revenues were relatively high at 32 percent of GDP, but this figure gives a distorted picture of public finances A little over 60 percent of the revenues were collected in cash and the rest were collected in kind Commodities collected as revenues are hard to liquidate and in reality only a fraction of these accumulated commodities will generate cash Also, revenue collection in kind from enterprises distorts their incentive to restructure, to generate better cash flows, and improve the quality of their goods this simply presents them with an opportunity to off-load goods that they were not able to sell Overall, the tax base is narrow and tax collection is inefficient There is a high instance of tax avoidance, postponement and evasion, and the enforcement mechanism to reduce this is weak

11 Cash expenditure as a share of GDP remains extremely high at 40 percent Expenditure pressures come from the following areas

- The government is supporting an expensive social assistance program Total expenditure on social assistance added up to 52 percent of total budgetary cash expenditure (21 percent of GDP) in 1997 (24 percent (10 percent of GDP) on education, 15 percent (6 percent of GDP) on health care and 13 percent (5 percent of GDP) on social security) Efficient mechanisms to manage social spending are not in place, and as a result actual spendings exceed budgeted targets
- Due to large outstanding government debt (internal plus external outstanding government debt is 50 percent of GDP), 11 percent of total expenditure went towards debt servicing in 1997
- Government's internal and external guarantees add up to 5 percent of GDP, and are a source of possible future increases in expenditure In 1997, Ministry of Finance paid MDI 87.3 million for called internal guarantees and MDI 17.8 million for called external guarantees In 1997, it recovered MDI 40.8 million from enterprises for internal guarantees issued in 1997 and MDI 25.5 million for internal guarantees issued in previous years, and MDI 3.2 million for external guarantees issued in 1997 As of January 1, 1998, total outstanding debt of enterprises to the Ministry of Finance

⁶ High government expenditure has put excessive pressure on monetary policy (that remains committed to low and stable inflation), resulting in high domestic interest rates (T'Bill rates are around 30 percent) These high rates are beginning to attract foreign investors Outstanding T'Bills stand at US\$100 million, of which around US\$40 million are held by foreigners

for called internal guarantees was MDI 79 5 million, and for called external guarantees was MDI 21 78 million

- On-lending to public enterprises remains high As of January 1, 1998, outstanding loans to enterprises stood at MDI 168 6 million (2 percent of GDP)
- As of January 1, 1998, outstanding budgetary arrears were 22 percent of GDP In 1997, lei 324 million (4 percent of GDP and 12 percent of budgetary revenues) was paid off in settlement of arrears

12 **The energy sector is in a state of financial crisis** External arrears continue to accumulate, and currently stand at around US\$250 million (14 percent of GDP), most of which are likely to be settled by further issuance of external debt Last year, debt worth US\$140 million was issued to Russia's Gazprom in partial settlement of arrears to the company, increasing the external debt to GDP ratio by approx 8 percent of GDP The crisis in the energy sector stems from tariff rates that, in spite of large increases in 1997,⁷ do not cover marginal cost High wasteful consumption of energy (partially due to low tariff rates) only multiplies the problem Energy revenues also remain low due to subsidies to privileged and vulnerable customers The current uniform electricity tariff of 24 bani/kwh is reduced to an average tariff of 22 bani/kwh after accounting for privileged customers, and 20 bani/kwh after considering the cash subsidies received by the vulnerable customers Similarly, the current uniform gas tariff of 454 MDI/000m³ reduces to only 377 MDI/000m³ after taking into account privileged tariffs of 305 MDI/000m³ ⁸ Non-payment of bills by consumers (due to a lack of an enforcement mechanism), insufficient number of energy meters, and energy theft are the other main reasons why revenues fall short of expenditures for energy companies

13 **High government expenditure and high domestic consumption of energy have also contributed to the recent sharp rise in the current account deficit**, by putting upward pressure on imports In dollar terms, imports grew by 17 percent and exports by only 3 percent in 1997 Due to historically suppressed consumption (e g of cars), import of consumer goods has suddenly shot up Moldova has a very high reliance on imported energy that is not very price elastic ⁹ **Import growth also remains high due to several tariff and tax exemptions** Due to free trade agreements with CIS and Romania, imports from these countries are tariff free Almost 60 percent of Moldovan

⁷ In March, 1997, electricity tariffs were raised by 33 percent, gas tariffs by 15 percent, and tariffs for household heat by 31 percent In June, 1997, a uniform electricity tariff of 24 bani/kwh was adopted, which increased household tariffs by more than 20 percent Also, a uniform gas tariff of MDI 454 lei/000m³ was adopted, which increased household tariffs by 40 percent

⁸ Under new regulation, the energy companies are to be compensated by the government for cash subsidies to vulnerable customers Under this agreement, in 1998, an estimated MDI 316 million (of which, MDI 183 3 million is for electricity and MDI 62 8 million is for gas) is to be given by the government In practice, however, this has not happened The government has not made any payments yet

⁹ Moldova imports more than 90 percent of its energy consumption and, as a result, energy imports account for a quarter of Moldova's total imports

imports are exempt from tariffs for this reason. There are no duties on imports of raw materials, capital goods, spare parts, semi-finished goods and chemicals. With the exception of Ukraine, duties on trade with the CIS countries are applied on the principle of country of origin. This means that all imports from CIS (excepting from Ukraine) are duty free. Imports from countries classified as least developed by the UN are also exempted from duties. In addition, the flow of imported goods into the Free Trade Zones (FTZs), where enterprises do not pay tariffs or duties, is increasing. The current policy of keeping exchange rates stable may have also contributed to the high growth of imports.

14 Due to an uncompetitive export structure, export growth slowed down to 7.5 percent in 1996 and 3 percent in 1997, compared with 30 percent growth in 1995. External demand for Moldovan goods remains weak because of shoddy quality of goods, lack of quality packaging and absence of marketing skills that are required to sell goods in international markets. Efforts to restructure and privatize export-oriented agro and industrial enterprises have been limited, leaving these firms with too inefficient a structure to be competitive in global markets.

15 Barter transactions account for a significant proportion of Moldova's external trade. In 1997, 14 percent of exports and 10 percent of imports were recorded as barter transactions. A number of barter transactions, however, also go unrecorded. In principle, the value of barter exports should cancel out against the value of barter imports. In practice, this does not happen because barter trade is often at non-market prices and evaluations value barter goods at market price. As a result, in 1997, evaluations by the NBM of barter exports were greater than those of barter imports by approx. US\$7 million.¹⁰ These evaluation discrepancies plus hidden barter trade make trade estimations unreliable to a certain degree.

16 Due to limited non-debt inflows (FDI and equity flows were around 4 percent of GDP in 1997), 91 percent of the current account deficit was financed by external borrowing in 1997, resulting in the rapid external debt accumulation.

17 Flowchart 1 (attached at the end of this Note) summarizes the key causes of poor growth performance and rapid accumulation of external debt.

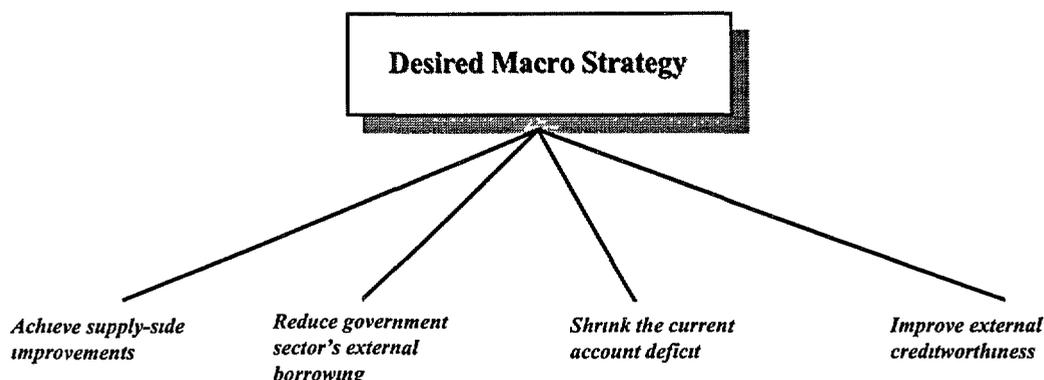
C RECOMMENDED MEDIUM-TERM MACROECONOMIC STRATEGY

18 Increasing GDP growth and keeping external debt at sustainable levels are the two impending macroeconomic objectives for Moldova, since the biggest macroeconomic risks also emanate from continued poor performances on these two fronts. Therefore, any desired macroeconomic stabilization framework would necessarily have to incorporate specific programs targeted at these two objectives. This Note proposes a macro strategy that assumes continued implementation of key structural reforms and has as end-objectives improved growth performance and external debt sustainability. Within this strategy necessary improvements in other macroeconomic

¹⁰ This also reflects the fact that the barter trade is on relatively unfavorable terms for Moldova.

areas of concern--such as fiscal and current account deficits--would ultimately feed back into the two chosen end-objectives

19 This Note recommends the following four-pronged macro strategy



20 The first dimension of the strategy would be to **achieve improvements on the supply-side structure of the economy** Within this dimension, focus would be on significant improvements in productivity of investment, increase in private and foreign investment, and reallocation of investment towards more productive projects

21 **Reducing external borrowing by the government sector** would constitute the second dimension of the strategy Under this dimension efforts would be made to significantly reduce the fiscal cash deficit (from the revenue as well as the expenditure side), to increase the share of the deficit financed by domestic borrowing, and to stop any further accumulation of energy arrears

22 The third dimension of the strategy would be to **shrink the current account deficit** Export promotion would lead this dimension Given the small size of domestic markets in Moldova, an export-led strategy would also be an important element of the overall strategy to improve growth performance A reduction in import growth and an increase in non-debt inflows would be the other important sub-components of this dimension of the strategy

23 **Improving external creditworthiness** would be the fourth dimension of the macro strategy Recent studies have found external creditworthiness to be a key determinant of the cost of external commercial credit for developing economies^{11 12} Improved

¹¹ Creditworthiness can have major impact on the cost of capital in international markets, as may be witnessed by the difference in spreads on international bond issues in recent years In 1996, for example, Malaysia and Ecuador paid spreads of 96 and 647 basis points over comparable government securities in the currency in which their bonds were denominated Differences in spreads have increased even more after the recent global emerging market crises

¹² Moldova's record on this front, as perceived by the international credit market, has been mixed For example, while the magazine Euromoney improved Moldova's ranking in its country risk ratings from 125 in September 1996 to 104 in September 1997, it reported a drop in its average sovereign credit ratings by other top credit rating agencies in the same period

creditworthiness would also allow Moldova to issue longer-term securities than it has issued thus far, and would help ease immediate debt-servicing pressures¹³

D MECHANISM TO IMPLEMENT THE RECOMMENDED STRATEGY

24 Continued implementation of key structural economic reforms would be the cornerstone of the macroeconomic strategy proposed in the previous section The implementation mechanism of the macro strategy along with the necessary key structural reforms are summarized in flowchart 2 (attached at the end of the Note)

Achieving Supply-Side Improvements

25 Important supply-side improvements would come from continued implementation of land reforms and farm restructuring, privatization and restructuring of enterprises, increased share of domestic private and foreign investment (and a reduced share of public investment), increased private sector access to credit and reprioritization in education spending

26 Continued implementation of land reforms and farm restructuring would improve the productivity of agriculture production, and given the large share of agriculture in total output, is critical to future increases GDP growth rates in 1997, agriculture output accounted for 28 percent of GDP, and processed agro products for another 13 percent of GDP It is important that privatization of the remaining collective and state farms be completed Development of a national cadastre and land registry would give a boost to government's current efforts to issue valid land titles to farmers, and increase tradability of agricultural land¹⁴ This would also increase farmers' access to credit, since they would be able to offer their land as collateral

27 Privatization and restructuring of the remaining public enterprises would be an important step towards increasing productivity The public sector still accounts for a large share of industrial output only 35 percent of industrial output is produced by 100 percent private firms Voucher privatization via issuance of "National Patrimonial Bonds" more or less achieved its objectives, but the results of the cash privatization have been disappointing The asking price of many to-be-privatized public enterprises is very high and not commensurate with their future revenue generating capabilities, and should

¹³ There is a substantial scope for Moldova to increase the duration of its debt Compared with its longest maturity foreign-currency bond issue of 6 years, many emerging market economies have recently issued much longer-term securities, e.g. China recently issued a 100-year tranche, Colombia a 20-year Yankee bond and India 20- and 30-year tranches

¹⁴ A positive step taken in this direction was the 1996 decision of the Constitutional court to declare unconstitutional Parliament's amendment in 1995 to the Land Code that imposed a moratorium on most private land sales until 1 January, 2001

30 Since human capital is a core determinant of GDP growth, important reforms (including finding new ways to cover financing needs) are urgently needed. Spending on education should be reprioritized. Traditionally, the focus of higher education has been on scientific studies, and this tradition has carried on after independence. As a result, Moldova is lagging behind in important areas of knowledge such as Management, Finance and other liberal arts subjects. Public investment in higher studies should be allocated across programs in a more balanced fashion. Overhauling of the curricula and retraining of teachers in the new curricula would also help bridge this knowledge gap. Also, since there is little scope of increase in government spending on education (it is already relatively high at 10 percent of GDP), the financing gap would necessarily have to be covered by attracting more private investment in education, at present private finance covers only approx. 5 percent of total expenditure on education.

Reducing Public Sector's External Borrowing

31 To reduce the public sector's external borrowing, measures should be taken to generate more cash revenues, reduce cash expenditure, increase the share of fiscal cash deficit financed by domestic borrowing, and restructure the energy sector.

32 Cash revenues have to be increased and barter should be phased out. Important measures to increase cash revenue collection would be:

- Publish and fully implement government decision prohibiting netting operations or payments in kind to the State budget or Social Fund
- Auction all commodities held in stock
- Reverse across-the-board suspension of tax penalties approved by the Parliament. Existing penalties are too harsh and, hence, are difficult to enforce. Future penalties should be reduced and cancellation of old penalties should be limited.
- Combine the Economic Police and the Financial Guard and reorganize the combined unit as a separate investigative agency under the Ministry of Finance. Integrate the Customs into the Ministry of Finance.
- Require the largest debtors to the budget (who do not have their assets frozen) to pay at least 50 percent of their arrears to the budget or face bankruptcy.
- Widen the tax base
- Privatize remaining major enterprises
- Fully implement the new VAT code, and minimize VAT exemptions

33 Government expenditure policy needs to be fundamentally restructured to achieve the desired reduction in budgetary expenditure as a share of GDP. Particular attention has to be paid to strengthening of expenditure management and control of local authorities.

Local authorities are the largest contributors to salary and other arrears, and are responsible for providing (through unfunded mandates) much of the social expenditure. Some suggested actions are:

- Impose more frequent (monthly/quarterly) monitoring and rigorous supervision (audits) of, and tighter financial controls over local government cash spendings, arrears accumulation, and in-kind and offsetting operations
- Reorganize local governments, to cut the number of local administrations (a current proposal is from 48 to 8) and reduce employment in local administration
- Introduce periodic (monthly/quarterly) financial reporting on the operations of major state-owned enterprises, including debt operations and guarantees
- Audit regularly the operations of the Social Fund, in particular expenditure arrears and in-kind and netting operations
- Draft new pension laws in line with the understanding reached with the World Bank in the context of SAL II
- Restructure spending in the education and health sectors aimed at improving efficiency, to reduce energy consumption and manpower
- Limit government guarantees. Guarantees cause a likely increase in the future debt and distort the pricing of the underlying borrowing instruments, causing misallocation of resources. Guarantees also promote rent-seeking.
- Cut on-lending. Government is not in a position to make efficient lending decisions and should leave the activity to commercial banks.
- Streamline the bureaucracy
- Reduce direct subsidies to production units

34 To improve the financial situation in the energy sector, this Note makes the following recommendations:

- Restructure energy generating and distributing companies. Increase tariff rates across the board to levels that would at least cover operating costs, cut off supply to defaulting customers, and upgrade consumer database and financial accounting. The National Energy Regulation Agency (ANRE) proposed only minor adjustments to existing tariff rates in its latest revision, for example, electricity tariffs are to be increased by only 1 banı/kwh to 25 banı/kwh.
- Cancel existing privileged tariff categories
- Expand gas and electricity metering. Increased tariffs and more meters would also cut wasteful consumption of energy.
- Eliminate cross-subsidy to household heating, and from electricity to heat. The implementation of the proposal by ANRE to introduce uniform retail tariff for district heat, and to increase about 30 percent of the bulk supply heat tariffs for the CHP generation plants, would be a positive step in this direction.
- Improve government accounting so that amounts of energy used, payments and arrears can be clearly identified by each budgetary institution.

- Use privatization revenues to reduce debt, and introduce tariff surcharges to service remaining debt

35 To reduce pressures on external borrowing the government needs to finance a larger share of its deficit internally Recommended reduction in government spending would ease pressures on monetary policy and allow a lowering of interest rates. This would increase the relative attraction for the government to issue T'Bills and/or borrow from commercial banks. Continued development of local capital--bond and equity--markets would be an important step for the government to increase domestic financing of its cash deficit. Already significant progress has been recorded on this front. In 1997, 55 percent of the fiscal cash deficit was financed through domestic borrowing, compared with 22 percent in 1996 and 43 percent in 1995. The size of the T'Bill market increased by 145 percent in 1996 and by 70 percent in 1997. The current size of the T'Bill market is around US\$100 million.

Shrinking the Current Account Deficit

36 Export promotion is the key to keeping the current account deficit at sustainable levels Export promotion should come from exploiting Moldova's comparative advantage in raw and processed agro goods, by developing a modernized and cost-effective production structure for these goods. This would require more action on privatization and restructuring of export-oriented agro and agro-processing units, and necessarily involve increased private and foreign investment into these units. To be more competitive in global markets, Moldova would need to improve the quality of its goods, build better packaging units, develop a more cost-efficient transport system, and invest in training a cadre in international marketing skills. Increased exposure to international competition would improve the quality of export goods. Greater diversification of export markets and commodity structure is also needed to minimize demand-side risks. In 1997, 70 percent of exports went to CIS countries and the top 10 export commodities accounted for 61 percent of total export. Moldova needs to reduce its reliance on trade with the CIS and identify niches in new international markets, especially western Europe. To increase diversification of export goods, Moldova should build its light industries exports, by taking advantage of its relatively low labor cost initially and then by increasing investment in the human capital stock of the labor force.

37 A recommended cut in government expenditure would lower domestic absorption and hence reduce pressures on imports Adjustments should also come from energy imports since these account for approx a quarter of total imports. This would require restructuring of energy companies and reducing domestic demand for energy (see para 34 for details). Other important measures to reduce import growth would include imposing uniform minimum import tariffs and restricting the commercial activity of the FTZs. Unrestricted activity in the FTZ presents enterprises with an arbitrage opportunity, since they do not pay any import duty or tariffs. The desired reduction in import growth should come from slowing the pace of consumer goods and not capital goods. High import growth of capital goods can be a key factor for increasing the

productive capacity of the economy and, therefore, generating better external repayment capabilities

38 Analysis shows that Moldova, even with implementation of key reforms, is likely to sustain high current account deficits over the medium term, albeit on a declining trend (para 41) It is important, therefore, to increase non-debt foreign financing of the current account deficit to take pressures off the external debt situation See para 28 for suggested steps to increase foreign direct investment

39 The current exchange rate policy has allowed authorities to use exchange rates as credible nominal anchors to stabilize prices However, real exchange rates have appreciated due to the pressures put on the monetary sector by high government expenditure The implications of this movement on external trade should be further reviewed in consultation with the IMF

Improving External Creditworthiness

40 **There are two major incentives for Moldova to improve external creditworthiness** First, without certain minimal level of creditworthiness multilateral organizations would substantially reduce their concessional lending to the country Second, Moldova could reduce its cost of capital on international markets by improving creditworthiness recent studies have found a direct link between creditworthiness and cost of capital on international markets Recent studies have also identified (i) external debt/GNP (ii) debt servicing/exports (iii) GDP growth rates, (iv) non-gold reserves/imports (v) current account/GDP ratio (vi) fiscal deficit/GDP ratio and (vii) inflation as the key domestic macroeconomic factors that influence external creditworthiness of developing countries There is also a direct link between a country's external creditworthiness and its overall level of economic liberalization, and its political and social stability The expected worsening of debt indicators in the medium term, therefore, has to be offset by stronger performances of other creditworthiness indicators to improve creditworthiness

41 **There are, however, constraints to implementing this macro strategy** Sharp reductions in the current account deficit are going to be especially difficult to achieve Given the maximum growth rates which can reasonably be achieved, sharp declines in the current account deficit may be possible only by adjustments (reductions) in the other demand side components, investment and consumption Extremely low per capita private consumption (around US\$300 per person) and growth implications of large drops in the investment rate would limit the scope of this adjustment and, hence, limit the speed at which the current account deficit can be reduced Therefore, constrained GDP growth and external debt accumulation are likely to persist in the medium term, even with immediate implementation of the desired macro strategy

E OPTIMAL TIMING TO IMPLEMENT THE MACRO STRATEGY

42 What would be the optimal timing of implementing these reforms and the desired macro strategy? To answer this question this Note develops two scenarios, an immediate reform scenario (IRS) and a delayed reform scenario (DRS) The IRS assumes steady continued implementation of key structural economic reforms (specified in flowchart 2) The DRS on the other hand assumes that implementation of structural reforms would be delayed until 2001 The analysis is conducted using the Bank's RMSM-X model, into which the key assumptions underlying the two scenarios are inputted

43 Table 2 shows the projected path of key indicators under the IRS Foreign saving would drop sharply over the next couple of years due to the needed reduction in the current account deficit This would result in a decrease in investment in 1998 and 1999, and a fall in per capita private consumption until 2000 Due to implementation of key reforms, productivity of investment would increase and more than make up for the drop in investment As a result, GDP growth would increase to a steady state 5 percent by 2001 Large reductions in fiscal expenditures (from 40 percent of GDP in 1997 to a steady state 35 percent) and marginal improvement in fiscal revenues, would improve the fiscal cash deficit to GDP ratio to 3 percent by 2000 Exports would respond to export promotion measures and grow at 10 percent till 2002 and at a slightly slower rates after Import growth would remain subdued at around the rate of growth of GDP Under this scenario, external debt to GDP would peak at around 69 percent in 2000 before beginning its descent towards the empirically established sustainable ratio of 50 percent, falling below the 50 percent mark only in 2006 Debt servicing to exports ratio would remain in the sustainable range, remaining below 21 percent

Table 2 Key Indicators under IRS

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
GDP Growth (%)	2.3	3.2	4.3	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Per Capita private Cons Growth (%)	-1.0	-0.7	-0.5	0	0.2	0.5	0.9	1.4	2.2	2.3
Investment Growth (%)	-4.3	-3.2	2.0	4.1	2.1	4.1	4.5	5.5	6.5	6.5
Inflation (%)	8.2	7.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Fiscal Balance/GDP (%) (-ve = deficit)	-5.8	-4.7	-3.2	-2.7	-2.4	-2.4	-2.4	-2.4	-2.3	-2.4
Export Growth (%)	10.0	10.8	10.4	10.4	10.0	9.1	8.2	7.3	6.4	6.4
Import Growth (%)	2.7	3.5	4.4	5.1	5.0	5.2	5.2	5.3	5.5	5.6
CA/GDP (%) (-ve = deficit)	-14.9	-11.6	-9.1	-7.4	-5.6	-4.1	-3.1	-2.3	-2.1	-1.8
Total Ext Debt (including energy arrears)/GDP (%)	66.5	68.5	68.7	68.0	65.5	61.9	57.4	51.9	47.4	39.9
Debt Servicing/Exports (%)	18.6	22.3	15.9	16.0	20.8	20.2	18.8	19.5	19.7	18.0

44 Limits on the sustainability of the IRS imply that the key assumptions underlying this scenario are a minimum requirement for external debt sustainability. Any delay or partial achievement of these key assumptions would seriously undermine external debt sustainability and would result in slower GDP growth. Table 2 presents the projected path of key indicators under the DRS. The indicators under the DRS are significantly worse than those under the IRS until 2001. Unimpressive external creditworthiness indicators would result in little assistance from multilateral organizations, limited bilateral credit, and relatively expensive commercial credit. Interest rate differential on external commercial credit under the two scenarios is assumed to reach 4 percent in 2000, as a reflection of differences in creditworthiness indicators.¹⁹ The DRS also assumes that the maturity of the gap-fill loans will be an year shorter than in the IRS. After 2001 the DRS converges towards the IRS.

Table 3 Key Indicators under DRS

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
GDP Growth (%)	1.6	1.8	2.0	2.0	3.2	3.9	4.5	5.0	5.0	5.0
Per Capita private Cons Growth (%)	-0.4	-0.2	-0.2	0.1	0	0.1	0.3	0.6	0.5	0.4
Investment Growth (%)	0	1.2	2.7	-2.2	-4.0	-2.6	-0.9	1.3	0.7	1.1
Inflation (%)	10	10	10	10	8	6	5	5	5	5
Fiscal Balance/GDP (%) (-ve = deficit)	-7.4	-7.3	-7.2	-6.2	-4.9	-3.7	-3.6	-2.6	-2.4	-2.4
Export Growth (%)	4.9	5.0	5.0	6.5	9.0	9.99	9.99	9.99	9.99	9.5
Import Growth (%)	2.4	2.9	3.2	3.1	3.2	4.0	4.4	4.9	5.1	5.0
CA/GDP (%) (-ve = deficit)	-17	-15.9	-16.1	-17.1	14.9	12.6	11.2	9.6	7.8	5.7
Total Ext Debt (including energy arrears)/GDP (%)	73.9	79.5	85.3	98.5	103.7	103.6	103.0	97.0	93.4	85.0
Debt Servicing/Exports (%)	19.3	25.3	24.3	30.3	39.6	39.7	41.7	45.2	46.1	45.6

45 The deteriorating macroeconomic and financial situation 2001 under the DRS would compel authorities to take corrective measures, and would result in the implementation of broad reforms measures. An effectively fixed nominal exchange rate would not be compatible with the overall macroeconomic situation under the DRS, and would likely experience a discrete upward jump when reforms are implemented (a 10 percent devaluation is assumed in 2001).²⁰ However, due to the delay in implementing reforms under the DRS, external debt indicators remain well above empirically established levels of sustainability. The external debt to GDP ratio peaks at 104 percent in 2002, and never falls below 85 percent. Debt servicing to exports ratio climbs to 46

¹⁹ This is consistent with recent findings that creditworthiness significantly affects cost of external commercial credit. After 2001, when reforms would be implemented, the external interest rates under the two scenarios would converge.

²⁰ Otherwise, under the DRS, by maintaining misaligned exchange rates the authorities would risk a possible run on reserves, resulting in a forced devaluation.

percent by 2006. These debt indicators indicate significant risk of the country not being able to repay its external debt obligations.

46 Overall, the analysis clearly shows that the implementation of the desired macroeconomic strategy and the underlying structural reforms has to be immediate. Any delay would result in low growth and, therefore, higher levels of poverty and impoverishment, and cause external debt to increase to unsustainable levels.

F SUMMARY AND CONCLUSION

47 Increasing growth and maintaining external debt at sustainable levels are the two biggest macroeconomic challenges that Moldova currently faces. Negative/low GDP growth rates have resulted in a 60 percent drop in output since independence, and caused increased poverty and income inequality. External debt has accumulated at a rapid pace, growing by over 300 percent between 1993 and 1997, and debt indicators suggest that external debt lies on the thresholds of sustainability. Therefore, continued poor performances on the two fronts are also the two biggest macroeconomic risks to the country.

48 GDP growth remains hampered mainly by a weak supply-side structure. Productivity of investment is low due to slow/partial implementation of land reforms and little action on restructuring industrial enterprises. The economy lacks the infrastructure--especially in energy, transportation and communications--to support high growth. Limited access to rural and industrial credit and a drop in the average stock of human capital since independence have also restricted expansion of output.

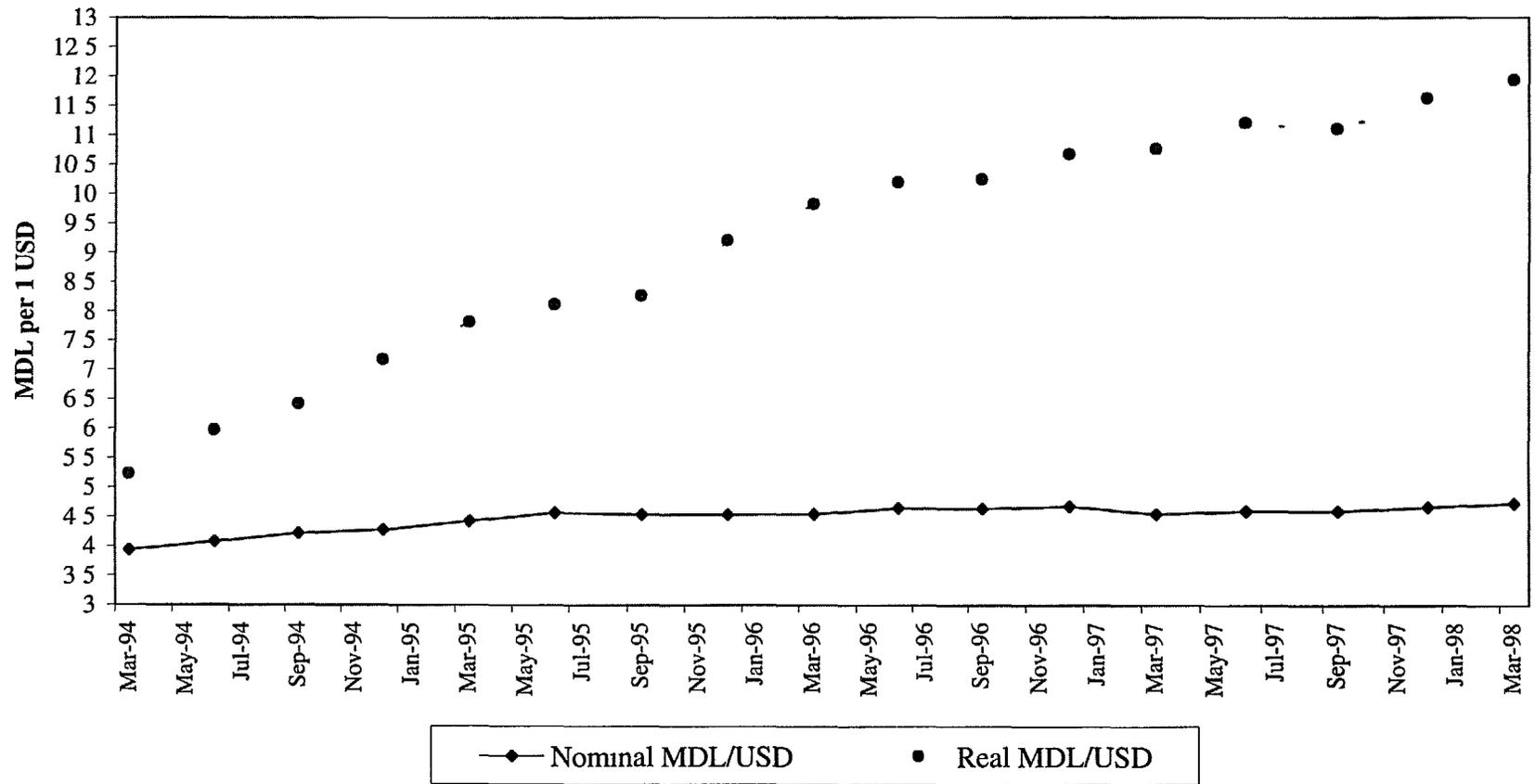
49 External debt accumulation remains mainly a fiscal problem, since government borrowing accounted for 77 percent of the net increase in external debt in 1997 and 66 percent of outstanding external debt was government debt. A large fiscal cash deficit (8 percent of GDP in 1997) and a continuing build-up of energy arrears (outstanding energy arrears stand at approx. US\$250 million or 14 percent of GDP) are putting excessive upward pressures on the government's debt-financing needs. On the budgetary front, the biggest challenges are to increase cash revenue collection (only approx. 20 percent of GDP in 1997) and reduce cash expenditures (very high at 40 percent of GDP in 1997). The energy sector is in a state of financial crisis, and needs to be urgently restructured.

50 High government expenditure has also contributed to the recent sharp rise in the current account deficit, by putting upward pressure on imports. Import growth is high also because of large domestic consumption of energy. Export growth has dropped sharply over the last two years due mainly to the shoddy quality of export goods and lack of international marketing skills. As a result, current account deficit jumped to an unsustainable 18 percent of GDP in 1997. Due to limited non-debt inflows (FDI and equity flows were around 4 percent of GDP in 1997), 91 percent of the current account deficit was financed by external borrowing in 1997, resulting in the rapid external debt accumulation.

51 This Note suggests a four-pronged macro strategy to increase growth and keep external debt at sustainable levels. The four dimensions of the strategy are (1) achieve improvements on the supply-side structure of the economy (2) reduce the external borrowing by the government sector (3) shrink the current account deficit and (4) improve external creditworthiness.

52 The Note proposes a detailed mechanism to implement this macro strategy. The implementation mechanism is summarized in flowchart 2. Continued implementation of key structural economic reforms would be the cornerstone of the strategy. Analysis clearly shows that the macro strategy and the underlying reforms need to be implemented immediately. Any delay in implementation would result in low GDP growth rates, that would increase poverty and income inequality and further exacerbate the risk of social instability, and accumulation of external debt to unsustainable levels.

Nominal and Real Exchange Rate of Moldovan Leu to US dollar (base year 1993)



Source: Calculated based on the data from the TACIS Report on Moldova Economic Trends and data of the US Government

47

US Dollar Nominal Exchange Rates and Volatility Across Countries of Central and Eastern Europe

Country	1990	1991	1992	1993	1994	1995	1996	1997	Arithmetic Average	Standard Deviation*	Volatility Coefficient** [11/10]
1	2	3	4	5	6	7	8	9	10	11	12
Moldova	n/a	n/a	n/a	n/a	4 07	4 50	4 60	4 61	4 44	0 22	5%
Bulgaria	2 4	18 4	23 3	27 7	54 3	67 2	175 8	1688 0	257 14	543 19	211%
Croatia	n/a	n/a	0 3	3 6	6 0	5 2	5 4	6 2	4 45	2 04	46%
Czech Rep	18 0	29 5	28 3	29 2	28 8	26 6	27 2	43 5	28 89	6 53	23%
Estonia	na	na	12 7	13 2	13 0	11 5	12 0	13 9	12 72	0 79	6%
Hungary	63 2	74 5	79 0	92 0	105 2	125 7	152 6	186 8	109 88	39 87	36%
Latvia	na	na	0 7	0 7	0 6	0 5	0 6	0 6	0 62	0 07	11%
Lithuania	na	na	1 8	4 3	4 0	4 0	4 0	4 0	3 68	0 85	23%
Poland	1 0	1 1	1 4	1 8	2 3	2 4	2 7	3 3	2 00	0 76	38%
Romania	24 4	76 4	308 0	760 1	1655 1	2033 3	3088 0	7144 0	1886 16	2227	118%
Russia	16 0	22 0	1017 0	2212 0	4563 0	5121 0	5784 0	6321 0	3132 00	2447	78%
Slovakia	18 0	29 5	28 3	30 8	32 0	29 7	30 7	33 6	29 08	4 45	15%
Slovenia	11 3	27 6	81 3	113 2	128 8	118 5	135 4	159 7	96 98	49 4	51%
Ukraine	na	na	na	4533 0	32751 0	147308 0	1 8	1 9	36919 14	56529	153%

***) Volatility coefficient is computed as a ratio of standard deviation to the mean. It shows the relative deviation from the mean, making, in this case, comparison across countries easier.

Source: *Statistical Database of Business Central Magazine Online (www.bcemag.com)*, estimates based on data published by the National Bank of Moldova.

87

CONTRACT No

between Russian joint-stock company "Gazprom" and joint-stock company "Gazsnabtranzit" regarding the volumes and conditions of natural gas supply to the Republic of Moldova and transit of gas through the territory of the Republic of Moldova

Moscow

" " December 1996

The Russian joint-stock company "Gazprom", hereinafter Gazprom, represented by Chairmen of the Board Vlahirev Rem Ivanovici, on one hand, acting in the basis of the Statute, and the joint-stock company "Gazsnabtranzit", hereinafter – Gazsnabtranzit, represented by the Chairmen of the Board Cunev Valentin Petrovici, acting in the basis of the Statute, on other hand, have concluded the present contract which resumes to the following

ARTICLE 1

Object of the contact, volumes of supply and transit

The object of the contract consists in the supply of russian natural gas to the joint-stock company "Gazsnabtranzit" for the consumers of the Republic of Moldova, its transit through the territory of the Republic Moldova from the points of delivery-collection on the border of Ukraine and Republic of Moldova to the point of delivery-collection on the border of the Republic of Moldova and Ukraine in the direction to Romania (Isaccea), the transportation of russian natural gas through the Ananiev-Cernovti-Bogorodciani gas pipe in order to pump the gas into the underground deposits of Ukraine

1 1 Gazprom is obliged to supply, and Gazsnabtranzit is obliged to purchase from Gazprom in year of 1997 russian natural gas in a quantity of 3 billion cubic miters, including quarterly purchase

Billion cubimeters

I quarter	II quarter	III quarter	IV quarter
1 1	0 5	0 4	1 0

1 2 During the year of 1997, Gazprom supplies russian natural gas to the Gazsnabtranzit, and Gazsnabtranzit purchases it and ensures its further transit on the territory of the Republic of Moldova in order to be delivered to other European countries in the direction to Romania (Isaccea) in the volume of 21 45 billion cubic meters, including quarterly

Billion cubic meters

I quarter	II quarter	III quarter	IV quarter
5 436	5 173	5 224	5 617

In order to supply the aforementioned volumes of gas from Ukraine, Gazsnabtranzit ensures the work of the KS Tiraspol I, II and KS Vulcanesti, as well as the project overloading of the gas pipe territory Tiraspol-Vulcanesti-Isacca and connection to work of the gas pipe territory, which has been withdrawn from the landslide zone

1.3 Gazprom and Gazsnabtranzit agreed, if the necessity arises, to examine the proposals of Gazsnabtranzit regarding an increase in the volumes of supply of natural gas to the consumers from the Republic of Moldova exceeding the volumes specified in the present contract, in the presence of additional resources in the system of gas supply. During the I and IV quarter of the year, such an increase in the volumes of gas supply, as a rule, is performed on account of gas collection from storage facilities of Ukraine paying for its storage in the storage facilities of Ukraine and its transportation on the buyer's account.

1.4 The parties agreed that in order to increase the reliability of the export supplies of gas, Gazprom through the gas transportation systems of joint-stock company "Ukrgezprom", will deliver at the border of Ukraine and Gazsnabtranzit will take the Russian natural gas into its gas transportation networks and will ensure its transit on the territory of the Republic of Moldova for its pumping into the storage facility of Bogorotcenı and others from Ukraine in the volume of 3 billion cubic meters, including quarterly

I quarter	II quarter	III quarter	IV quarter
-	1.5	1.5	-

1.5 The legal delivery of gas is performed on the border of Ukraine – The Republic of Moldova on the place and in the moment of the receipt of the gas in the gas transportation system of the Gazsnabtranzit

1.6 Based on its obligations, the technical implementation of this contract is assigned by Gazprom to the "Mostrangaz" enterprise, and Gazsnabtranzit – to the "Tiraspoltransgaz" and "Moldovatrangaz" through the separate agreements with the joint-stock company "Gazsnabtranzit"

1.7 Gazprom, in co-ordination with Gazsnabtranzit, possess the right to conclude direct agreements on gas supply with separate consumers from the Republic of Moldova in limits of the total quantities of the gas supplied to Gazsnabtranzit in accordance with p. 1.1 of this article

The Parties concluded that in this case Gazprom will deliver to the border between the Ukraine and the Republic of Moldova, and Gazsnabtranzit will receive the gas into its gas transportation networks in order to be delivered to the mentioned consumers

The conditions regarding gas transportation on the territory of the Republic of Moldova are established by the consumers and Gazsnabtranzit

ARTICLE 2
Technical Conditions of Supply

2.1 The distribution of gas volumes, mentioned in the Article 1, on defined directions of supply and transit, determination of gas quantity and quality are provided in the Technical Agreement on the conditions of natural gas delivery-receipt into the gas measurement stations when supplied by Gazprom to the Republic of Moldova in basis of the Contract for the period of 1997 (hereinafter – Technical Agreement), which represents an integral part to this Contract

2.2 The distribution of the quantity of gas by months is performed uniformly, resulting from the average quarterly volume per day (24 hours)

The monthly volumes may be modified within the limits of quarterly quota on the agreement of the parties. The proposals regarding the monthly supply of gas are submitted by Gazsnabtranzit to Gazprom within 30 days before the beginning of the quarter, 15 days before the beginning of the quarter. Gazprom notifies Gazsnabtranzit regarding the modification of the monthly volumes.

If necessary to modify quarterly volumes of gas supply, the proposals on their modifications are submitted by Gazsnabtranzit to the Gazprom 30 days before the beginning of the next quarter.

2.3 The delivery-receipt of gas during a month is performed, as a rule, uniformly with the daily volumes deviations from the average per day volume with at least 5%

2.4 The delivery of Russian natural gas to Gazsnabtranzit is ensured by the joint-stock company Ukgazprom.

The technical delivery-receipt of gas is performed on the gas measurement stations mentioned in the Technical Agreement, in compliance with p. 2.1 of the present article by acts of delivery-receipt between the joint-stock company Ukgazprom and Gazsnabtranzit.

2.5 Gazprom, Gazsnabtranzit and the joint-stock company Ukgazprom settle the authorized representatives to monthly draw the documents on receipt and delivery of gas, and transit of gas on the territory of the Republic of Moldova to be pumped into the Bogorotceni and other storage facilities from the Ukraine.

The Parties ensure the presence of their representatives and customs bodies representatives, on their demand, on the measurement units.

The representatives of the customs bodies shall be submitted all the documentation for a month.

2.6 The monthly acts of the gas receipt-delivery are drafted by summing up the quantity of gas, registered in all measurement units (GISs), and contain the data on delivery of gas to Gazsnabtranzit, the delivery of gas in the basis of direct agreements of Gazprom and its transfer beyond the borders of the Republic of Moldova, as well as the transit of gas to the Bogorotceni and other storage facilities from the Ukraine

The acts shall be signed by the representatives of Gazprom and Gazsnabtranzit in 4 copies (2 copies for each party) not later than the 5th day of the next accounting month

2.7 The quantity of the gas mentioned in the monthly acts of receipt-delivery, are final and compulsory for the Gazprom and Gazsnabtranzit and represent the basis for their settlement

2.8 In case of the general decrease in the volumes of the russian gas supply into the gas transportation system of the Republic of Moldova, based on mutual agreements a proportional decrease in the volumes of gas supply to all directions, listed in the Article 1 shall occur. If such a decrease in the volumes of gas supply is determined by the implementation of the p 4.7 of Article 4 of the present Contract, than the transit of russian gas to third countries is performed in accordance with p 1.2 and p 1.4 of Article 1

ARTICLE 3

Gas price

3.1 The price for the russian natural gas supplied to the Gazsnabtranzit during 1997 on the F O B Republic of Moldova conditions, is established in the amount of the 58 US Dollars for 1 000 cubic meters

The price includes the taxes and collections

3.2 This price is determined taking into account the rated combustion heat (Q_{hp}), equal to 7900 kcal/ n cubic meters

On the average monthly deviation of the heat of combustion from the rated one with more than 100 kcal/n cubic meters the gas rates are determined taking into consideration its factual dimension

The recalculation of the price for the actual heat of combustion (AHC) will be estimated using the following formula

$$AHC = \frac{P * Q_{act}}{7900 \text{ kcal/ n cubic meter}}$$

P - the aforementioned price for 100 cubic meters of gas,
Qact - The factual heat of combustion in kcal/ n cubic meters

The recalculation of the actual average content of calories per month will be performed once per month with the help of the average volume of gas heating

3 3 The payment for the transit of russian natural gas through the territory of the Republic of Moldova to the countries of Europe towards Romania (Isaccea) will be not settled by Gazprom

3 4 The estimated contract amount, at the price provided in p 3 1 of this Article, shall constitute 174 000 000 US Dollars, including 54 111 800 US Dollars on the basis of exchange of goods, given the right of Gazprom to ship the natural gas with the deviation from the aforementioned amount depending on the implementation of the conditions of the Contract on the shipment volumes, the settlements procedure and penalty charges

ARTICLE 4 **The Settlement Procedure**

4 1 Gazsnabtranzit will pay in advance for the shipped gas

The payment for the value of natural gas, shipped to Gazsnabtranzit, estimated on the basis of contractual volumes, will be made by planned advance transfers to Gazprom account consisting of money resources in equal tranches from the previously declared monthly quantity of gas for the period of 15 days in the first day of the accounting period as of the 1st and 15th date of each month

The payment made by Gazsnabtranzit is calculated as of the day of receipt of money on the Gazprom account

4 2 The payment for the value of the services on the transit of russian natural gas which comes through the territory of the Republic of Moldova for pumping into the Bogorotceni and other storage facilities from the Ukraine through the Ananiev - Cernovti-Bogorodciani gas pipe will be performed in the basis of the tariff rate equal to 1 5 US Dollars per 1000 cubic meters of gas per 100 km

The transit fee for the Russian gas pumped through the Ananiev-Cernovti-Bogorodciani gas pipe to be pumped into underground gas deposits of Ukraine during the transit shall be regarded as payment for gas, delivered to the Gazsnabtranzit for the respective accounting month, in the basis of the bills drawn by Gazsnabtranzit and documents of receipt-delivery mentioned in this p 2 6 of the Article 2 of this Contract

4 3 The final mutual payments ate made till the 15th of the next accounting month on the basis of the agreed settlement for the gas considering the factual calories content The

amount settled in excess goes into the account of the planned payments of the next month

On the collection of extra gas volumes previously declared, performed by Gazsnabtranzit for this additionally collected gas is made not later than the 15th of the next accounting month

4.4 In case of overdue payments, Gazsnabtranzit will pay fines in US Dollars in amount of 0.05% of payment for every day of overdue. The fines shall be transferred through a separate payment not later than the 15th of the month that follows after the accounting month

4.5 The calculation of the value of gas will be made on the basis of mutually stipulated prices expressed in USA Dollars, while the payments - in Russian rubles in accordance with the exchange rate of the ruble to the dollar, established by the Central Bank of the Russian Federation, on the day of registration on the resources on the Gazprom account

4.6 Gazsnabtranzit, in the account of payment for the value of supplied gas in the amount of 54,111,800 US Dollars, will ensure, on the basis of a balance of value of the gas and goods, the counter-supply of material and technical resources, consumer goods, foodstuffs and buildings, to the Russian joint-stock company Gazprom enterprises, in accordance with Appendix no 1 which is an integral part of this Agreement

The Agreements on the supply of material and technical resources, consumer goods and foodstuffs by Gazprom is ordered to be performed by Gazcomplectimpex and Gazcompromselistroi enterprises, and the contracts on the construction of houses are concluded by Gazprom enterprises by the appointment of the Capital Construction Administration of the Gazprom, on behalf of Gazsnabtranzit – Moldovatrangaz, Tiraspoltrangaz and joint stock company Moldovagaz

The mutual settlement regarding the supply of material and technical resources, consumer goods and foodstuffs, as well as goods necessary for constructions, till the 15th of the month coming after the next accounting month according to the documents submitted to the joint-stock company Moldovagaz registry of services rendered and the copies of payment documents being indicated the date of the settlement performed by the bank

The registration of the value of material and technical resources and services rendered by Gazsnabtranzit shall be made in US Dollars, or Russian rubles, according to the dollar-ruble exchange rate determined by the National Bank of the Russian Federation as of the day of registration of the resources on the account of Gazprom

The prices for the goods offered and services rendered by Gazsnabtranzit shall be expressed in US Dollars and negotiated with the Gazprom

4 7 In case the terms of the payment stipulated through this contract are exceeded, Gazprom possess the right to limit and then to cease the delivery of gas to consumers from the Republic of Moldova until the payment for the debt is made

4 8 Every quarter, not later then the 15th of the month coming after the accounting quarter, Gazprom and Gazsnabtranzit shall collate the mutual accounts in accordance with this contract and draw the report of Collation taking into consideration the fines paid for the delay in payment, in case there is one

4 9 Gazprom, the joint-stock company Moldovagaz and Gazsnabtranzit till 31st of January 1997 shall perform the adjustment of the mutual accounts on gas delivery and transit during 1996 taking into consideration the fines

4 10 The joint-stock company Moldovagaz and Gazsnabtranzit shall pay off in the first quarter of 1997 the debt for the natural gas actually received from the Russian Federation during 1994, 1995 and 1996, through transfer of the money resources on Gazprom account, supply of material and technical resources and consumer goods in compliance with the Program on the debt repayment for the natural gas signed by the Government of the Republic of Moldova on 18th of July 1996 and Program on the debt repayment for the natural gas accepted by the consumers from Pridnestrovie in 1994-1996 signed by the Administration of Pridnestrovie on 2nd of October 1996

Based on the results of collation of the mutual accounts for 1996, the Moldovan party will submit a schedule of debt repayment, which occurred after the implementation of the aforementioned Programs

In case of failure to fulfil the conditions of this point within the stipulated terms, the supply of gas to the consumers from Moldova shall be ceased

ARTICLE 5

Responsibilities of the parties

5 1 Gazprom and Gazsnabtranzit will take the necessary measures to properly execute the obligations assumed by them under this contract. In case of violation of these obligations, the party at fault shall compensate to the other party all direct losses

5 2 Gazsnabtranzit bears full responsibility for facilitating transit of Russian gas through the territory of the Republic of Moldova for export in the direction of Romania (Isaccea)

The gas transmitted to Gazsnabtranzit for transit transportation is the property of RAO Gazprom and shall not be provided for other consumers both on the territory of the Republic of Moldova and outside it

In case of violation by Gazprom of its obligations of gas export shipments to third countries, related to its overuse by consumers from the Republic of Moldova, as well as

in case of violation of transit shipments of gas due to other reasons than the cases stipulated in article 6 of this contract, Gazsnabtranzit fully compensates to Gazprom all losses

5 3 Gazsnabtranzit shall not, without an approval from Gazprom, re-export the russian gas received for the consumers from Moldova to third countries

5 4 In case shipments of gas go below the contract volume stipulated for consumers from the Republic of Moldova through the fault of Gazprom, the latter will pay to Gazsnabtranzit a penalty of 8% of the value of the gas failed to be shipped or, at a mutual agreement of the parties, shall compensate this amount by shipments of gas in future periods of the year

5 5 In case the Moldovan party fails to receive the entire quarter shipments of gas through the fault of Gazsnabtranzit, the latter shall, without an approval with Gazprom in accordance with p 2 2 of article 2 of this contract, pay to Gazprom a fine of 8% of the value of gas failed to be received for the quarter. The size of the penalty shall be determined based on the results of a verification for the reporting quarter and shall be paid until the 15th of the month that follows the reporting quarter

5 6 AO Gazsnabtranzit and AO Moldovagaz, with the participation of state authorities of the Republic of Moldova, shall submit in January 1997 a decision of the Government of the Russian Federation on exemption of RAO Gazprom from fines imposed by customs and foreign currency control bodies for late payment by the Moldovan party of the gas shipped to Moldova in 1994-1996

ARTICLE 6

Force-majeur situations

The parties shall not be held liable for partial execution of obligations, if this failure to execute the obligations is due to force-majeur situations. Such situations shall be regarded as events that occur after signing by the parties of the contract as a result of events that are unpredictable by the parties of an extraordinary character, such as fire, flood, earthquake, landslide, explosion, etc., which the parties could not forecast and prevent.

Existence of force-majeur situations must be confirmed by the Trade Chamber of the respective country and submitted to the other party within a term of two weeks.

Article 7

Dispute settlement

7 1 The parties shall attempt to settle all disputes and differences in opinions arising between them regarding interpretation and utilization of this contract through negotiations.

7.2 In case the parties cannot reach a mutually agreeable decision of a dispute related to this contract, this dispute shall be finally resolved in the International Commercial Arbitration Court at the Trade-industrial Chamber of the Russian Federation (Moscow) in accordance with the regulation of this Court. The place of dispute settlement is Moscow. Disputes are reviewed in the Arbitration Court by three arbitrators. The language to be used at dispute settlement is Russian. At dispute settlement, the Arbitration Court uses norms of the material law of the Russian Federation.

The decision of the Arbitration is final, cannot be appealed by the parties and is binding on them.

Article 8 Additional provisions

8.1 This contract can be cancelled at a mutual agreement of the parties, or by one of them in case of a serious violation of the provisions of the contract by the other party. A unilateral cancellation of the contract shall be carried out by the party to the contract through by submitting a written notice to the other party. In case a reply is not received within 10 days from the date of customary receipt of notice by the addressee, the contract is considered cancelled.

8.2 The parties shall inform each other about modifications in their legal addresses, telephone and fax numbers within 5 days.

8.3 On the day this contract is signed, all previous correspondence, documents and negotiations between parties regarding issuers related to contract terms, become void.

8.4 Any amendments to this contract are valid only provided that they are in written form and signed by authorized representatives of the parties.

8.5 Relations of the parties that are not subject to regulation by this contract can be regulated by additional agreements between the parties.

8.6 Neither of the parties may delegate its rights and obligations under this contract to third parties without written notification of the other Party.

8.7 In case of necessity to execute technological operations on the sections of gas pipes and compressor stations on the territories of activity of Gazsnabtranzit and Gazprom, the parties coordinate such activities and this exempts them from mutual sanctions related to failure to respect contract schedules due to execution of such operations.

8.8 Taking into account the confidentiality of this contract, the parties shall take measures to ensure that the terms of this contract are not disclosed to third parties.

ARTICLE 9
Term of validity of the contact

This contract enters into force on January 1, 1997 and expires on December 31, 1997
This contract serves as basis for signing economic agreements

The party that executed all its obligations under this contract in the due manner, has the right to request from the other party to fully execute its obligations, regardless of the term of expiration of the contract

This contract is signed in Moscow on December “__” 1996 in two copies in Russian, both copies being of equal validity

REPUBLIC OF MOLDOVA NATURAL GAS SYSTEM ANALYSIS (1997 FIGURES)

REPUBLIC OF MOLDOVA RB	GAS PRICE		GAS FLOW	LENGTH OF PIPES	EMPLOYEES	GAS COSTS	OPERATING TARIFF	TARIFF	TOTAL REVENUE	CHPs REVENUE	DISTRIBUTION REVENUE
	\$/1000 cm	\$/MBTU	bcm	km	person	MUS\$	\$/1000 cm	\$/1000cm	MUS\$	MUS\$	MUS\$
TRANSIT	80	2 53	17	142 6					1355		
TRANSMISSION	58	1 83	2 1	452 4		121	8 1	66 1	99 34		94 8
of which MGRES	58		0 4			25					
DISTRIBUTION	66 1	2 09	1 5	4349 0		99					
CHISINAU	66 1	2 09	0 87	752 9		57 50			22 7	44 9	12 6
CHP1			0 11			7 50	20 3	86 4		9 8	2 30
CHP2			0 42			27 85	17 3	83 4		35 1	7 29
TERMOCOMENERGO			0 01			0 81	19 4	85 5	1 0		0 24
INDUSTRIAL			0 01			0 64	23 6	89 7	0 9		0 23
COMMERCIAL			0 04			2 41	11 6	77 7	2 8		0 42
RESIDENTIAL			0 12			7 78	2 3	63 8	7 5		0 27
OTHER			0 10			6 43	24 7	90 8	8 8		2 41
TRANSIT	64 7		0 03			1 67	0 0	64 7	1 6		0 00
LOSSES AND OWN NEEDS			0 04			2					
BALTI			0 13			9			3 3		2 770
POWER			0 09			6	20 7	86 8		8 2	1 948
TERMOCOMENERGO			0 004			0	19 4	85 5	0 3		0 072
INDUSTRIAL			0 02			1	25 2	91 3	1 8		0 490
R/C/O			0 01			1	17 7	83 8	1 2		0 259
LOSSES			0 002								
OTHER DCs			0 499			33					
LOSSES			0 03								
DROCHIA GAS			0 04						3 053		
FLORESTI GAS			0 04						3 357		
EDINET GAZ			0 040						2 781		
REZINA-GAZ			0 074						1 694		
ORHEI GAZ			0 019						1 245		
CRIULENI GAZ			0 009						0 564		
ANENII NOI GAZ			0 09						6 408		
STEFAN VODA GAZ			0 009						0 571		
FLACARA CAUSENI			0 025						2 409		
CAHUL GAZ			0 026						1 735		
FACHEL COMRAT			0 016						1 003		
METAN CHADIR			0 048						3 009		
SELF VULCANESHTI			0 022						1 393		
PROMETEU CHIMISLIA			0 005						0 333		
IALOVENI GAZ			0 001						0 000		
TARACLIA GAZ			0 021						1 317		
BRICENI GAZ			0 001						0 066		
CONTOR GAZ BASARAB			0 003						0 182		
STRASENI GAZ			0 005						0 316		
GLODENI GAZ			0 032						2 230		
TELENESTI GAZ			0						0 000		
OCNITA GAZ			0 021						1 403		
PROPAN GAZ FALESTI			0 001						0 071		
SOLDANESTI GAZ			0 005						0 334		
DONDUSENI GAZ			0 000022						0 0015		
SUBTOTAL RB			1 5						61 538	53 1	
TRANSNISTRIA LB											
TRANSIT											
TRANSMISSION											
DISTRIBUTION											
OTHER 3 DCs											
SUBTOTAL											
TOTAL											

NOTES

- Some figures are approximate estimates
- Gas price 1997 \$58/1000 cm allowance \$22/1000cm for transit
- Total flow through transit system including flow to Moldova
- 1 US\$=4 66 lei

Chisinau DC Customer profile - 1996

	Customer Class		Annual consumption		Annual revenue		Total paid		
			mill cm	%	mill lei	%	mill lei	% of ann revenue	% from the total
1	Moldenergo		371 1	52	221 5	73	123 2	56	60
2	Others		342 1	48	81 3	27	83 3	103	40
3	Total		713 2	100	302 8	100	206 6	68	

	Others		Annual consumption		Annual revenue		Total paid		
			mill cm	%	mill lei	%	mill lei	% of ann revenue	% from the total
1	Residentials	private apartments	103 8	30	23 3	29	20 4	87	24
2	Industrials	Termocom Termocom Energo Ministry of Industry CS "Inmacom"	35 1 12 14 0 9 0	10 11	12 1 4 2 4 8 3 1	15 4	16 2 3 8 6 5 0	133 20	19
3	Agricultural	(Ministry of Agriculture)	54 3	16	18 8	23	19 0	101	23
4	Commercials		54 0	16	18 8	23	19 2	102	23
5	Budget		8 2	2	2 6	3	2 4	91	3
6	Transit		20 3	6	5 6	7	6 2	111	7
7	Own needs		0 3	0	-	-	-	-	
8	Losses		66 1	19	-	-	-	-	
9	Total		342 1	100	81 3	100	83 3	103	

Chisinau DC Customer profile - 1997

	Customer Class		Annual consumption		Annual revenue		Total paid		
			mill cm	%	mill lei	%	mill lei	% of ann revenue	% from the total
1	Moldenergo		539	62	224	68	106	47	50.5
2	Others		331	38	104	32	104	100	49.5
3	Total		870	100	328	100	210	64	

	Others		Annual consumption		Annual revenue		Total paid		
			mill cm	%	mill lei	%	mill lei	% of ann revenue	% from the total
1	Residential	private apartments	118	36	35	34	32	90	30.5
2	Industrial	Termocom Termocom Energo Ministry of Industry CS "Inmacom"	34 14 9.7 10.5	10 12	14 5.4 4.1 4.5	13 5	15 7 3.8 4.2	108 6.5	14.5
3	Agricultural	(Ministry of Agriculture)	71	22	30	29	37	121	35.3
4	Commercials		36	11	13	13	12	94	11.9
5	Budget		10	3	4	4	5	119	4.5
6	Transit		25	8	8	7	4	46	3.4
7	Own needs		0.4	0.1	-	-	-	-	
8	Losses		36	11	-	-	-	-	
9	Total		331	100	104		104	100	

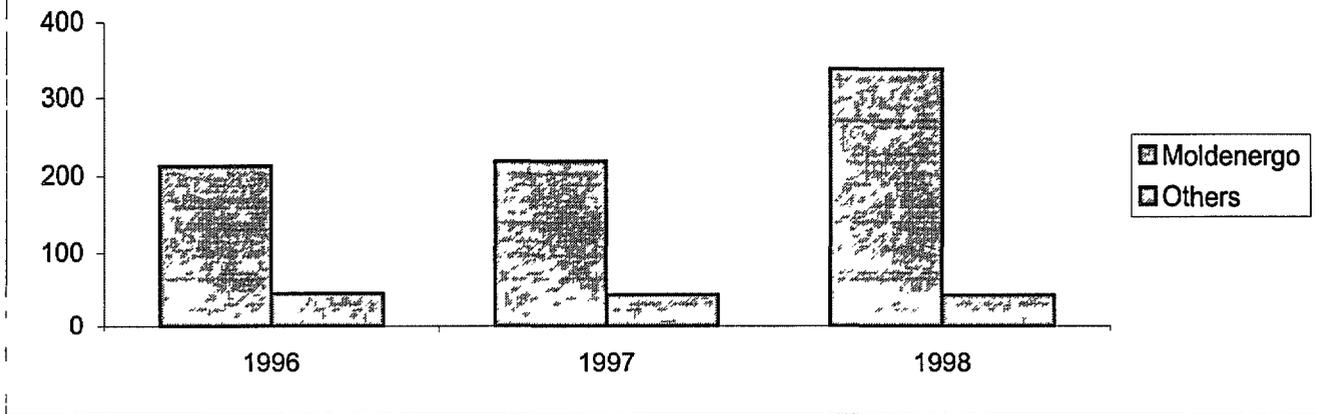
Chisinau DC debts profile for 1995-1997

	Customer Class	Debts					
		as of Dec 31, 95	% of debts	as of Dec 31, 96	% of debts	as of Dec 31, 97	% of debts
1	Moldenergo	212 6	82 5	217 9	83 5	335 5	88 7
2	Others	45 1	17 5	43 0	16 5	42 7	11 3
3	Total	257 7		260 9		378 2	

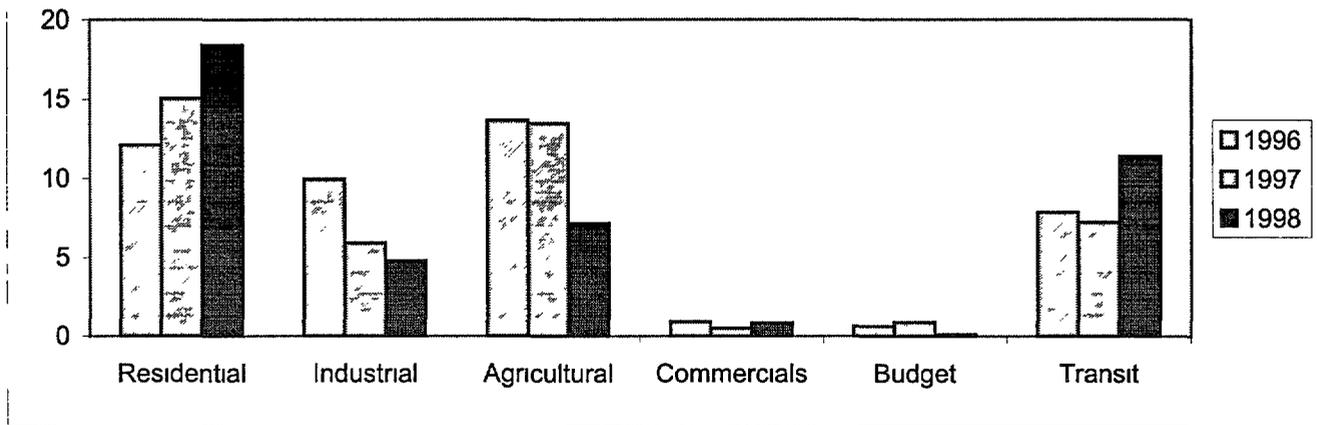
	Others	Debts					
		as of Dec 31, 95	% of debts	as of Dec 31, 96	% of debts	as of Dec 31, 97	% of debts
1	Residential private apartments	12 1	26 9%	15 0	35 0%	18 4	43 1%
2	Industrial Termocom Termocom Energo Ministry of Industry CS "Inmacom"	9 9 1 3 0 7 4 1 4 5	22 1%	5 9 2 9 2 4 0 4 2 7	13 8%	4 8 1 3 0 8 0 6 2 9	11 2%
3	Agricultural (Ministry of Agriculture)	13 7	30 3%	13 5	31 3%	7 2	16 8%
4	Commercials	0 9	2 0%	0 5		0 8	1 9%
5	Budget	0 6	1 4%	0 9	2 0%	0 1	0 3%
6	Transit	7 8	17 4%	7 2	16 8%	11 4	26 7%
7	Own needs		-		-		-
8	Losses		-		-		-
9	Total	45 1		43 0		42 7	

62

**CDC debt profile with ME,
mln lei**



**CDC debt profile w/o ME,
mln lei**



* Transit means the gas delivered by CDC to neighbor DC's

List of laws

1	Resolution 767 ANRE creation
2	Resolution 212 Reorg & Privat of gas sector
3	Draft GoM Decree on debts restructuring
4	Gas Act
5	Gas regulations (including related licenses)
6	Privatisation Law
7	Law on Joint Stock Companies
8	Foreign Investment Act
9	JSC Chapter
10	Foreign Exchange Regulations
11	Repatriation of export proceeds
12	Regulation of payments for imports
13	Labor Laws
14	Enterprise Act
15	Law On Normative Price And Procedure On Sale And Purchase Of Land
16	Environmental Law
17	Tax Law
18	VAT law (implication for the energy industry)
19	Securities Circulation and Stock Exchange's Law
20	Moldova Securities Law
21	Draft Law on Foreign Exchange Regulation
22	Regulations on Currency Control in Moldova (approved by National Bank of Moldova)
23	Procedure for the Registration of Foreign Credits and Guarantees with the National Bank of Moldova
24	Customs duties
25	National Bank Act
26	Financial Institutions Act
27	Accounting Law (how is land handled in books)
28	Insurance Law
29	Bilateral Agreements
30	World Bank guarantees for make a multilateral insurance guarantee
31	Investment Promotion Agency
32	Notes to the 1998 Federal Budget
33	Law on Collateral
34	Criminal Code
35	Law on State Debt and State Guarantee
36	Law on Property Rights
37	Bankruptcy Law
38	Protection of Consumer Rights
39	Bases of Foreign Economic Activity
40	Law on Concessions
41	Law on Bills of Exchange
42	Status of Conventions and Model Laws issued by the United Nations Office of Foreign Affairs, last updated on 20 June 1998

THE REPUBLIC OF MOLDOVA

Gas Act

The present Act establishes the basic principles of the organization and regulation of the activities regarding the production, storage, transportation, distribution and supply of gas as well as the institutional system of the protection of consumers

The goal of the Act is to set up the legal framework of an effective competition in the gas market in order to increase the efficiency of the gas industry

CHAPTER I

GENERAL PROVISIONS

Article 1 The scope of the Act

(1) The scope of the present Act shall cover the following

- a) production and storage of combustible gases (hereinafter gas),
- b) transportation and distribution of gas by means of pipelines,
- c) gas supply activities, including gas import and export and gas transit,
- d) prices for gas and regulations for the gas industry,
- e) protection of the interests of consumers,
- f) holders of the licenses

(2) The present Act regulates the legal relationships between the partners in the gas market gas entities, suppliers and consumers

(3) The scope of the present Act shall not extend to the utilization of bottled gas The utilization of bottled gas shall be regulated in accordance with a Government Decree

Article 2 General conditions

Gas shall be produced, stored, transported, distributed and supplied in an efficient way from the economic point of view observing the legislation regarding the safety of property, environment and labor protection as well as other laws and regulations in force in the interests of the national economy and consumers

Article 3 Definition of terms

For the purpose of the present Act there are utilized the following terms

- | | |
|----------------------|--|
| 1 Consumer | -natural (private) person or legal entity whose gas consuming installations are connected to the gas network through one or more connection points |
| 2 Consumer equipment | -the installations of the consumer and the consumer gas network situated downstream from the connection point |

- 3 Connection point -the place where the consumer equipment is connected to the gas network and that is the boundary of the property of the consumer and the gas entity or the supplier
- 4 Cost of service Minimum costs -actual costs necessarily and reasonably incurred during the performing of an activity
- 5 Distribution entity -legal entity who has been given the license for the distribution of gas
- 6 Distribution point -an object of the distribution network that serves the purpose of gas transfer from the pipelines of high or medium pressure to the pipelines of medium or low pressure
- 7 Gas entity -transportation entity and distribution entity
- 8 Gas distribution network -a system consisting of high, medium and low pressure gas pipelines and other equipment and distribution points situated downstream from the distribution station and upstream from the connection point that serve in the aggregate the purpose of distribution of a supply of gas to the connection points
- 9 Gas distribution station -the installations that belong to the gas transportation networks and serve the purpose of gas transfer from high pressure pipelines to distribution pipelines of high, medium or low pressure
- 10 Gas meter -apparatuses and the combination of devices that serve to measure the volumes of gas transported through the transportation and distribution networks as well as the volumes of gas utilized by the consumers
- 11 Gas network -gas transportation and distribution networks
- 12 Gas producer -legal entity who has been given the license to extract gas as a natural resource from the territory of the Republic of Moldova or to produce it artificially
- 13 Gas supply at non-regulated tariffs - the supply of gas to consumers at non-regulated tariffs
- 14 Gas supply at regulated tariffs - the supply of gas to consumers within a geographic area at regulated tariffs
- 15 Gas system -the totality of the elements of the chain of production, storage, transportation, distribution and utilization of gas
- 16 Gas transportation network -a system consisting of high pressure gas pipelines, stations for compression, distribution and measurement that serve in the aggregate the purpose of gas transportation
- 17 License holder -gas entity or gas supplier

- 18 Natural monopoly -activity aimed at transportation and supply of gas in the course of the performance of which market rules are absent or do not operate adequately because the consumer has no other choice
- 19 Pay for connection - payment for meter procurement, testing and installation, as well as for other equipment, apparatus and pipes to the consumer necessary to satisfy requirements for connections to the transportation and distribution grids
- 20 Storage -the activity related to storing gas
- 21 Supplier -a legal entity who has been given license for acquisition and for sale of a supply of gas at regulated and unregulated tariffs
- 22 Supply -acquisition and selling the gas
- 23 Transportation entity -legal entity who has been given the license for the transportation of gas

CHAPTER II

ADMINISTRATIVE COMPETENCE AND PROTECTION OF CONSUMERS

Article 4 Responsibilities of the State

The policy of the operation and development of the gas system of the Republic of Moldova is implemented by Government as follows

- a) Establishes the strategy (program) of the extraction and utilization of gas from gas fields find on the territory of the Republic of Moldova and the strategy for the development of the main gas pipelines including joint projects with other states Assures energy security of the state
- b) Establishes the conditions regarding the import, export and transit of gas,
- c) Approves the construction of the main gas pipelines,
- d) Approves the construction of artificial gas storage with the capacity that exceed 0 1 million cubic meters as well as of gas storage based on the utilization of natural (underground) reservoirs

Article 5 The National Agency for Energy Regulation

(1) The National Agency for Energy Regulation (hereinafter Agency) is hereby established as a permanent public body with the status of a legal entity that is not subordinated in any way in its activity to any other government or private agency or institution, except the stipulations of Art 5 (3) and Art 8 (p 3, 4, 5, 8 and 9(2))

(2) The expenses relevant to the activity of the Agency shall be covered from a fund that is to be completed from the following sources

- a) Fees for licensing,
- b) Annual fees applied to license holders,
- c) Other sources stipulated in the legislation in force

(3) The Government in accordance with the present act shall approve the Regulation of the Agency

Article 6 The tasks and main duties of the National Agency for Energy Regulation

(1) The Agency has the following obligations

- a) license the production of gas, gas storage operation, transportation, distribution and supply of gas as well as activities which assure the increase of efficiency and competition on the gas market,
- b) control the meeting of requirements and the quality of services,
- c) in cases stipulated in the present Act amends or withdraws the licenses mentioned in Art 6, 1,a,
- d) elaborates and approves in accordance with the established process the methodology of calculation of regulated gas tariffs, and approves regulated gas tariffs,
- e) supervise the correctness of calculation- of the regulated gas tariffs- performed by the license holders according to the provisions defined in the license,
- f) monitors the business of the agents that act in the gas market,
- g) defines the economic technique data and data that provide the functioning of gas system in the whole, that shall be made public by the license holders, taking in consideration their confidentiality,
- h) promotes the competition in the gas market,
- i) establishes the accounting model and information system to be used by the license holders to report to the Agency, in compliance with the National Standard Accounting System

Article 7 The rights of the Agency

(1) In the interest of the fulfillment of its duties stipulated in the present Act the Agency is entitled

- a) to control the observance of the conditions, stipulated in the license, by the license holders,
- b) to control the correctness of application of regulated tariffs by the license holders,
- c) to have access to the documents concerning the activities subject to license even in case they contain state or business secrets,
- d) to obtain copies, abstracts of such documents and request additional information from the license holder in order to fulfill its duties,
- e) to enforce the principle of minimum costs regarding the production, transmission, distribution and supply of gas,
- f) to issue regulations in order to perform its duties in the most efficient way,
- g) to exact fines

(2) The Agency may also have other rights stipulated in its regulations and legislation in force

Article 8 Administration of the Agency

(1) The Agency shall be managed by the Administration Council consisting of 3 Directors

(2) The decision of the Administration Council shall be taken by a majority of votes Each Director of the Administration Council has one vote

(3) The Directors of the Administration Council shall be appointed by the Government of the Republic of Moldova for a term of 6 years, except the case of their initial appointment under this Act when one Director shall be appointed for a term of 2 years, one Director for a term of 4 years and one Director for a

term of 6 years The Government of the Republic of Moldova shall appoint a Director of the Administration Council every 2 years or whenever a term, for any cause, becomes vacant, in which case the new Director shall serve the remaining time of the unexpired term No person shall serve as a Director of the Administration Council for more than 12 years and no person shall be appointed Director after having served as a Director for more than 6 years, including any time remaining on the current term of the Director

(4) A Director may be dismissed by the Government of the Republic of Moldova only if he/she resigns, loses the citizenship of the Republic of Moldova, is not able to fulfill his/her duties by reason of health, is elected in an other function, is convicted by the court, violates systematically his/her obligations, violates the legislation in force

(5) The Government of the Republic of Moldova shall designate one of the Directors as General Director of the Agency's Administration Council, being entitled at any time to designate any of the Directors to be the General Director

(6) The General Director shall engage and direct the staff of the Agency being supported by the majority of the members of the Administration Council

(7) A Director shall not

- a) hold any office or position,
- b) be a shareholder, debtor or creditor,
- c) receive or expect to receive any compensation or other financial consideration,
- d) attempt to obtain employment for any person or himself

at enterprises regulated by the Agency, in accordance with this act

(8) The Administration Council shall present a report regarding the activity of the Agency in the previous year to the Parliament and the Government of the Republic Moldova

Article 9 The Agency's budget The regulatory fees

(1) Each year, the National Energy Regulatory Agency applies regulatory fees to license holders to create its annual budget By November 15 of each year, the Agency will prepare its detailed budget for the next year The budget will reflect all the expenditures of the Agency The Agency will establish the regulatory fees level in the basis of valuation of gas volumes for the next year, received from the license holders until November 1, and that will be sufficient to cover all the budgetary expenditures of the Agency during the next year To determine the level of regulatory fees for the production, transportation, distribution, gas supply at regulated and non-regulated tariffs, there will be applied the following principles

- in the case of gas production (accumulation) entities the fees will be imposed on the gas volume produced (stored),
- in the case of gas transportation entities, the fees will be imposed on the gas volume delivered to the distribution networks,
- in the case of distribution entities, the fees will be imposed on the gas volume delivered to the final customers,
- in the case of gas supply entities the fees will be imposed on the delivered volumes

(2) The Agency's budget will be approved by the Minister of Finance at the level of 0.06-0.09% from the annual cost of the energy and natural gas supplied to customers. The Agency's budget will be published in the republican mass media.

(3) The regulatory fees, paid by license holders, will be transferred on the current account of the Agency, which is the sole user of these funds. In the case where the Agency's funds are not fully utilized during the current year of regulation, then they should be transferred and included in the next year budget, in the case where it occurs a deficit of funds during the current year of regulation, the Agency is entitled to reimburse it from the next year budget, applying an appropriate regulatory fee. The Agency is entitled to contract loans at reasonable rates of interest to cover the current costs that can not be covered by the collected regulatory fees. The Agency will reimburse the funds received from the regulatory fees applied.

Article 10 Financial report

By March 1 of each year, the ANRE will prepare and publish a financial report which will include both the accounting data of the regulatory fees transferred by the license holders on the current account of the Agency, and the Agency's expenditures during the previous year. The financial report will identify all the loans contracted by the Agency during the given regulation year as well as other funds utilized by the Agency. The financial report will be published in the republican mass media.

Article 11 Protection of consumers

(1) In the course of the performance of its activities the Agency shall

- a) pay regular attention to matters affecting the interests of consumers,
- b) elaborate detailed rules regarding the protection of consumers,
- c) investigate the complaints of consumers,
- d) co-operate with the organizations that represent the interests of consumers,
- e) provide the organizations which protect the interests of consumers as well as the consumers with necessary data and relevant information regarding the activity of license holders excepting the confidential information,
- f) decide in disputed matters both between consumers and suppliers, and between consumers and transmission and distribution entities.

(2) The consumers may address a claim to the Agency concerning any matters within the authority of the Agency including the quality of services provided by a gas entity or a supplier. The Agency shall examine the mentioned complaints and will take respective measures within the limits of its authority.

Article 12 Decisions of the Agency

(1) The Administration Council shall perform its duties so in order to ensure the transparency of its activity. In this order

- a) the Administration Council's sessions will be public,
- b) all the Agency's decisions will be accessible to the public. The confidential information will not be provided. The provisions of a regulation will establish the way of using of the latter.
- c) The interested Parties will be informed in advance about the agenda of the Administration Council's session. Both, the interested Parties and the public at large will have free access to the examination of problems in discussion. In case when the problems under discussion are

confidential, they will be examined at closed-door meeting, the session's decisions being accessible to every interested party

- (2) In the event of a disagreement between a licensee and a consumer or another licensee, involving a matter within the jurisdiction of the ANRE which cannot be resolved through negotiation, the matter of disagreement shall be analyzed by the ANRE in order to make a decision within the scope of its authority
- (3) The licenses issued by the Agency as well as its decisions of public interest shall be published in the Monitorul Oficial of the Republic of Moldova
- (4) A decision of the Agency may be appealed to Court according to effective legislation

CHAPTER III

LICENSING

Article 13 Activities subject to license

- (1) Production of gas, gas storage operation, transportation, distribution and supply of gas are activities subject to license. There can be licensed other activities of the gas industry if doing so it is stimulated the competition in the gas market
- (2) The activity connected to operation of gas storage of the capacity under 0.1 million cubic meters is not subject to license

Article 14 The conditions for licensing

- (1) To perform the activities stipulated in the Article 13 there shall be issued licenses to economic entities that are legal entities and if they satisfy the following conditions
 - are registered in the Republic of Moldova,
 - prove that they have financial and technical sources as well professional training to ensure a normal performance of the licensed activity,
- (2) The manager of the enterprise, that is license holder, shall have to meet the following requirements
 - to be able to perform his/her duties,
 - to have permanent residence in the Republic of Moldova,
 - to have no previous convictions relevant to the activity regulated by the present Act,
 - not to be punished earlier - according to the criminal code - for the deeds - intentionally done,
 - higher education with a technical bias and at least 5 years experience in the field
- (3) There shall not be issued licenses to economic entities that undergo bankruptcy or liquidation procedures, as well as to economic organizations whose licenses were withdrawn earlier for reasons provided in Art 19 (2), b, c, d, e, and there has not yet passed 10 years from the moment of the withdrawal

(5) The license holder is obliged to restore the original condition of the real estate on termination of exercising the rights listed in point (1) of the present Article

Article 21 Right of preparatory work

In connection with the construction of the gas networks the gas entity may apply for a permission for right of preparatory work

Article 22 Right of cabling

(1) The right of cabling permits the license holder of the gas entity to perform the construction, installation, repair and replacement of the gas pipelines, compressor stations, distribution stations and distribution points and other equipment of the gas networks

(2) The right of cabling ceases if the construction of the gas objects is not finalized in 5 years

Article 23 Right of use

(1) Any object - of the gas entities - that are not stipulated in the Article 22, point (1) may be placed and operated on other parties real estate on the basis of the right of use

(2) The right of use is established on the basis of an agreement with the owner of the real estate

(3) The damages caused to the owner of the real estate as a result of the application of the right of use shall be compensated to the owner of the real estate by the license holder

(4) In case there cannot be reached an agreement concerning the establishment of the right of use the license holder may request the support of competent authority to solve the problem

(5) The right of use ceases in case the construction of the objects defined in point (1) shall not been finalized in 5 years reckoned from the date the right of use was authorized

Article 24 Expropriation

(1) In case the license holder has not been able to obtain the right of use in order to build the compressor station, distribution station and distribution points and other objects of public use it is entitled to initiate the procedure of the expropriation of the real estate of the other owner according to the legislation in force

(2) In order to construct and operate the gas pipelines, the procedure of expropriation may take place only if the license holder demonstrates that the right of cabling stipulated in Article 22 hinders substantially or even terminates the proper use of the real estate

(3) The real estate expropriated in accordance with points (1) and (2) shall be transferred to the ownership of the state and put at the disposal of the license holder with the right of use

CHAPTER V

PRODUCTION, STORAGE, TRANSPORTATION, DISTRIBUTION AND SUPPLY OF GAS

Article 25 Co-ordination of the activities of the gas system

- (1) The gas entities shall function in a co-operating gas system In the interest of the operation of the co-operating gas system the transportation and distribution entities and suppliers shall co-operate on the basis of the market economy principles and unique operational control over the gas system
- (2) Subject to conditions contained in licenses and to regulations of ANRE, the gas entities together with the suppliers shall elaborate the rules concerning
 - a) the conditions of co-operation within the gas system,
 - b) the application of restrictions in relationships between parties
- (3) The legal relationship between the participants to the gas market shall be established in contracts in accordance with the license conditions and the regulations issued by ANRE

Article 26 Production of gas and operation of gas storage

- (1) All gas producers as well as those that operate the gas storage have the right to participate in the gas market on condition that the technical requirements for connection to the gas network are satisfied, the quality of supplied gas corresponds to the standard in force
- (2) The License for the gas production and storage is valid unless the Agency withdraws it due to the breach of the license The license can be cancelled by the Agency after 25 years of the presentation of a written notice

Article 27 Transportation and distribution of gas

- (1) Every licensee or consumer has the right of access to the gas transportation and distribution networks without discrimination
- (2) The gas transportation or distribution entity is obliged to transport gas to the place of destination in accordance with the conditions defined in the contract concluded between parties, license conditions and regulations issued by the Agency
- (3) The gas transportation entity as well as the gas distribution entity may also be a supplier
- (4) The gas transportation and distribution entities shall perform the duties of the dispatching activity in order to manage the volumes of gas defined in the contracts concluded between the participants of the gas market
- (5) The gas transportation entity as well as the gas distribution entity shall answer any claim relevant to its activity during a period of 15 days reckoned from the moment when the claim was registered
- (6) The License for gas transmission and distribution is valid unless the Agency withdraws it due to breach of the License The license can be cancelled by the Agency after 25 years of the presentation of a written notice

CHAPTER VI

LEGAL RELATIONSHIPS BETWEEN SUPPLIERS AND CONSUMERS

Article 30 Gas supply contract

- (1) The gas shall be supplied only on the basis of a contract concluded between the consumer and the supplier
- (2) The provisions of the contracts may be further detailed and completed in appendixes and other additional documents
- (3) The consumers are entitled to conclude individual contracts of gas supply with any supplier including the suppliers from outside the borders of the Republic of Moldova
- (4) Consumer requirements concerning purchasing natural gas and revision of existing contracts will be considered and satisfied by the appropriate licensee taking into account technical feasibility

Article 31 Terms of the contract

- (1) For gas markets determined by the Agency to be non-competitive the Agency shall elaborate and adopt regulations that control the legal relationships between the participants of gas market
- (2) In the competitive gas market, the legal relationships between the gas suppliers and purchasers shall be established within the conditions of the contract signed between these parties. The contract will include the validity and cancellation of the contract, specify the cases of breach of contract, suspension and limitation of contract as well as other responsibilities of the suppliers and purchasers of gas

Article 32 The effects of the gas supply contract

- (1) The supplier is obliged to ensure the continuous supply of gas - of the parameters stipulated in the standards in force- according with the conditions contained in the contract
- (2) The operation of consumer equipment shall not endanger life, health and property and destabilize the proper operation of the gas entity as well as the receipt of gas by other consumers

Article 33 Suspension and restrictions

- (1) The gas entities are entitled to suspend the supply of gas for the shortest possible period when the life of people and property are endangered, there are not observed the established regimes of gas consumption, there are operational breakdowns in the operation of the gas networks as well as for carrying out connections and other maneuvers that cannot be performed otherwise
- (2) The gas entities shall inform the consumers in advance of the date and expected duration of suspension of gas supply caused by maintenance and elimination of the consequences of faults
- (3) The gas entities are entitled to restrict or suspend the supply of gas in case of gas crisis at the national scale or because of the interests relevant to foreign trade, national economy, environmental protection and national defense

(4) The gas entities shall not compensate the damages caused as a result of suspensions and restrictions carried out because of circumstances listed in point (3) of the present Article if the actions of the supplier have complied with the points (1) and (2)

(5) Transportation and distribution entities may suspend or terminate gas supply to a customer or other licensee for failure to comply with applicable contracts.

Article 34 Measurement of gas consumption and payment settlement

(1) The license holders for gas transportation and distribution are responsible for the installation, operation, maintenance and periodic recalibration of the gas meters of consumers connected to their network

(2) The license holders for gas transportation and distribution shall meter the quantity of supplied gas in accordance with the standards in force. The supplier is obliged to utilize only tested meters

(3) The consumer shall

- (a) pay for connection, and
- (b) pay for gas consumed based on meter readings and concluded contracts

(4) The contracting parties may initiate an unplanned testing of the gas meter. In case the complaint has not been proved the complainant shall incur the expenses related to this unplanned testing. If the complaint has been proved then there shall be performed a new payment settlement

CHAPTER VII

TARIFF REGULATION

Article 35 Tariffs of gas

(1) Regulated gas tariffs shall be calculated and applied by the respective license holders according to a methodology established beforehand

(2) The methodology of calculation and application of tariffs shall be elaborated and approved by the Agency in accordance with established process for definite periods of time

(3) The methodology of tariff calculation mentioned in p 2 shall include

- a) the calculation of the expenditures
 - aa) related to the cost of service,
 - ab) related to efficient development of the gas entities,
 - ac) related to the fulfillment of the obligation regarding the environment protection,
- b) the necessary profit in order to continue the activity of the license holders,
- c) the promotion of reliable supply of gas at minimum costs as well as the efficient utilization of the production capacities,
- d) the recognition of the state policy concerning the development of the national gas system, as well as the transit, the import and the export of gas

(4) The license holders shall provide the Agency with all information that is necessary for the activity of supervising the correctness of costs and calculations of regulated tariffs

CHAPTER VIII

FINAL AND TRANSITORY PROVISIONS

Article 36 The settlement of disputes between the contracting parties

- (1) Except Art 11(2), the disputes between the parties shall be solved in the court of law
- (2) In case of any dispute between the license holder and the consumer or another license holder, the subject of the dispute will be analyzed by the Agency in order to take a decision within the limits of its authority

Article 37 Final provisions

- (1) The present Act shall come into force at the date of its publication
- (2) The Agency may amend a license, without the agreement of the licensee, during the first year after publication of this Act provided such amendment is necessary to protect the interest of licensees and consumers
- (3) The Government within two months shall
 - a) submit the proposals to the Parliament in order to amend the legislation in force in concordance with the present Act and
 - b) amend its legal rules according to the present Act

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July 21, 1998

Approved

Registered

National Energy Regulatory Agency
of the Republic of Moldova

Ministry of Justice of the Republic
of Moldova No _____

Anatol Saracuta

Ion Paduraru

**REGULATIONS
ON LICENSING THE ACTIVITIES OF
PRODUCTION, TRANSPORTATION,
DISTRIBUTION, STORAGE AND
GAS SUPPLY IN THE
REPUBLIC OF MOLDOVA**

CHISINAU, 1998

1 GENERAL CONDITIONS

1.1 The present Regulation is elaborated and approved in accordance with GoM Resolutions no 767 from August 11, 1997 "Regarding the National Energy Regulatory Agency", no 110 from February 2, 1998 "Regarding the regulation of some types of activity in the Republic of Moldova" and number 128, from February 5, 1998 "Regarding the approval of the Regulations on the elaboration of departmental normative acts" It establishes the method, procedures and conditions for license issuance by National Energy Regulatory Agency (ANRE) to economic agents operating on the gas market of the Republic of Moldova for the production, transportation, distribution, storage and gas supply

1.2 The economic agents of the gas market, independent of their legal and organizational form, can develop the activities of producing, transportation, distribution, storage and gas supply only on basis of licenses, issued by ANRE

The economic agents, exercising unauthorized such kind of activities (without license), are carrying the responsibility in accordance with effective legislation and this Regulations

1.3 The license for gas production, transportation, distribution, storage and supply is an official document, which confirms the capacity and the right of a Licensee to develop one of the mentioned kinds of activity during a definite period, under conditions which will ensure a high quality of services provided to customers and transparent prices, in accordance with the legislation, acting on the territory of the Republic of Moldova

1.4 ANRE shall issue licenses in a standard form for each type of activity and for a period of at least 3 years

1.5 The License is issued only to legal persons, which are registered on the territory of the Republic of Moldova Each License shall specify the term of its effectiveness and shall contain, as an integral part, License Conditions attached thereto, which specify the obligations and rights of the Licensee

1.6 ANRE Council will examine license's applications The supplicant economic agent will be informed in advance about the date of Council session The presence of the authorized representative of the supplicant at the Council session is compulsory

1.7 The applications for license issuance, copies of licenses, ANRE's license register and all other documents related to issuing or amendment of licenses will be available for examination to any interested person or organisation at ANRE's offices

II BASIC FUNCTIONS OF NATIONAL ENERGY REGULATORY AGENCY REGARDING THE ISSUANCE OF LICENSE AND THE MONITORING THE COMPLIANCE WITH LICENSE CONDITIONS

Basic functions of National Energy Regulatory Agency regarding the issuance of licenses and monitoring of the compliance of licenses holders with license conditions include

- 2 1 Detailed examination of applications for license issuance,
- 2 2 Organizing open meetings to consider License applications,
- 2 3 Issuing decisions for approvals or denials of License applications,
- 2 4 Examination and amending License conditions, according to ANRE or Licensee initiative,
- 2 5 Publication of the contents and the list of issued licenses, license conditions as well as amendments inserted in the issued license conditions, terms of license validity and the list of cancelled Licenses
- 2 6 Monitoring licensees' compliance with license conditions,
- 2 7 Notifying the licensee of their non-compliance with license conditions and establish measures to liquidate detected violations
- 2 8 Issuance of decisions on license suspension or cancellation,
- 2 9 Advance publication of the information referred to license applications, license supplements, organization of public meetings, ANRE decisions attesting the issuance or refusal to issue licenses, license suspension or cancellation,
- 2 10 Maintenance of records about licenses in an appropriate register

III PROCEDURES AND CONDITIONS TO ISSUE LICENSES

3 1 The Licenses for exercising activities stipulated in article 1 1 are issued only to economic agents, which are legal persons, if the latter fulfill the following conditions

- are registered at State Registration Chamber at the Ministry of Justice of Moldova Republic,
- prove that they dispose of financial and technical means and professional skill to develop a normal authorized activity,

Manager of the enterprise has to correspond to following conditions

- have the capacity for completing the work,

- have higher education on power engineering and the experience in the domain of at least 5 years,

The Licenses can not be granted to economic agents, which are failed or are in the process of liquidation. The economic agent, whose license was previously withdrawn, should present a new application for license issuance after the fulfillment of all ANRE's written requirements.

To obtain a License, the economic agent submits an application to National Energy Regulatory Agency according to specified form (see Attachment 1)

To the application must be attached

- information about the applicant with the title, indication of organizational and judicial form, legal address, fiscal code and bank accounts,
- statute and registration certificate of the State Registration Chamber of the Ministry of Justice of the Republic of Moldova,

The Statute, the registration certificate of State Registration Chamber and the documents confirming the fiscal code are presented in the form of copy, authenticated by notary. Otherwise, original must be presented.

Applicants can ask the Agency for delay in presentation of some of above documents due to objective causes, reported to the Agency, or can ask for liberation of presenting some documents, which are not relevant for the given kind of activity, for which the License is requested.

3.2 Examination of the application for license issuance or modification in accordance with the legislation will be performed by ANRE in established terms, accordingly to the documents, which attest the possibility, the qualification and the professional skill of the economic agent in the domain, indicated in application. The applications for license issuance and the attached documents are examined in accordance with provisions of this Regulation.

3.3 After the registration of application for License issuance or modification, if necessary, the Agency can ask the applicant for additional information and/or ask assistance from the independent experts to examine the applicant's eligibility to obtain the license. Agency leadership can invite to the Council session for applications' examination plenipotentiary representatives of other institutions and organizations. At the Agency's request and with the aim of regulating the economic agents activity, the applicant is obliged to obtain necessary authorizations regarding the fulfillment of license condition before the license issuance. The license will be issued with the mutual consent of the local public authorities.

3.4 The application for license issuance and the attached documents shall be examined in accordance with the effective legislation and this Regulation on the basis of the following criteria:

- presence and adequacy of all documents necessary for License issuance, capacity of the applicant to practice the activities indicated in license in accordance with the legislative acts,
- correspondence of the technical state of gas production and storage enterprises as well as gas transportation and distribution networks to the effective norms, conformity of used technologies, equipment, installations, control and protection apparatus to security requirements,
- presence of a framework of viable technical and organisational measures to ensure the development of activities stipulated in license and to ensure security of operation personal as well as environmental protection,
- reliable and stable gas supply, sufficient to meet the short and long term demands of consumers,
- effect of the activity proposed by the applicant over the regulated tariffs on gas market,
- degree of improvement in the economic and technical efficiency of activities in the gas sector,
- increased opportunities to attract investments,
- expected level of the quality of services provided to gas consumers,
- availability of a qualified and competent staff

3 5 ANRE's decision to issue, amend or deny a License shall be made public within 30 days after the presentation of documents, indicated in p 3 1 of this Regulations

The Chairman of ANRE Council may extend the period of adopting the final decision on license issuance up to 15 days in case there is necessary additional examination of materials

Within 10 days after the license issuance ANRE will inform about this fact the fiscal authority and the appropriate local public authority

3 6 ANRE shall render its decision on License application in a written form, setting forth the factual basis and reasons for its conclusions, recording the votes of Agency Council members and any concurring opinions, expressed during examination

3 7 Each license has its number and series, according to the register established by ANRE ANRE's Council shall approve the generic licenses and license conditions Generic licenses and license conditions are presented in annexes 2-7 and shall include license on gas production, license on gas transportation, license on gas distribution, license on gas storage, license on gas supply at regulated tariffs and license on gas supply at non-regulated tariffs

3 8 The License is signed by the General Director on the basis of ANRE's Council decision and it is certified by National Energy Regulatory Agency stamp The license is issued by a responsible person – the secretary of the Council secretary, who introduces the respective data in a special register

3 9 The license is valid for a definite period of time, but not less than 3 years and not more than 25 years

- the license is valid for a period of 25 years in case of gas production, transportation, distribution, storage and supply at regulated tariffs,
- the license is valid for a period of 3 years in case of gas supply at non-regulated tariffs

3 10 It is prohibited to transfer the license to any other economic agent as well as to have the license used by several economic agents simultaneously. In case, the production, transportation, distribution, storage and gas supply at regulated and non-regulated tariffs are activities practiced by several entities, territorially separated, the applicant will receive, along with the license, certified copies with the addresses of each installation (entity [SIC])

These copies have to be registered to the National Energy Regulatory Agency

3 11 The License becomes null and void in case of suspension of the activity of the economic agent, liquidation of the enterprise and expiration of validity of the certificate on state registration. In these cases the economic agent has to free himself from all his obligations, stipulated in license and is entirely responsible for all consequences of these decisions in accordance with the effective legislation. He is obliged to inform the National Energy Regulatory Agency about this fact within 15 days

In case the economic agent reorganises his activity, changes its title, operates with another data, compared to those stipulated in the license, he is obliged to submit an application for substituting the obtained license with a new one within 15 days. Until the issuance of the new license the applicant develops his activity on the basis of his previous license

3 12 In case of licence's loss, the applicant is issued a new duplicate of license free of charge, after the presentation of appropriate declaration and publication of an appropriate announcement in mass media

3 13 In case there is a decision to refuse the License issuance, ANRE shall give a written notice to the applicant within 3 days after the approval of the decision. The notice will include basic reasons the license was not issued

As basic reasons to refuse the license issuance could be

- the documents presented by the applicant contain non-authentic distorted data,
- detection, through expertise, the non-compliance or the lack of necessary conditions to develop license conditions (lack of normative documents, technical and technological conditions, sanitary and hygienic conditions, necessary conditions to secure the life and health of people, the lack of necessary qualification (special training) of specialists (employees))

3 14 The economic agent can submit a new application for license issuance after the fulfilment of all requirements, mentioned in the letter of response for the first application

3 15 The applicants, which were twice denied by ANRE, can appeal and contest its decision in the Court in established manner

3 16 The enterprises existing on the energy market on the date of approval of this Regulation should obtain the license in a compulsory way according to this Regulation, with the aim of performing their previous activity

IV PROCEDURES TO BE USED IN CASE OF BREACH OF LICENSE CONDITIONS

4 1 The National Energy Regulatory Agency is authorised to perform the control over the fulfilment by the economic agents of license conditions regarding the production, transportation, distribution, storage and gas supply

4 2 In case of non-compliance or breach of license conditions, ANRE shall give a written notice to licensee regarding the breach of conditions stipulated in the license. The written notice will contain detected violations, which have to be eliminated within 10 days

4 3 In case the licensee fails to eliminate detected breaches or to reply to the written notice regarding the breach of license conditions within 10 days, ANRE shall suspend the license action and shall initiate proceeding on licensee's revocation,

4 4 In case the licensee disagrees with ANRE over the conclusions on the breach of license conditions, ANRE shall initiate an investigation to review in detail above problem. In case, on the basis of the results of the investigation, which must permit participation of all interested parties, including public and mass media, ANRE detects the breach of license conditions, it is entitled to suspend or cancel the issued licenses

4 5 In case ANRE considers that licensee's actions or inaction endanger public health and security or it may result in serious damages to other real estate, ANRE is entitled to oblige the licensee to undertake urgent measures to eliminate detected danger (notwithstanding the investigation is not finalised)

4 6 ANRE shall present in written form its decision regarding the breach of license conditions, setting forth the factual basis and reasons for its conclusions and recording the votes of its Council Members and any concurring or dissenting opinions of any Member or other interested party

4 7 ANRE shall provide the licensee and other interested parties with a copy of its decision within a week from its approval

4 8 National Energy Regulatory Agency shall cancel the license issued to an economic agent in the following cases

- the economic agent fails to respect license conditions,
 - the economic agent fails to pay taxes,
- in other cases, provided by the effective legislation of the Republic of Moldova

The economic agent and the fiscal inspection is informed about the decision to suspend or withdrawn the license within 10 days after the approval of such a decision

After the elimination of conditions, which caused the suspension of license activities suspension, the license is re-enacted and the economic agent can continue his activity The economic agent and the central state fiscal inspection of the Republic of Moldova shall be informed about this decision within 7 days from the date of its approval

4 9 In case the investigations prove that licensee has violated license conditions, ANRE shall issue an order regarding the elimination of detected violations The licensee is obliged to conform to license conditions within a week after the receiving of such an order Otherwise ANRE shall cancel the License

4 10 ANRE's decisions regarding the cancellation or suspension of the license can be appealed to the Court

V REGULATORY TAXES AND COLLECTION PROCEDURES

5 1 In accordance with the effective legislation the National Energy Regulatory Agency will collect each year regulatory fees from all license holders to form its annual budget, approved by the Minister of Finance At he request of ANRE, the Ministry of Economy and Reforms and the Ministry of Finance determine the fees for licenses Funds received from license issuance and annual fees applied to license holders shall be at ANRE disposal in accordance with the provision of the Law on State Budget

VI FINAL CONDITIONS

6 1 All ANRE decisions regarding the issuance of licenses, their application, the introducing of amendments into Licenses and into this Regulations, as well as license suspension or cancellation shall be approved at the opened meetings of ANRE

6 2 Five days prior to a scheduled public meeting ANRE should give written notice to legal or physical entities that have expressed their interest in participating to the examination of the problem under consideration Members of the consumers associations, public organisations and representatives of mass media are to be informed about the meeting through an announcement in the press or on radio or television Above notices should contain information on the date, time and place of the meeting, its subject, agenda and purpose, as well as on main participating parties

6 3 Minutes of official meetings of ANRE concerning the applications for license issuance, together with all related documents, should be kept in ANRE archive

Co-ordinated

Ministry of Economy and Reforms of the
Republic of Moldova

“ _____ ” _____ 199_
_____ I Sturza

Ministry of Finance
of the Republic of Moldova

“ _____ ” _____ 199_
_____ A Arapu

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THE REPUBLIC OF MOLDOVA

National Energy Regulatory Agency

LICENSE CONDITIONS
For
PRODUCTION OF NATURAL GAS

Series _____ License No _____

Issued To

(Licensee)

1 General Provisions

- 1 1 This License, including these License Conditions, is issued pursuant to the effective laws and governmental decrees of the Republic of Moldova
- 1 2 If any condition of these License Conditions becomes null and void or otherwise ceases to be effective, that condition shall be deleted from the License Conditions and the remaining conditions shall continue in full force and effect
- 1 3 The License cannot be transferred to another party without the prior written approval of the ANRE
- 1 4 Licensee shall hold only one license for the Production of Natural Gas
- 1 5 The following words and phrases used in the License, these License Conditions and Annexes, when capitalized, shall have the meanings set forth below

Licensed Activity	Activities necessary for, and directly related to, the production of natural gas at market, unregulated tariffs
Regulations and Rules	Standards, codes, regulations, orders and other prescriptions in force established by laws or other official documents

2 Carrying out the Licensed Activity

- 2 1 Licensee is authorized by this License to conduct the Licensed Activity anywhere within the boundaries of the Republic of Moldova utilizing the natural gas production facilities specified in Annex A Licensee shall notify the ANRE of the termination of any natural gas production facilities or the commissioning of new ones, introducing the respective amendments in Annex A

2 Licensee shall not engage in any form of monopoly activity prohibited by the laws of the Republic of Moldova, or Regulations and Rules adopted by the ANRE

3 Obligations of Licensee

1 Reporting

3 1 1 Licensee shall submit to the ANRE, upon its request and in the form and within the time set by the ANRE, information, including information provided to Government entities, that is necessary in the conduct of its authorized regulatory responsibilities

3 1 2 Licensee shall notify the ANRE within 10 days of any change in
a) address,
b) description of facilities,

3 1 3 Communication between Licensee and the ANRE pursuant to or in connection with, this License shall be given in writing and executed by a duly authorized officer, or his duly designated representative, of Licensee or the ANRE, respectively

3 2 Information provided to the ANRE by Licensee shall be considered public unless, upon specific request of Licensee, the ANRE by decision ascertains that certain information is of a proprietary nature and that the public interest served by disclosure would not justify or offset the potential commercial harm to Licensee

3 3 Licensee shall comply with the legislation in force of the Republic of Moldova, all governmental decrees and Regulations and Rules

3 4 Licensee shall pay regulatory fees on a regular and continuous basis during the term of this License as determined by the ANRE in accordance with effective Regulations and Rules established by the ANRE

3 5 Tariffs for services provided by Licensee shall be determined by Licensee and are not subject to regulation or approval by the ANRE

3 6 Licensee shall promptly pay for all services, provided by licensees from the natural gas market, in accordance with the terms of concluded contracts or agreements. The ANRE may suspend or terminate this License if Licensee fails to comply with this Condition

3 7 Licensee shall comply with the Rules and Regulation for Natural Gas System Operation, developed by the Licensee for Operation of Natural Gas Transportation Network and approved by ANRE

3 8 In the event of a disagreement between Licensee and a consumer or another licensee, involving a matter within the jurisdiction of the ANRE which cannot be resolved through negotiation, the matter of disagreement shall be analyzed by the ANRE in order to make a decision within the scope of its authority

3 9 A decision of the Agency may be appealed to Court according to effective legislation

3 10 Tariffs and contracts for the sale of natural gas by Licensee to an entity which holds a License for Supply of Natural Gas at Regulated Tariffs or for any other regulated sale of natural gas comprised

6 License Suspension and Termination

6.1 The ANRE may suspend or terminate the License on its own initiative, in accordance with its Regulations and Rules in case

- a) Licensee requests the withdrawal of the license,
- b) Licensee violates the License Conditions,
- c) Licensee violates the present Act and the legislation in force in the performance of its activity,
- d) Licensee is declared bankrupt and is unable to perform its obligations,
- e) Licensee obtained the license fraudulently

National Energy Regulatory Agency

**LICENSE
For
OPERATION OF NATURAL GAS TRANSPORTATION NETWORK**

Series _____ License Number _____
Effective Date _____

License Issued To _____
[Name and Legal Address]

Fiscal Code _____
Registration Certificate _____
[Series, Number, Place of Registration]

Under the authority granted to it by the Laws of the Republic of Moldova, the National Energy Regulatory Agency (ANRE) grants this License to perform the activity of transportation of natural gas (TNG) to the above-named Company, hereinafter "Licensee", subject to the License Conditions attached to this License and made an integral part hereof. This License is effective as of the date above written and will continue in effect for a period of 25 years up to the moment it is terminated by the ANRE in accordance with the License Conditions.

General Director _____

[Seal of the ANRE]

Distribution Network (DN)	A system consisting of high, medium and low pressure gas pipelines, other equipment and distribution points situated downstream from the distribution station and upstream from the connection point that serve in the aggregate the purpose of distribution of a supply of gas to the connection points
Funds Administration Program	A set of procedures and rules agreed by all signed parties, which are established in order to manage the financial flows and to introduce an efficient mechanism of payment for natural gas within the natural gas system of the Republic of Moldova
Fund Administrator	Legal entity engaged for realization of the Funds Administration Program
Licensed Activity	Activities necessary for, and directly related to, the operation of TNGN facilities used for transportation and dispatch of natural gas from suppliers to consumers as well as from some suppliers to suppliers
License for Supply of Natural Gas at Regulated Tariffs	A license issued by the ANRE authorizing the licensee to provide a supply of natural gas to consumers within a fixed geographic area at tariffs regulated by the ANRE
Performance Agreement	An agreement between Licensee and the ANRE which establishes incentives and penalties related to the measurable performance by Licensee of specific actions which are designed to improve the efficiency and effectiveness of its Licensed Activity
Regulations and Rules	Standards, codes, regulations, orders and other prescriptions in force established by Laws or other official documents
Transportation Network (TN)	A system consisting of high pressure gas pipelines, stations for compression, distribution and measurement that serve in the aggregate the purpose of gas transportation
TN Tariff	Tariff that Licensee may charge for the use of its TN facilities by natural gas suppliers as set out in Annex B and approved by the ANRE
Service Cost Calculation Methodology	Procedures for the calculation of charges for costs incurred by Licensee for connections to its TN facilities or for other specific services provided to producers, suppliers and consumers for which compensation is not provided in the TN Tariff

2 Carrying out the Licensed Activity

- 2.1 Licensee is authorized by this License to conduct the Licensed Activity utilizing the TN facilities specified in Annex A
- 2.2 Licensee shall prepare draft Regulations and Rules for Natural Gas System Operation designed to maintain balance, and adequate pressure in the Transportation Network within the territory of the Republic of Moldova. The Regulations and Rules shall comprise provisions concerning
 - a) assurance of the gas system security and reliability, and quality of provided services,
 - b) conduct of licensees involved in the activity of the gas system

The Licensee shall allow for broad participation by gas system Licensees and other participants in the gas system in the development of the draft Regulations and Rules for Natural Gas System Dispatch. The draft Regulations and Rules resulting from this process and proposed for adoption by the Licensee, together with any dissenting view of other participants, shall be submitted to the ANRE for its consideration, review and final decision. The ANRE shall conduct public hearings and shall invite presentation of opinions on Licensee's draft by interested parties, including consumers. After consideration of all the facts and arguments presented, the ANRE shall approve the Regulations and Rules for Natural Gas System Operation, that it finds most appropriately balance the interests of all participants in the gas system, including consumers, and that are consistent with ANRE's statutory responsibilities and the Laws of the Republic of Moldova. ANRE will issue its findings and the order adopting the final Regulations and Rules for Natural Gas System Operation in writing.

- 2.3 To improve the operation of the gas system, the Licensee shall periodically, but no less than every three years, conduct a review of effective Regulations and Rules for Natural Gas System Operation, observing the procedure set forth in Paragraph 2.2 and report its finding and recommendations to ANRE.
- 2.4 Licensee shall comply with the Rules and Regulations for Natural Gas System Operation approved by ANRE.
- 2.5 Licensee shall not impede, prevent or attempt to prevent other licensees or potential competitors from engaging in or entering
 - (a) the natural gas business in the Republic of Moldova, or
 - (b) the business of importing or exporting natural gas to or from the Republic of Moldova unless Licensee is directed otherwise by Law or applicable Government Decree.

Licensee shall not grant any privileges to a participant in the gas industry unless such privileges are also made available to all similar legitimate participants in the gas industry.

- 2.6 Licensee shall not engage in Cross Subsidies.
- 2.7 Licensee shall not engage in any form of monopoly activities prohibited by the Laws of the Republic of Moldova, or Regulations and Rules adopted by the ANRE.
- 2.8 Each twelve months after the Effective Date, Licensee shall send a written statement to the ANRE, in a form specified by the ANRE, certifying that Licensee has complied with the provisions of Paragraphs 2.5, 2.6 and 2.7 during the previous twelve months period. The ANRE may at any time relieve Licensee of this obligation either temporarily or permanently by written notice.
- 2.9 Licensee shall perform the Licensed Activity consistent with principles of economic efficiency and the objective of achieving lowest costs.
- 2.10 The Licensee shall not engage in other activities, which impede or may impede the proper performance of Licensed Activity. Licensee shall inform ANRE before undertaking any activity, other than the Licensed Activity. ANRE may prohibit Licensee from performing any activity, other than the Licensed Activity, or impose conditions on performance of such activity, as necessary to protect the interests of consumers.

- c) if Licensee is required or permitted to disclose the information to comply with these License Conditions, an order of the ANRE, or any applicable Laws, or
- d) if the information must be disclosed in the normal course of performing Licensed Activity

3 2 2 Licensee shall ensure that any Associated Business does not use any information in Licensee's possession to gain an unjustified competitive advantage, and shall ensure that it does not disclose any information to any other person (including those of another Associated Business) that could enable that person to obtain any kind of unjustified commercial advantage

3 2 3 Licensee shall develop and submit to the ANRE procedures for ensuring compliance with Paragraphs 3 2 1 and 3 2 2 Upon the request of the ANRE Licensee shall undertake any necessary step to safeguard the confidential information in Licensee's possession and to submit to the ANRE reports concerning the observance of the obligations stipulated in Paragraphs 3 2 1 and 3 2 2

3 3 Information provided to the ANRE by Licensee shall be considered public unless, upon specific request of Licensee, the ANRE by decision finds that certain information is of a proprietary nature and that the public interest served by disclosure would not justify or offset the potential commercial harm to Licensee

3 4 Upon the ANRE request Licensee shall prepare and submit to the ANRE programs for the development of the natural gas system to assure future access to TN and meet the demand for transportation of natural gas for all licensees and consumers These programs shall include recommendations regarding the necessity to change the capacity of TN

3 5 Licensee shall develop and promote policies and programs to achieve a high level of quality and reliability of TN services in accordance with the respective Regulations and Rules adopted by the ANRE

3 6 Licensee shall all necessary measures to increase the operational and economic efficiency of the Licensed Activity in order to assure the quality and reliability of delivered services for the benefit of consumers Upon request of the ANRE Licensee agrees to enter into Performance Agreements with the ANRE pursuant to the relevant Regulations and Rules adopted by the ANRE from time to time

3 7 Increase or Decrease in TN Capacity

3 7 1 Licensee shall promptly notify the ANRE of any circumstances, which lead to changes in the capacity of TN facilities, identified in Annex A, for a period exceeding 30 days Any changes in available transportation capacity, except for temporary periods of less than twelve months duration, which exceeds 10% of the amount of transportation capacity identified in Annex A shall require an amendment to this License

3 7 2 Licensee shall immediately notify the ANRE and other interested parties about any dysfunction or emergencies which occur in its TN facilities, or facilities with which its system is interconnected, and keep the ANRE appraised of system conditions during the duration of any such events Licensee shall submit a written report describing the mentioned events, taken actions as well as the measures which will prevent or limit in the future the

suppliers threaten the safety, security, reliability or quality of operation of the Transportation Network or services provided to other consumers, production facilities, or suppliers or may prevent or impede the Licensee from complying with License Conditions

3 10 In the event of a disagreement between Licensee and a consumer or another licensee, involving a matter within the jurisdiction of the ANRE, which cannot be resolved through negotiation, the matter of disagreement shall analyzed by the ANRE in order to make a decision within the scope of its authority

3 11 A decision of the ANRE may be appealed to Court according to effective legislation

3 12 METERING

3 12 1 Licensee shall keep records of all natural gas flows at all connection points on the TN facilities for the time intervals determined by Regulations and Rules of the ANRE Where metering equipment is not adequate to record such data, or is inoperative or faulty, Licensee shall prepare estimates of such natural gas flows pursuant to effective Regulations and Rules

3 12 2 Licensee shall prepare detailed reports on sources of all natural gas flows during the designated time intervals, taking into account the aspects of the contracts between the licensees, maintenance of the system in good operational condition, emergency natural gas flows and all other matters required in accordance with the applicable Regulations and Rules adopted and approved by the ANRE

3 12 3 Licensee shall provide reports of natural gas flows for the designated time intervals to all licensees participating in the natural gas market as well as to the ANRE in accordance with the schedule provided for in Regulations and Rules

3 12 4 All financial obligations arising from the purchase and sale of natural gas shall be the responsibility of the respective natural gas suppliers and consumers

3 13 Licensee shall participate in Funds Administration Program, cooperate within this program and submit to Fund Administrator all information requested by it in order to implement the Funds Administration Program

3 14 Licensee shall comply with the Laws in force of the Republic of Moldova, all Government Decrees and Regulations and Rules

3 15 Licensee shall pay regulatory fees on a regular and continuous basis during the term of this License as determined by the ANRE in accordance with effective Regulations and Rules established by the ANRE

4 Control Over the Performance of Licensed Activity

4 1 The ANRE shall monitor Licensee's compliance with these License Conditions, review reports obtained from Licensee and, at any time, is entitled, to inspect Licensee's accounting records and may require a technical and /or accounting audit of Licensee's activities

4 2 Authorized representatives of the ANRE have the right of access to Licensee's premises, its equipment and documents to inspect the Licensed Activity Licensee shall provide any required assistance necessary for the ANRE during the said inspection

National Energy Regulatory Agency

**LICENSE
For
OPERATION OF NATURAL GAS TRANSPORTATION NETWORK**

License issued to

(Full name of Licensee)

Series _____

License No _____

Effective Date of the present Annex _____

ANNEX A

Authorized List of

NATURAL GAS TRANSPORTATION FACILITIES

Facility Name	Location	Rated Capacity	Description	Date Placed in Service
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This list shall be supplemented with detailed descriptions of the TN, including maps and schemes of TN that are sufficient to clearly define the boundary between Licensee's facilities and Distribution Networks

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National Energy Regulatory Agency

**LICENSE
For
OPERATION OF NATURAL GAS TRANSPORTATION NETWORK**

License issued to

(Full name of Licensee)

Series _____ License No _____
Effective Date of the present Annex _____

ANNEX B

NATURAL GAS TRANSPORTATION TARIFFS

NGTN Tariff	_____ per 1000 cubic meters
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95

THE REPUBLIC OF MOLDOVA
National Energy Regulatory Agency
LICENSE CONDITIONS
For
OPERATION OF NATURAL GAS STORAGE

Series _____

License No _____

Issued To

(Licensee)

1 General Provisions

- 1 1 This License, including these License Conditions, is issued pursuant to the effective Laws and Government Decrees of the Republic of Moldova
- 1 2 If any condition of these License Conditions becomes null and void or otherwise ceases to be effective, that condition shall be deleted from the License Conditions and the remaining conditions shall continue in full force and effect
- 1 3 The License cannot be transferred to another without the prior written approval of the ANRE
- 1 4 Licensee shall hold only one license for the Storage of Natural Gas
- 1 5 The following words and phrases used in the License, these License Conditions and Annexes, when capitalized, shall have the meanings set forth below

Distribution Network (DN)	A system consisting of high, medium and low pressure gas pipelines, other equipment and distribution points situated downstream from the distribution station and upstream from the connection point that serve in the aggregate the purpose of distribution of a supply of gas to the connection points
Licensed Activity	Activities necessary for, and directly related to, the operation of SNG facilities by Licensee
Regulations and Rules	Standards, codes, regulations, orders and other prescriptions in force established by Laws or other official documents
Storage of Natural Gas (SNG)	Pipelines, reservoirs, compressors and other facilities, which are used to inject, retain and withdraw natural gas
Transportation Network (TN)	A system consisting of high-pressure gas pipelines, stations for compression, distribution and measurement that serve in the aggregate the purpose of gas transportation

2 Carrying out the Licensed Activity

- 2 1 Licensee is authorized by this License to conduct the Licensed Activity anywhere within the boundaries of the Republic of Moldova utilizing the SNG facilities specified in Annex A
- 2 2 Licensee shall not engage in any form of monopoly activity prohibited by the Laws of the Republic of Moldova, or Regulations and Rules adopted by the ANRE

3 Obligations of Licensee

3 1 Reporting

3 1 1 Licensee shall submit to the ANRE, upon its request and in the form and within the time set by the ANRE, information, including information provided to Government entities, that is necessary in the conduct of its authorized regulatory responsibilities

3 1 2 Licensee shall notify the ANRE within 10 days of any change in

- a) address,
- b) description of facilities

3 1 3 Communications between Licensee and the ANRE pursuant to, or in connection with, this License shall be given in writing and executed by a duly authorized officer, or his designated representative, of Licensee or the ANRE, respectively

3 2 Information provided to the ANRE by Licensee shall be considered public unless, upon specific request of Licensee, the ANRE by decision finds that certain information is of a proprietary nature and that the public interest served by disclosure would not justify or offset the potential commercial harm to Licensee

3 3 Increase or Decrease in SNG Capacity

3 3 1 Licensee shall promptly notify the ANRE of any circumstances, which lead to changes in the capacity of SNG facilities capacity, identified in Annex A, in a manner that may significantly affect service to customers, for a period exceeding 30 days Any changes in available storage capacity, except for temporary periods of less than twelve months duration, which exceeds 10% of the amount of storage capacity identified in Annex A shall require an amendment to this License

3 3 2 Licensee shall immediately notify the ANRE and other interested parties about any dysfunctions or emergencies, which occur in its SNG facilities, or in facilities with which its system is interconnected, and keep the ANRE apprised of system conditions during the duration of any such events Licensee shall submit a written report describing the mentioned events, taken actions as well as the measures which will prevent or limit in the future the reoccurrence of such events and their severity and duration

3 3 3 Licensee shall inform the ANRE about the intention to reduce partially or totally the storage capacity of natural gas at least twelve months prior to execution of the intended reduction and

provide additionally a detailed explanation of the intended actions. The ANRE may relieve Licensee of this obligation in case the loss of capacity for storage of natural gas is due to catastrophic or extraordinary events beyond the control of Licensee.

- 3.3.4 Licensee shall notify the ANRE of its plans to construct new facilities.
- 3.4 Licensee shall comply with the effective Laws of the Republic of Moldova and with all Government Decrees and Regulations and Rules.
- 3.5 Licensee shall promptly pay for all services received from entities holding natural gas licenses in accordance with terms of contracts or agreements for such services. The ANRE may suspend or terminate this License if Licensee fails to comply with this License Condition.
- 3.6 The tariffs for services provided by Licensee shall be determined by Licensee and are not subject to regulation or approval by the ANRE.
- 3.7 Licensee shall comply with the Rules and Regulation for Natural Gas System Operation, developed by the Licensee for Operation of Natural Gas Transportation Network and approved by ANRE.
- 3.8 In the event of a disagreement between Licensee and a consumer or another licensee, involving a matter within the jurisdiction of the ANRE which cannot be resolved through negotiation, the matter of disagreement shall be analyzed by the ANRE in order to make a decision within the scope of its authority.
- 3.9 A decision of the Agency may be appealed to Court according to effective legislation.
- 3.10 Licensee shall pay regulatory fees on a regular and continuous basis during the term of this License as determined by the ANRE in accordance with effective Regulations and Rules established by the ANRE.

4 Control Over the Performance of Licensed Activity

- 4.1 The ANRE shall monitor Licensee's compliance with these License Conditions and review reports received from Licensee.
- 4.2 Upon the substantiated complaint of any third party or upon its own motion, the ANRE may initiate an investigation of Licensee's compliance with its License, including examination of Licensee's business practices with respect to the Licensed Activity.
- 4.3 If after investigation, the ANRE concludes that Licensee has failed to comply with one or more of its License Conditions, the ANRE may take such actions within its scope of authority as it shall deem appropriate in the circumstances to protect the interests of natural gas consumers.
- 4.4 Licensee is obliged to inform the ANRE of any violation of these License Conditions within one week from such violation becoming known to Licensee.
- 4.5 Licensee shall obey any decision issued by the ANRE, including the payment of fines imposed by the ANRE, in accordance with the Laws in force, with respect to violations of the License Conditions.

5 Amendment of License

5 1 The ANRE may amend the License Conditions in case the do not comply with

- a) the Laws in force of the Republic of Moldova,
- b) Decision of the Court

5 2 Within one year starting with the Effective Date, the ANRE may revise the License Conditions without seeking agreement of Licensee After providing an opportunity for all interested parties to express their opinion, in accordance with effective procedures, and giving careful consideration to all arguments presented, the ANRE will adopt necessary amendments to License Conditions Written notice of proposed amendments shall be delivered to Licensee 30 days prior to making such amendments effective

5 3 At any time either Licensee or the ANRE may propose any other amendments to Licensee Conditions, in addition to those stipulated in Paragraphs 5 1 and 5 2, by transmitting its proposal in writing, together with supporting arguments, to the other party The ANRE shall make the final decision only after taking into consideration the interests of consumers and other licensees Interested parties shall be informed in written form about the proposed amendments If the ANRE and Licensee come to agreement on such amendments, the License Conditions will be so amended Otherwise, the ANRE may appeal to Court

5 4 The amendments introduced into the License Conditions shall be published in the Monitorul Oficial 30 days before becoming effective

6 License Suspension and Termination

6 1 The ANRE may suspend or terminate the License on its own initiative, in accordance with its Regulations and Rules in case

- a) Licensee requests the withdrawal of the license,
- b) Licensee violates the License Conditions,
- c) Licensee violates the present Act and the legislation in force in the performance of its activity,
- d) Licensee is declared bankrupt and is unable to perform its obligations
- e) Licensee obtained the license fraudulently

THE REPUBLIC OF MOLDOVA
National Energy Regulatory Agency

LICENSE
For
OPERATION OF NATURAL GAS STORAGE

License issued to

(Full name of Licensee)

Series _____

License No _____

Effective Date of the present Annex _____

ANNEX A

Authorized List of

LICENSEE'S FACILITIES

Facility Name	Location	Rated Capacity	Description	Date Placed in Service

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National Energy Regulatory Agency
LICENSE
For
DISTRIBUTION OF NATURAL GAS

Series _____ License Number _____
Effective Date _____

License Issued To _____
[Name and Legal Address]

Fiscal Code _____
Registration Certificate _____
[Series, Number, Place of Registration]

Under the authority granted to it by the Laws of the Republic of Moldova, the National Energy Regulatory Agency (ANRE) grants this License, to perform the activity of distribution of natural gas (DNG), to the above-named Company, hereinafter "Licensee", subject to the License Conditions attached to this License and made an integral part hereof. This License is effective as of the date above written and will continue in effect for a period of 25 years up to the moment it is terminated by the ANRE in accordance with said License Conditions.

General Director _____

[Seal of the ANRE]

National Energy Regulatory Agency

LICENSE CONDITIONS
For
DISTRIBUTION OF NATURAL GAS

Series _____

License No _____

Issued To

(Licensee)

1 General Provisions

- 1 1 This License, including these License Conditions, is issued pursuant to the effective Laws and Government Decrees of the Republic of Moldova
- 1 2 If any condition of these License Conditions becomes null and void or otherwise ceases to be effective, that condition shall be deleted from the License Conditions and the remaining License Conditions shall continue in full force and effect
- 1 3 The License cannot be transferred to another party without the prior written approval of the ANRE
- 1 4 Licensee shall hold only one license for Distribution of Natural Gas
- 1 5 The following words and phrases used in the License, these License Conditions and Annexes, when capitalized, shall have the meanings set forth below

Associated Business	Any business which, directly or indirectly, in whole or in part 1 is owned by Licensee, or 2 owns Licensee, or 3 is owned by a company which is owned by Licensee
Authorized Territory	Geographically limited region, specified in Annex A to the present License, within which Licensee is authorized to perform the Licensed Activity
Cross Subsidies	Transfers of funds or allocations of costs within the accounts of Licensee or among Associated Businesses for financial support of one activity or business at the expense of another
Distribution Network (DN)	A system consisting of high, medium and low pressure gas pipelines, other equipment and distribution points situated downstream from the distribution station and upstream from the connection point that serve in the aggregate the purpose of distribution of a supply of gas to the connection points

- 2 5 Licensee shall not engage in any form of monopoly activity prohibited by the Laws of the Republic of Moldova or Regulations and Rules adopted by the ANRE
- 2 6 Each twelve months after the Effective Date, Licensee shall send a written statement to the ANRE, in a form specified by the ANRE, certifying that Licensee has complied with the provisions of Paragraphs 2 4 and 2 5 during the previous twelve months period The ANRE may at any time relieve Licensee of this obligation either temporarily or permanently by written notice
- 2 7 Licensee shall perform the Licensed Activity consistent with principles of economic efficiency and the objective of achieving lowest costs
- 2 8 The Licensee shall not engage in other activities, which impede or may impede the proper performance of Licensed Activity Licensee shall inform ANRE before undertaking any activity, other than the Licensed Activity ANRE may prohibit Licensee from performing any activity, other than the Licensed Activity, or impose conditions on performance of such activity, as necessary to protect the interests of consumers
- 2 9 Licensee shall inform the ANRE about the setting up of an Associated Business ANRE may impose conditions on the setting up of the Associated Business as necessary to protect Moldovan consumers
- 2 10 Licensee shall not impede, prevent or attempt to prevent other licensees or potential competitors from engaging in or entering
- (a) the natural gas business in the Republic of Moldova, or
 - (b) the business of importing or exporting natural gas to or from the Republic of Moldova unless Licensee is directed otherwise by Law or applicable Government Decree

Licensee shall not grant any privileges to a participant in the gas industry unless such privileges are also made available to all similar legitimate participants in the gas industry

3 Obligations of Licensee

3 1 Reporting

- 3 1 1 Licensee shall keep accounting records and prepare financial statements, which shall be kept separately for the Licensed Activity and any other activities engaged in by Licensee, in accordance with regulatory accounting rules and procedures adopted by the ANRE Licensee shall submit to the ANRE, upon its request and in the form and within the time set by the ANRE, other information, including information provided to Government entities, that is necessary to the ANRE in the conduct of its authorized regulatory responsibilities
- 3 1 2 Licensee shall allocate common expenses among its Licensed Activity and other types of activities on a reasonable basis in accordance with generally accepted business practices Licensee shall submit to the ANRE, upon its request, written documentation setting forth the basis for the allocation of common expenses as well as the results obtained
- 3 1 3 Licensee shall notify the ANRE within 10 days of any change in
- a) address,
 - b) description of facilities

3 1 4 Communication between Licensee and the ANRE pursuant to, or in connection with, this License shall be given in writing and executed by a duly authorized officer, or his duly designated representative, of Licensee or the ANRE, respectively

3 2 Use Of Information

3 2 1 Licensee shall ensure that any information obtained as a result of its Licensed Activity shall not be revealed to anyone, except for persons who perform Licensed Activity and who are authorized to receive such information, and also shall ensure that such information is not used for conducting any other activities, other than the Licensed Activity, except

- a) with the prior written consent of the person or business entity to whose affairs the information relates, or
- b) if the information is already known to the public, or
- c) if Licensee is required or permitted to disclose the information to comply with these License Conditions, an order of the ANRE, or any applicable Laws, or
- d) if the information must be disclosed in the normal course of performing Licensed Activity

3 2 2 Licensee shall ensure that any Associated Business does not use any information in Licensee's possession to gain an unjustified competitive advantage, and shall ensure that it does not disclose any information to any other person (including those of another Associated Business) that could enable that person to obtain any kind of unjustified commercial advantage

3 2 3 Licensee shall develop and submit to the ANRE procedures for ensuring compliance with Paragraphs 3 2 1 and 3 2 2 Upon the request of the ANRE Licensee shall undertake any necessary steps to safeguard the confidential information in Licensee's possession and to submit to the ANRE reports concerning the observance of the obligations stipulated in Paragraphs 3 2 1 and 3 2 2

3 3 Information provided to the ANRE by Licensee shall be considered public unless, upon specific request of Licensee, the ANRE by decision finds that certain information is of a proprietary nature and that the public interest served by disclosure would not justify or offset the potential commercial harm to Licensee

3 4 Licensee shall construct and maintain its Distribution Network system at a capacity that is adequate to meet the demands of all consumers within Authorized Territory by extending and upgrading its facilities as necessary

3 5 Licensee shall develop and promote policies and programs to achieve a high level of quality and reliability of distribution services in accordance with the respective Regulations and Rules adopted by the ANRE

3 6 Licensee shall take all necessary measures to improve the operational and economic efficiency of the Licensed Activity in order to assure the quality and reliability of the delivered services for the benefit of consumers Upon the request of the ANRE Licensee agrees to enter into Performance Agreements with the ANRE, pursuant to the relevant Regulations and Rules adopted by the ANRE from time to time

- 3 7 Licensee shall participate in Funds Administration Program, cooperate within this program and submit to Funds Administrator all information requested by it in order to implement the Funds Administration Program
- 3 8 Licensee, pursuant to the effective Laws of the Republic of Moldova, has the right to purchase land and property, and to perform construction works, complying with the Regulations and Rules
- 3 9 Licensee shall comply with the Laws in force of the Republic of Moldova, all-Government Decrees and Regulations and Rules
- 3 10 Licensee shall pay regulatory fees on a regular and continuous basis during the term of this License as determined by the ANRE in accordance with effective Regulations and Rules established by the ANRE
- 3 11 TDNG and other charges
- 3 11 1 The TDNG shall be regulated and approved by the ANRE Licensee shall adjust the TDNG for inflation in accordance with the methodology of tariff calculation approved by the ANRE
- 3 11 2 Licensee shall be entitled to charge fees based on the TDNG set out in Annex B The value of fees shall be determined on the basis of the TDNG and quantity of natural gas registered by the meters installed at the borders between the Distribution Network and the natural gas network of consumers connected to the Distribution Network
- 3 11 3 The TDNG approved by the ANRE shall be set to provide Licensee with
- a) sufficient revenue to cover reasonable levels of costs and profits, and
 - b) incentives to reduce costs and operate efficiently
- 3 11 4 The ANRE may revise the TDNG at any time during the first year after the Effective Date, annually during the next two years, and subsequently on each third anniversary of the Effective Date
- 3 11 5 During the first year after the Effective Date, Licensee has the right to appeal to the ANRE to adjust the TDNG for good cause shown
- 3 11 6 During the first two years after the Effective Date, Licensee shall propose to the ANRE to change the TDNG to improve the relationship between the pricing structure and actual costs of providing distribution services
- 3 11 7 Licensee shall develop a Service Cost Calculation Methodology Service Cost Calculation Methodology as well as its amendments shall be considered effective only after their approval by the ANRE The charges established for additional services will be determined in order to recover the reasonable costs and profits of providing such services
- 3 11 8 ANRE shall publish in mass media the following materials within five days prior to becoming effective
- a) DNG Tariffs and Natural Gas Losses Factor,
 - b) Service Cost Calculation Methodology,
 - c) Amendments to Service Cost Calculation Methodology

Published materials shall contain information to enable any person to clearly understand the sum to be paid, structure of TDNG and other charges. A copy of the published notices shall be provided to the Licensee.

3 11 9 Licensee is entitled to demand reasonable payment security from suppliers and consumers in the conduct of its Licensed Activity, in accordance with any applicable ANRE Rules and Regulations.

3 11 10 Licensee may disconnect a consumer for non-payment of gas bills, in accordance with any applicable ANRE Rules and Regulations. Licensee may not disconnect a consumer for non-payment of gas bills to a licensee for independent natural gas supply. Licensee shall reconnect a consumer upon settlement of outstanding bills, in accordance with any applicable ANRE Rules and Regulations.

3 12 Access to Distribution Network

3 12 1 Licensee shall provide access, on a fair, reasonable, and non-discriminatory basis, to licensed natural gas suppliers, and consumers, to connect to, and to use Distribution Network facilities.

3 12 2 Within 30 days of receiving a request from a consumer or a licensed natural gas supplier, Licensee shall provide the applicant with the information concerning connections to its distribution facilities or other services, including detailed information on any technical conditions, services and necessary additional permits, requirements for natural gas metering, data processing, payments, and terms and conditions of agreements. Licensee may charge additional fees for rendering such information, in accordance with Paragraph 3 11 7.

For appropriate reasons, Licensee may apply to the ANRE, within 15 days after receiving the relevant request, to extend the normal 30 days period of response.

3 12 3 Within 30 days after receiving an application for connection to, or use of, its Distribution Network facilities, Licensee shall send to the applicant the draft of the respective agreement.

3 12 4 Licensee shall not enter into any agreement, which would lead to violation of the License Conditions.

3 12 5 Licensee shall require consumers and licensed natural gas suppliers to pay applicable connection fees determined in accordance with Paragraph 3 11 7. Licensee shall give consumers the possibility to pay applicable connection charges either in a lump sum payment of the full amount or monthly payments of equal parts during a period stipulated in the connection agreement.

3 12 6 Licensee shall not discriminate unreasonably against any physical persons or legal entity in the conduct of the Licensed Activity.

3 12 7 Licensee may suspend its services provided in accordance with this License for any period during which the action or inaction of one or more consumers or natural gas suppliers threaten the safety, security, reliability or quality of operation of the Distribution Network.

or services provided to other consumers or suppliers to other consumers or may prevent or impede the performance of the Licensed Activity by Licensee

- 3 13 Licensee shall comply with the Rules and Regulation for Natural Gas System Operation, developed by the Licensee for Operation of Natural Gas Transportation Network and approved by ANRE
- 3 14 In case of a disagreement between Licensee and a consumer or another licensee, involving a matter within the jurisdiction of the ANRE, which cannot be resolved through negotiation, the matter of disagreement shall be analyzed by the ANRE in order to make a decision within the scope of its authority
- 3 15 A decision of the Agency may be appealed to Court according to effective legislation
- 3 16 Natural Gas Metering and Natural Gas Losses Factor
- 3 16 1 Licensee shall provide reading of its commercial meters located at the interconnection points into the geographically limited region, specified in Annex A to the present License
- 3 16 2 Licensee shall provide meter readings of customers located in the territory of the Licensed Activity for all suppliers, including independent natural gas suppliers, on a non-discriminatory and confidential basis and shall be compensated for the relevant costs from the DNG Tariffs
- 3 16 3 Licensee shall
- a) maintain a system for estimating daily consumption of natural gas by those consumers for whom actual daily meter readings are not obtained, and
 - b) provide determination of daily natural gas consumption for customers served by independent natural gas suppliers by measurement, estimation of load consumption or by any other acceptable method, and
 - c) obtain the ANRE's approval of its methods and procedures used for determination and estimation of daily natural gas consumption
- 3 16 4 The ANRE is entitled to revise the Natural Gas Losses Factor, set out in Annex B, every three years after the Effective Date. The revision of the Natural Gas Losses Factor may take place at any other time, if there has been reached an agreement between the ANRE and Licensee. The ANRE may propose changes to the Natural Gas Losses Factor based on its review of technical calculations, plans of Licensee and any other data relevant to the Licensed Activity
- 3 16 5 In accordance with Paragraph 3 11 6, Licensee shall, within two years of the Effective Date, propose to the ANRE to adjust the Natural Gas Losses Factor consistent with changes to the TDNG
- 3 16 6 Licensee shall separately determine the amount of natural gas delivered to its Distribution Network by the independent suppliers of natural gas, taking into account the determinations of natural gas consumption, for time intervals determined by Regulations and Rules adopted by the ANRE, for customers served by independent natural gas

suppliers made in accordance with Paragraph 3.15.3, and applying the Natural Gas Losses factor, set out in Annex B. Licensee shall report daily this information to interested parties as required by Regulations and Rules.

3.17 Licensee shall inform the ANRE twelve months in advance about its intention to make major changes in its natural gas network, if these changes could result in a reduction in network capacity or a decrease in Distribution Network reliability. Upon the request of the ANRE, Licensee shall submit to the ANRE economic and technical substantiation of its intended actions.

4 Control Over the Performance of Licensed Activity

4.1 The ANRE shall monitor Licensee's compliance with these License Conditions, review reports obtained from Licensee and, at any time, is entitled to inspect Licensee's accounting records and may require a technical and /or accounting audit of Licensee's activities.

4.2 Authorized representatives of the ANRE have the right of access to Licensee's premises, its equipment and documents to inspect the Licensed Activity. Licensee shall provide any required assistance necessary for the ANRE during the said inspection.

4.3 Upon the substantiated complaint of any third party or upon its own motion, the ANRE may initiate an investigation of Licensee's compliance with its License, including examination of Licensee's business practices with respect to the Licensed Activity.

4.4 If after investigation, the ANRE concludes that Licensee has failed to comply with one or more of its License Conditions, the ANRE may revise Licensee's tariffs and/or take other actions within its scope of authority in order to protect the interests of natural gas consumers.

4.5 Licensee shall inform the ANRE of any violation of these License Conditions within one week from such violation becoming known to Licensee.

4.6 Licensee shall obey any decision issued by the ANRE, including the payment of fines imposed by the ANRE, in accordance with the Laws in force, with respect to violations of the License Conditions.

5 Amendment of License

5.1 The ANRE may amend the License Conditions in case they do not comply with
a) the Laws in force of the Republic of Moldova,
b) decision of the Court.

5.2 Within one year starting with the Effective Date the ANRE may revise the License Conditions without seeking agreement of Licensee. After providing an opportunity for all interested parties to express their opinion, in accordance with effective procedures, and giving careful consideration to all arguments presented, the ANRE will make the relevant amendments to the License Conditions. Written notice of proposed amendments shall be delivered to Licensee 30 days prior to making any such amendments effective.

- 5.3 At any time either Licensee or the ANRE may propose any other amendments to License Conditions, in addition to those stipulated in Paragraphs 5.1 and 5.2, by transmitting its proposal in writing, together with supporting arguments, to the other party

The ANRE shall make the final decision only after taking into consideration the interests of consumers and other licensees. Interested parties shall be informed in written form about the proposed amendments. If the ANRE and Licensee come to agreement on such amendments, the License Conditions shall be so amended. Otherwise the ANRE may appeal to Court.

- 5.4 The amendments introduced into the License Conditions shall be published in the Monitorul Oficial 30 days before becoming effective.

6 License Suspension and Termination

- 6.1 The ANRE may suspend or terminate the License on its own initiative, in accordance with its Regulations and Rules in case
- a) Licensee requests the withdrawal of the license,
 - b) Licensee violates the License Conditions,
 - c) Licensee violates the present Act and the legislation in force in the performance of its activity,
 - d) Licensee is declared bankrupt and is unable to perform its obligations,
 - e) Licensee obtained the license fraudulently.
- 6.2 If Licensee changes its legal status or the shareholder controlling interest is changed without a special authorization from the ANRE, the License becomes null and void and the successor of Licensee shall apply for a new license in compliance with the ANRE's procedure for license issuance.

National Energy Regulatory Agency

**LICENSE
For
DISTRIBUTION OF NATURAL GAS**

License issued to

(Full name of Licensee)

Series _____ License No _____
Effective Date of the present Annex _____

**ANNEX A
AUTHORIZED TERRITORY FOR
LICENSED ACTIVITY**

[Description of territory in which Licensee is authorized to conduct the Licensed Activity and detailed maps of the geographic area and Distribution Network. The Authorized Territory shall be the geographic area adjacent to the Distribution Network facilities that are providing service to consumers.]

National Energy Regulatory Agency

**LICENSE
For
DISTRIBUTION OF NATURAL GAS**

License issued to

(Full name of Licensee)

Series _____ License No _____
Effective Date of the present Annex _____

ANNEX B

**Tariffs for Distribution of Natural Gas and Natural Gas Losses
Factor**

Tariff for Distribution of Natural Gas	Annual Natural Gas Losses Factor
_____ per 1000 cubic meters	_____ %

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THE REPUBLIC OF MOLDOVA

National Energy Regulatory Agency

**LICENSE
For
SUPPLY OF NATURAL GAS AT REGULATED TARIFFS**

Series _____ License Number _____
Effective Date _____

License Issued To _____
[Name and Legal Address]

Fiscal Code _____
Registration Certificate _____
[Series, Number, Place of Registration]

Under the authority granted to it by the Laws of the Republic of Moldova, the National Energy Regulatory Agency (ANRE) grants this License for supply of natural gas at regulated tariffs (SRT) to the above-named Company, hereinafter "Licensee", subject to the License Conditions attached to this License and made an integral part hereof. This License is effective as of the date above written and will continue in effect for a period of 7 years up to the moment it is terminated by the ANRE in accordance with the License Conditions.

General Director _____

[Seal of the ANRE]

THE REPUBLIC OF MOLDOVA
National Energy Regulatory Agency
LICENSE CONDITIONS
For
SUPPLY OF NATURAL GAS AT REGULATED TARIFFS

Series _____

License No _____

License Issued To

(Licensee)

1 General Provisions

- 1.1 This License, including these License Conditions, is issued pursuant to effective Laws and Government Decrees of the Republic of Moldova
- 1.2 If any condition of these License Conditions becomes null and void or otherwise ceases to be effective, that condition shall be deleted from the License Conditions and the remaining License Conditions shall continue in full force and effect
- 1.3 The License cannot be transferred to another party without the prior written approval of the ANRE
- 1.4 Licensee shall hold only one license for Supply of Natural Gas at Regulated Tariffs
- 1.5 The following words and phrases used in the License, these License Conditions and Annexes, when capitalized, shall have the meanings set forth below

Associated Business	Any business which, directly or indirectly, in whole or in part, <ul style="list-style-type: none">1 Is owned by Licensee, or2 Owns the License, or3 Is owned by a company, which is owned by Licensee
Cross Subsidies	Transfers of funds or allocations of costs within the accounts of Licensee or among Associated Businesses for financial support of one activity or business at the expense of another
Distribution Network (DN)	A system consisting of high, medium and low pressure gas pipelines, other equipment and distribution points situated downstream from the distribution station and upstream from the connection point that serve in the aggregate the purpose of distribution of a supply of gas to the connection points
Fund Administrator	Legal entity engaged for realization of the Funds Administration

	Program
Funds Administration Program	A set of procedures and rules agreed by all signed parties, which are established in order to manage the financial flows and to introduce an efficient mechanism of payment for natural gas within the natural gas system of the Republic of Moldova
Licensed Activity	Activities necessary for, and directly related to, providing a supply of natural gas at regulated tariffs by Licensee
License for Supply of Natural GAS at Regulated Tariffs	A license issued by ANRE authorizing the licensee to provide a supply of natural gas to consumers within a fixed geographic area at tariffs regulated by the ANRE
Natural Gas Losses Factor	Estimated natural gas losses in the natural gas network expressed in percent of the total amount of natural gas delivered into the DN within the relevant accounting period
Performance Agreement	An agreement between Licensee and the ANRE which establishes incentives and penalties related to the measurable performance by Licensee of specific actions which are designed to improve the efficiency and effectiveness of its Licensed Activity
Purchase Price of Natural Gas Regulations and Rules	Price paid by Licensee for natural gas supplied to consumers Standards, codes, regulations, orders and other prescriptions in force established by Laws or other official documents
Retail Tariff	Tariff paid by consumers for consumed natural gas
Service Cost Calculation Methodology	Procedures for the calculation of charges for costs incurred by Licensee for providing additional services to consumers for which compensation is not provided in the Supply Tariff
Supply at Regulated Tariffs (SRT)	The supply of natural gas to retail consumers at regulated prices by purchasing natural gas from producers and wholesale suppliers and arranging for the delivery of natural gas over high, intermediate and low pressure facilities to the consumer's premises
Supply Tariff	Tariff that the Licensee may charged for SRT service as set out in Annex B and approved by the ANRE
Tariff for Distribution of Natural Gas (TDNG)	Tariff that a licensee who holds the Licensee for Distribution of Natural Gas may charge for the use of its Distribution Network facilities by natural gas suppliers as approved by the ANRE
Transportation Network (TN)	A system consisting of high pressure gas pipelines, stations for compression, distribution and measurement that serve in the aggregate the purpose of gas transportation

2 Carrying out the Licensed Activity

- 2.1 Licensee is authorized by this License to conduct the Licensed Activity only within the boundaries of the geographically limited region, specified in Annex A to the present This right is granted exclusively to it Licensee is prohibited from engaging in any other natural gas supply activity within the geographically limited region, specified in Annex A to the present
- 2.2 Licensee shall not collaborate in any way with other licensees in preparing and negotiating with the ANRE matters related to or affecting natural gas tariffs or other charges applied to consumers, except

as may be expressly permitted by Regulations and Rules adopted by the ANRE, or collude in any way regarding the Licensed Activity to the detriment of existing or potential suppliers or consumers

- 2.3 Licensee shall not impede, prevent or attempt to prevent other licensees or potential competitors from engaging in or entering
- (a) the natural gas business in the Republic of Moldova, or
 - (b) the business of importing or exporting natural gas to or from the Republic of Moldova unless Licensee is directed otherwise by Law or applicable Government Decree

Licensee shall not grant any privileges to a participant in the gas industry unless such privileges are also made available to all similar legitimate participants in the gas industries

- 2.3 Licensee shall not engage in Cross Subsidies

- 2.4 Licensee shall not engage in any form of monopoly activity prohibited by the Laws of the Republic of Moldova or Regulations and Rules adopted by the ANRE

- 2.5 Each twelve months after the Effective Date, Licensee shall send a written statement to the ANRE, in a form specified by the ANRE, certifying that Licensee has complied with the provisions of Paragraphs 2.3, 2.4 and 2.5 during the previous twelve months period. The ANRE may at any time relieve Licensee of this obligation either temporarily or permanently by written notice

- 2.6 Licensee shall perform the Licensed Activity consistent with principles of economic efficiency and the objective of achieving lowest costs. Licensee shall purchase natural gas for Supply at Regulated Tariffs at the lowest price available at the time it enters any natural gas purchase arrangement. Licensee shall always be ready to demonstrate to the ANRE that its activity is in compliance with the License Conditions

- 2.7 The Licensee shall not engage in other activities, which impede or may impede the proper performance of Licensed Activity. Licensee shall inform ANRE before undertaking any activity, other than the Licensed Activity. ANRE may prohibit Licensee from performing any activity, other than the Licensed Activity, or impose conditions on performance of such activity, as necessary to protect the interests of consumers

- 2.8 Licensee shall inform the ANRE about the setting up of an Associated Business. ANRE may impose conditions on the setting up of the Associated Business as necessary to protect Moldovan consumers

3 Obligations of Licensee

3.1 Reporting

- 3.1.1 Licensee shall keep accounting records and prepare financial statements, which shall be kept separately for the Licensed Activity and any other activities engaged in by Licensee, in accordance with regulatory accounting rules and procedures adopted by the ANRE. Licensee shall submit to the ANRE, upon its request and in the form and within the time set by the ANRE, any information, including information provided to Government entities, that is necessary in the conduct of its authorized regulatory responsibilities

- 3 1 2 Licensee shall allocate common expenses between Licensed Activity and other types of activities on a reasonable basis in accordance with generally accepted business practices. Licensee shall submit to the ANRE, upon its request, written documentation setting forth the basis for the allocation of common expenses as well as the results obtained.
- 3 1 3 Licensee shall notify the ANRE within 10 days of any change in
- a) address,
 - b) description of facilities
- 3 1 5 Communication between Licensee and the ANRE pursuant to, or in connection with, this License shall be given in writing and executed by a duly authorized officer, or his duly designated representative, of Licensee or the ANRE, respectively.
- 3 2 Use Of Information
- 3 2 1 Licensee shall ensure that any information obtained as a result of its Licensed Activity shall not be revealed to anyone, except for persons who perform Licensed Activity and who are authorized to receive such information, and also shall ensure that such information is not used for conducting any other activities, other than the Licensed Activity, except
- a) with the prior written consent of the person or business entity to whose affairs the information relates, or
 - b) if the information is already known to the public, or
 - c) if Licensee is required or permitted to disclose the information to comply with these License Conditions, an order of the ANRE, or any applicable Laws, or
 - d) if the information must be disclosed in the normal course of performing Licensed Activity
- 3 2 2 Licensee shall ensure that any Associated Business does not use any information in Licensee's possession to gain an unjustified competitive advantage, and shall ensure that an Associated Business does not disclose confidential information to any other person (including those of another Associated Business) that could enable that person to obtain any kind of unjustified commercial advantage.
- 3 2 3 Licensee shall develop and submit to the ANRE procedures for ensuring compliance with Paragraphs 3 2 1 and 3 2 2. Upon the request of the ANRE, Licensee shall undertake any necessary steps to safeguard the confidential information in Licensee's possession and to submit to the ANRE reports concerning the observance of the obligations stipulated in Paragraphs 3 2 1 and 3 2 2.
- 3 3 Information provided to the ANRE by Licensee shall be considered public unless, upon specific request of Licensee, the ANRE by decision finds that certain information is of a proprietary nature and that the public interest served by disclosure would not justify or offset the potential commercial harm to Licensee.
- 3 4 Licensee shall develop and promote policies and programs to achieve a high level of quality and reliability established of SRT services in accordance with the respective Regulations and Rules adopted by the ANRE.

icensee shall take all necessary measures to improve the operational and economic efficiency of the
icensed Activity in order to assure quality and reliability of delivered services for the benefit of
consumers Upon the request of the ANRE Licensee agrees to enter into Performance Agreements
with the ANRE, pursuant to the relevant Regulations and Rules adopted by the ANRE from time to
time.

Licensee shall comply with the Laws in force of the Republic of Moldova, all Government Decrees
and Regulations and Rules

Licensee shall pay regulatory fees on a regular and continuous basis during the term of this License
as determined by the ANRE in accordance with effective Regulations and Rules established by the
ANRE

Supply Tariffs and other charges

- 3 8 1 Supply Tariffs shall be regulated and approved by the ANRE Licensee shall adjust Supply
Tariffs for inflation in accordance with the methodology of tariff calculation approved by the
ANRE
- 3 8 2 Licensee shall be entitled to charge fees based on the Supply Tariffs, set out in Annex B, as
one component of the Retail Tariff applied to consumers to whom natural gas is supplied
- 3 8 3 Supply Tariffs approved by the ANRE shall be set to provide Licensee with
 - a) sufficient revenue to cover reasonable levels of costs and profits, and
 - b) incentives to reduce costs and operate efficiently
- 3 8 4 The ANRE may revise Supply Tariffs at any time during the first year after the Effective
Date, annually during the next two years, and subsequently on each third anniversary of the
Effective Date
- 3 8 5 During the first year after the Effective Date, Licensee has the right to appeal to the ANRE
to adjust Supply Tariffs for good cause shown
- 3 8 6 During the first two years after the Effective Date, the Licensee shall propose to the
ANRE to change the Supply Tariffs to improve the relationship between the pricing
structure and actual costs of providing SRT services
- 3 8 7 Licensee shall develop a Service Cost Calculation Methodology Service Cost
Calculation Methodology as well as its amendments shall be considered effective only
after their approval by the ANRE The charges established for additional services will
be determined in order to recover the reasonable costs and profits of providing such
services
- 3 8 8 ANRE shall publish in mass media the following materials five days prior to becoming
effective
 - a) Supply Tariffs,
 - b) Service Cost Calculation Methodology,
 - c) Amendments to Service Cost Calculation Methodology

3 10 Supply of Natural Gas to Consumers

3 10 1 Licensee shall offer to provide natural gas supply on a fair, reasonable, and non-discriminatory basis to all customers located within the geographically limited region, specified in Annex A to the present License, including, in accordance with ANRE Regulations and Rules, any consumer is currently served by a Licensee for Independent Natural Gas

3 10 2 For each meter serving a consumer, the consumer may select a supply of natural gas from a licensed supplier provided the selected supplier provides all of the natural gas delivered to each such meter

3 10 3 Licensee may suspend its services provided in accordance with this License for any period during which the action or inaction of one or more consumers threaten the safety, security, reliability or quality of natural gas supply or services provided to other consumers, or may prevent or impede the performance of the Licensed Activity by Licensee

3 11 In case of a disagreement between Licensee and a consumer or another licensee, involving a matter within the jurisdiction of the ANRE, which cannot be resolved through negotiations, the matter of disagreement shall be analyzed by the ANRE in order to make a decision within the scope of its authority

3 12 A decision of the ANRE may be appealed to Court according to effective legislation

3 13 Licensee shall participate in Funds Administration Program, cooperate within this program and submit to Fund Administrator all information requested by it in order to implement the Funds Administration Program

3 14 Licensee shall comply with the Rules and Regulation for Natural Gas System Operation, developed by the Licensee for Operation of Natural Gas Transportation Network and approved by ANRE

4 Control Over the Performance of Licensed Activity

4 1 The ANRE shall monitor Licensee's compliance with these License Conditions, review reports obtained from Licensee and, at any time, is entitled to inspect Licensee's accounting records and may require a technical and /or accounting audit of Licensee's activities

4 2 Authorized representatives of the ANRE have the right of access to Licensee's premises, its equipment and documents to inspect the Licensed Activity Licensee shall provide any required assistance necessary for the ANRE during the said inspection

4 3 Upon the substantiated complaint of any third party or upon its own motion, the ANRE may initiate an investigation of Licensee's compliance with its License, including examination of Licensee's business practices with respect to the Licensed Activity

4 4 If after investigation, the ANRE concludes that Licensee has failed to comply with License Conditions, the ANRE may revise Licensee's tariffs and/or take such other actions within its scope of authority in order to protect the interests of natural gas consumers

- 4 5 Licensee shall inform the ANRE of any violation of these License Conditions within one week from such violation becoming known to Licensee
- 4 6 Licensee shall obey any decision issued by the ANRE, including the payment of fines imposed by the ANRE, in accordance with the Laws in force, with respect to violations of the License Conditions

5 Amendment of License

- 5 1 The ANRE may amend the License Conditions in case they do not comply with
- a) the Laws in force of the Republic of Moldova , or
 - b) decision of the Court
- 5 2 Within one year starting with the Effective Date, the ANRE may revise the License Conditions without seeking agreement of Licensee After providing an opportunity for all interested parties to express their opinion, in accordance with effective procedures, and giving careful consideration to all arguments presented, the ANRE will adopt necessary amendments to License Conditions Written notice of proposed amendments shall be delivered to Licensee 30 days prior to making any such amendments effective
- 5 3 At any time either Licensee or the ANRE may propose any other amendments to License Conditions, in addition to those stipulated in Paragraphs 5 1 and 5 2, by transmitting its proposal in writing, together with supporting arguments, to the other party

The ANRE shall make the final decision only after taking into consideration the interests of consumers and other licensees Interested parties shall be informed in written form about the proposed amendments If the ANRE and Licensee come to agreement on such a change, then License Conditions will be so amended Otherwise the ANRE may appeal to Court

- 5 4 The amendments introduced into the License Conditions shall be published in the Monitorul Oficial 30 days before becoming effective

6 License Suspension and Termination

- 6 1 The ANRE may suspend or terminate the License on its own initiative, in accordance with its Regulations and Rules in case
- a) Licensee requests the withdrawal of the license,
 - b) Licensee violates the License Conditions,
 - c) Licensee violates the present Act and the legislation in force in the performance of its activity,
 - d) Licensee is declared bankrupt and is unable to perform its obligations
 - e) Licensee obtained the license fraudulently
- 6 3 If Licensee changes its legal status or the shareholder controlling interest is changed without a special authorization from the ANRE, the License becomes null and void and the successor of the License shall apply for a new license in compliance with the ANRE's procedure for license issuance

THE REPUBLIC OF MOLDOVA
National Energy Regulatory Agency
LICENSE
For
SUPPLY OF NATURAL GAS AT REGULATED TARIFFS

ANNEX A
AUTHORIZED TERRITORY FOR
LICENSED ACTIVITY

License issued to

(Full name of Licensee)

Series _____ License No _____
Effective Date of the present Annex _____

[Description of territory in which Licensee is authorized to conduct the Licensed Activity and detailed maps of the geographic area]

THE REPUBLIC OF MOLDOVA
National Energy Regulatory Agency

LICENSE
For

SUPPLY OF NATURAL GAS AT REGULATED TARIFFS

License issued to

(Full name of Licensee)

Series _____ License No _____
Effective Date of the present Annex _____

ANNEX B

**SUPPLY TARIFFS
and
UNCOLLECTED BILLS PERCENTAGE**

Supply Tariff	Percentage Allowed for Uncollected Bills
_____ per 1000 cubic meter	_____ %

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THE REPUBLIC OF MOLDOVA

National Energy Regulatory Agency

**LICENSE
For
INDEPENDENT NATURAL GAS SUPPLY**

Series _____ License Number _____
Effective Date _____

License Issued To _____
[Name and Legal Address]

Fiscal Code _____
Registration Certificate _____
[Series, Number, Place of Registration]

Under the authority granted to it by the Laws of the Republic of Moldova, the National Energy Regulatory Agency (ANRE) grants this License to perform the activity of providing independent natural gas supply (IGS), inclusively through import and export, to the above-named Company, hereinafter "Licensee", subject to the License Conditions attached to this License and made an integral part hereof. This License is effective as of the date above written and will continue in effect for a period of 3 years or up to the moment of its termination by the ANRE in accordance with the License Conditions.

General Director _____

[Seal of the ANRE]

THE REPUBLIC OF MOLDOVA
National Energy Regulatory Agency
LICENSE CONDITIONS
For
INDEPENDENT NATURAL GAS SUPPLY

Series _____ License No _____
Issued To _____
(Licensee)

1 General Provisions

- 1.1 This License, including these License Conditions, is issued pursuant to effective Laws and Government Decrees of the Republic of Moldova
- 1.2 If any condition of these License Conditions becomes null and void or otherwise ceases to be effective, that condition shall be deleted from the License Conditions and the remaining License Conditions shall continue in full force and effect
- 1.3 The License cannot be transferred to another party without prior written approval of the ANRE
- 1.4 Licensee shall hold only one License for Independent Natural Gas Supply
- 1.5 The following words and phrases used in the License, these License Conditions and Annexes, when capitalized, shall have the meanings set forth below

Licensed Activity	Activities necessary for, and directly related to, providing a supply of natural gas, inclusively through import and export, at market, unregulated tariffs
Regulations and Rules	Standards, codes, regulations, orders and other prescriptions in force established by Laws or other official documents
Supply at Regulated Tariffs (SRT)	The supply of natural gas to retail consumers at regulated prices by purchasing natural gas from producers and wholesale suppliers and arranging for the delivery of natural gas over transmission and distribution facilities to the consumer's premises

2 Carrying out the Licensed Activity

- 2.1 Licensee is authorized by this License to conduct the Licensed Activity anywhere within the boundaries of the Republic of Moldova, except in any territory where Licensee is authorized to

- perform the activity of supply of natural gas at regulated tariffs, as well as to carry out the activity of natural gas import, export and transit
- 2 2 Licensee shall not engage in any form of monopoly activity prohibited by the Laws of the Republic of Moldova, or Regulations and Rules adopted by the ANRE
- 2 3 Licensee may offer supply service to each meter of a consumer provided Licensee is the supplier of all of the natural gas delivered to each such meter
- 2 4 Any overdue bills of a consumer to any other gas industry licensee, except another Licensee for Independent Natural Gas Supply, must be settled before the Licensee may initiate service to the consumer

3 Obligations of Licensee

3 1 Reporting

- 3 1 1 Licensee shall submit to the ANRE, upon its request and in the form and within the time set by the ANRE, information, including information provided to government entities, that is necessary in the conduct of authorized regulatory responsibilities
- 3 1 2 Licensee shall notify the ANRE within 10 days of any change in
- a) address,
 - b) description of facilities
- 3 1 4 Communication between Licensee and the ANRE pursuant to, or in connection with, this License shall be given in writing and executed by a duly authorized officer, or his duly designated representative, of Licensee or the ANRE, respectively
- 3 2 Information provided to the ANRE by Licensee shall be considered public unless, upon specific request of Licensee, the ANRE by decision finds that certain information is of a proprietary nature and that the public interest served by disclosure would not justify or offset the potential commercial harm to Licensee
- 3 3 Licensee shall comply with the Laws in force of the Republic of Moldova, all Government Decrees and Regulations and Rules
- 3 4 Licensee shall pay regulatory fees on a regular and continuous basis during the term of this License as determined by the ANRE in accordance with effective Regulations and Rules established by the ANRE
- 3 5 Tariffs for services provided by Licensee shall be determined by Licensee and are not subject to regulation or approval by the ANRE Licensee shall be solely responsible for billing for gas services and collecting from its customers Licensee may require financial mechanisms to secure payment in accordance with applicable Law
- 3 6 Licensee shall notify the Licensee for Supply of Natural Gas at Regulated Tariffs that serves the geographical region in which a customer is located, no less than thirty days before Licensee discontinues service to the consumer The ANRE may suspend or terminate this License if Licensee fails to comply with this Condition

- 3 7 Licensee shall promptly pay for all services, provided by the licensees from the natural gas market. The ANRE may suspend or terminate this License if Licensee fails to comply with this Condition.
- 3 8 Licensee shall comply with the Rules and Regulation for Natural Gas System Operation, developed by the Licensee for Operation of Natural Gas Transportation Network and approved by ANRE.
- 3 9 In the event of a disagreement between Licensee and a consumer or another licensee, involving a matter within the jurisdiction of the ANRE which cannot be resolved through negotiation, the matter of disagreement shall be analyzed by the ANRE in order to make a decision within the scope of its authority.
- 3 10 A decision of the Agency may be appealed to Court according to effective legislation.

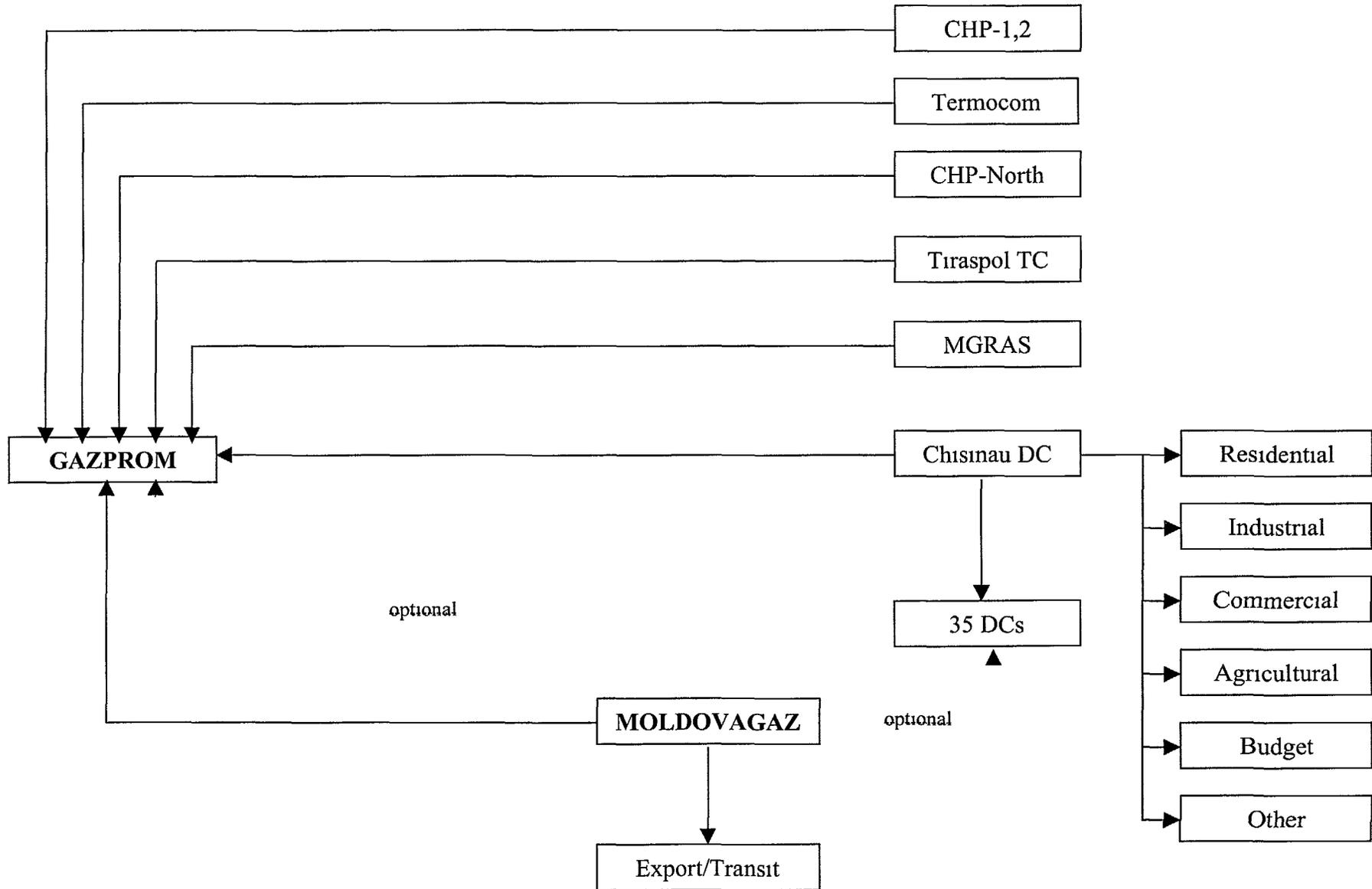
4 Control Over the Performance of Licensed Activity

- 4 1 The ANRE shall monitor Licensee's compliance with the License Conditions and review reports received from Licensee.
- 4 2 Upon the substantiated complaint of any third party or upon its own motion, the ANRE may initiate an investigation of Licensee's compliance with its License, including examination of Licensee's business practices with respect to the Licensed Activity.
- 4 3 If after investigation, the ANRE concludes that Licensee has failed to comply with License Conditions, the ANRE may take actions within its scope of authority in order to protect the interests of natural gas consumers.
- 4 4 Licensee shall inform the ANRE of any violation of these License Conditions within one week from such violation becoming known to Licensee.
- 4 5 Licensee shall obey any decision issued by the ANRE, including the payment of fines imposed by the ANRE, in accordance with the Laws in force, with respect to violations of the License Conditions.

5 Amendment of License

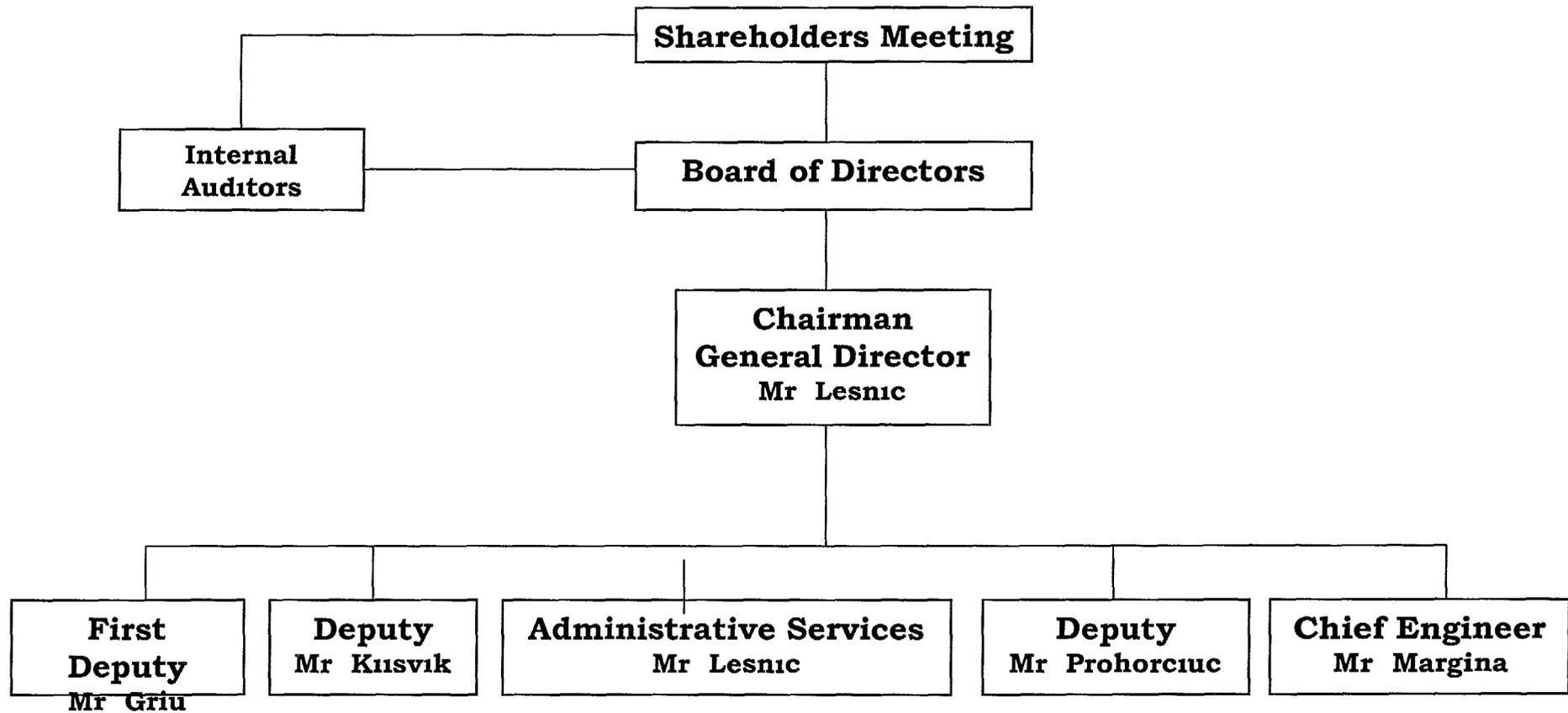
- 5 1 The ANRE may amend the License Conditions in case they do not comply with
- a) Laws in force of the Republic of Moldova,
 - b) Decision of the Court
- 5 2 Within one year starting with the Effective Date, the ANRE may revise the License Conditions without seeking agreement of Licensee. After providing an opportunity for all interested parties to express their opinion, in accordance with effective procedures, and giving careful consideration to all arguments presented, the ANRE will adopt necessary amendments to License Conditions. Written notice of proposed amendments shall be delivered to Licensee 30 days prior to making such amendments effective.
- 5 3 At any time either Licensee or the ANRE may propose any other amendments to License Conditions, in addition to those stipulated in Paragraphs 5 1 and 5 2, by transmitting its proposal in writing, together with supporting arguments, to the other party.

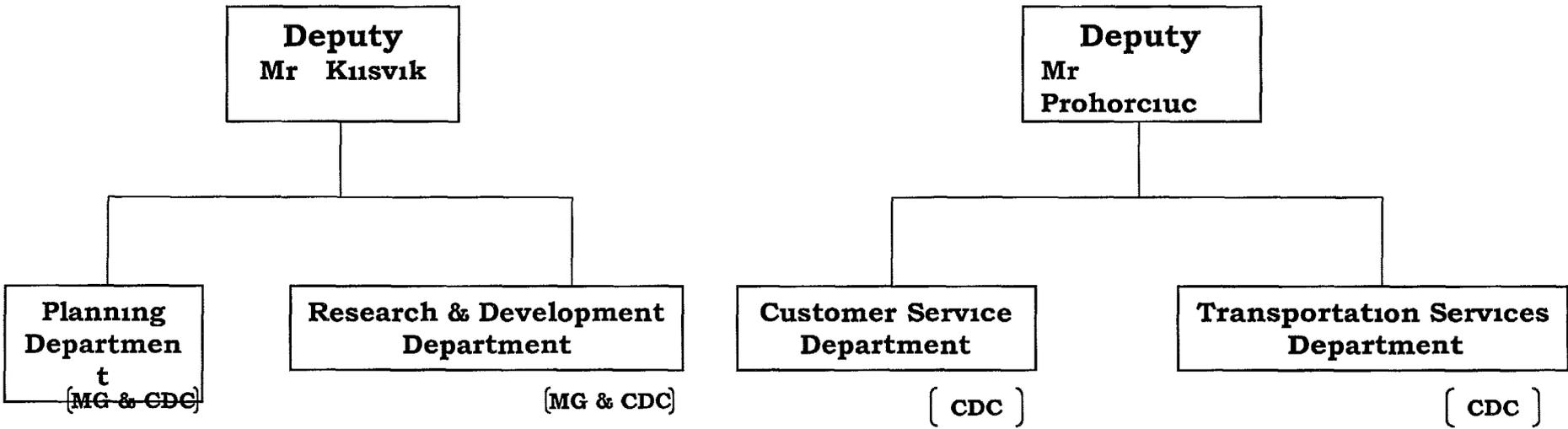
Moldovagaz Contracting Purchase of Gas



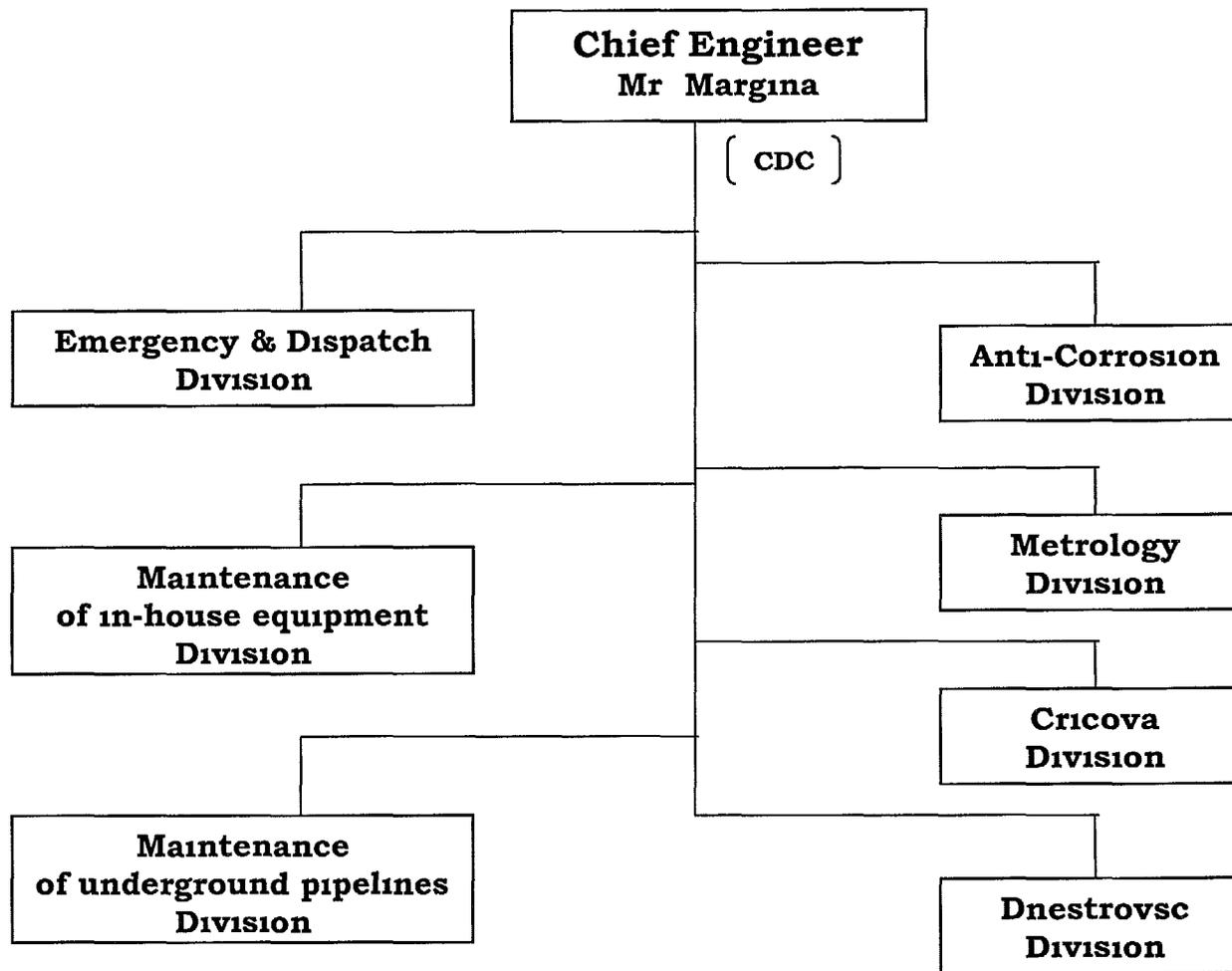
126

MOLDOVAGAZ/CHISINAU DISTRIBUTION COMPANY
(MG/CDC)
CURRENT ORGANIZATIONAL STRUCTURE

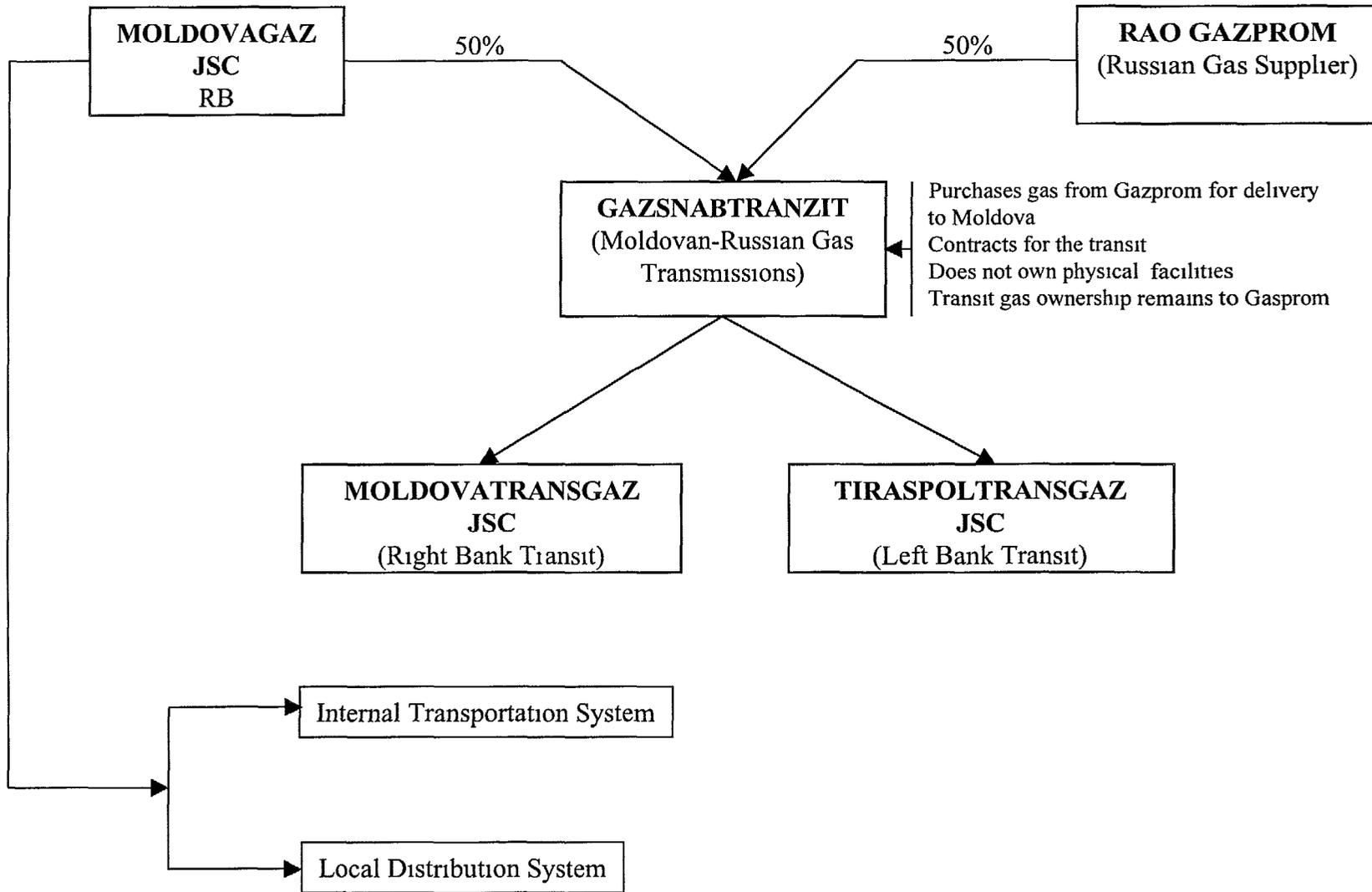




129



Existing gas ownership structure



Moldovagaz pipeline characteristics

	Diameter mm	Left Bank km	Right Bank km	In Ukraine km	Total length km	Pressure atm	Designed throughput bln cm/year
Transit System							
<i>North-South Direction</i>							
Ananiev-Tiraspol-Ismail	1200	19	50	24	92	75	18.3
Shebelinca-Dnepropetrovsc-Krivoi Rog-Rasdelinaia-Ismail	800	23	47	55	125	55	4.4
Rasdelinaia-Ismail	800	23	47	55	125	55	4.4
<i>East-West Direction</i>							
Kremenciug-Ananiev-Cernautsi-Bogorodciani	1020	15	180		195	55	11.0
Total		81	323	134	537		38
Transportation System							
Ribnitsa-Chisinau	500		105			55	
Odessa-Chisinau	500		31			55	
Other	150 - 500		136			55	
Total			272				
Distribution System							
Medium Pressure	150-350		778		778	05 - 3	
incl Chisinau DC			182		182		
Low pressure	70-120		1252		1252	03 - 05	
incl Chisinau DC			532		532		
Low pressure overground	70-120		2320		2320	03 - 05	
incl Chisinau DC			531		531		
Total			4349		4349		

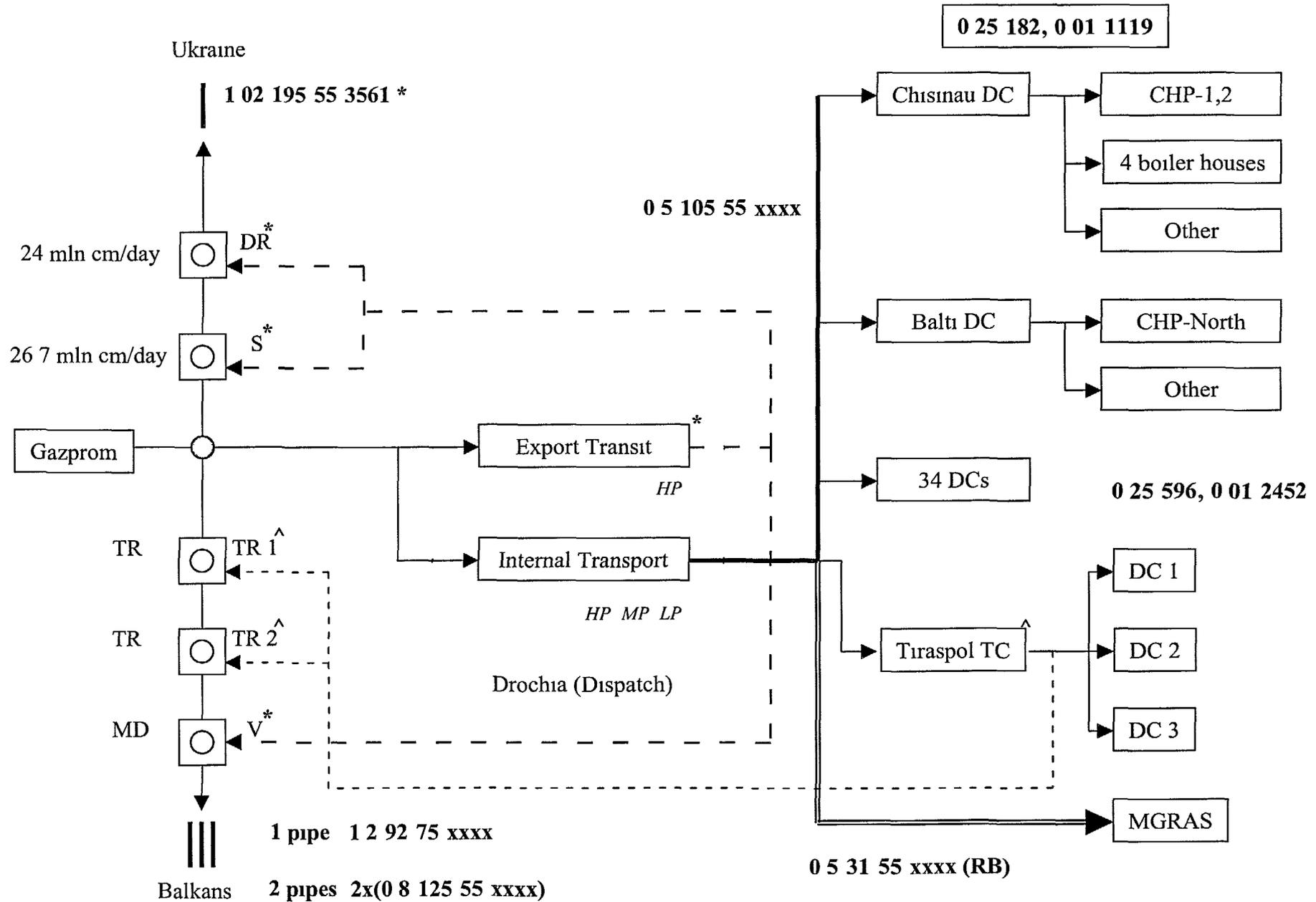
Gas Compressor Stations Technical Characteristics

		Unit	Tiraspol 1	Tiraspol 2	Vulcaneshti	Soldaneshti	Drochia
1	Pipeline Diameter	mm	1200	800	800	1020	1020
2	Gas Compressor Type		GTK-16	ESDG-12 5	ESDG-12 6	ESDG-12 7	GRAT-6 3
3	Drive Type		GTS-16	STD-4000-2	STD-4000-3	STD-4000-4	NK-12 st
4	Capacity of compressor	MW	16	4	4	4	6 3
5	Compressor Revolution	rot/min	4600	7960	7950	7950	8200
6	Engine Revolution	rot/min	4600	3000	3000	3000	8200
7	Voltage	kV		10	10	10	
8	Gas turbine fuel consumption/Q=8250 kcal/cm	cm/h	6650				3200
9	Number of gas compressors		4	5	5	6	5
10	Power used	MW	2	15-20	15-20	15-20	2
11	Number of transformers			2	2	2	2
12	Transformer capacity	MVA		16	16	16	1 6
13	Voltage of Substations	kV		110/10	110/10	110/10	110/10

13

Moldovagaz

System Technical Characteristics



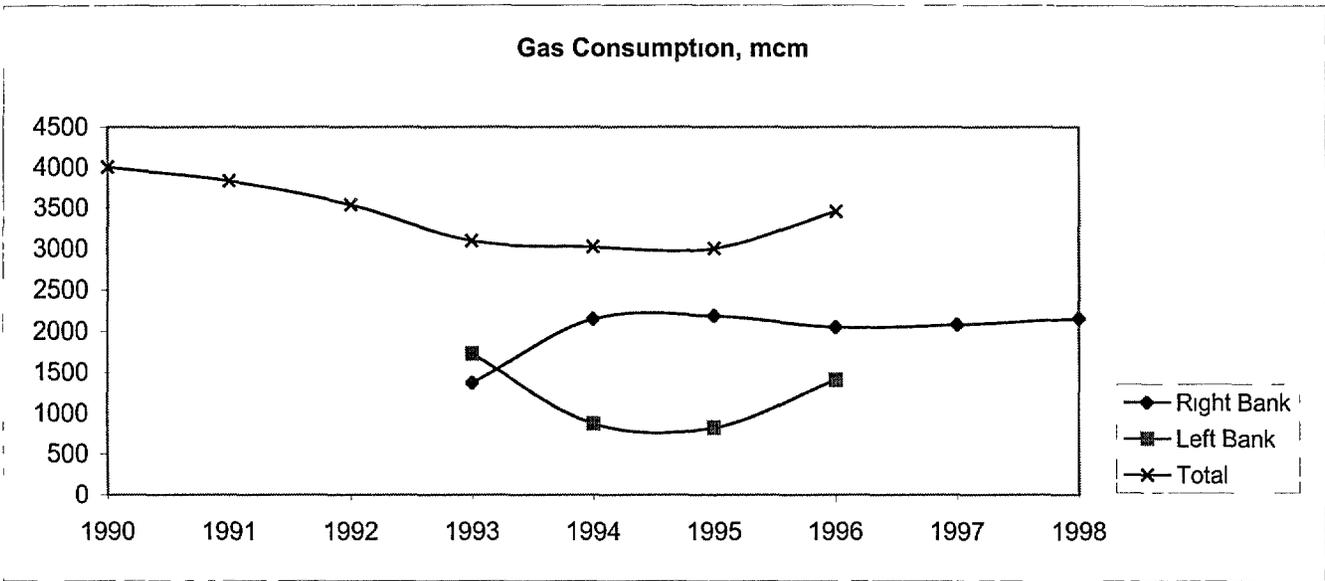
134

TECHNICAL CHARACTERISTICS OF GAS DISTRIBUTION STATIONS AT 01 01 1997

	Distribution station	Year of commissioning	Inlet gas pressure		Outlet gas pressure			Throughput				
			design atm	actual	design atm	actual	design atm	actual atm	design th cm/h	actual th cm/h		
1	Chisinau	1966	55	49	3	3		170	160			
2	Maiak, AGRS-3	1972	55	48	3	3		3	3	1		
3	Primavara, AGRS-10	1980	55	48	12	3		12	6	9		
4	Anenii-Noi AGRS-30	1972	55	50	6	5	8	30	3			
5	Mereni AGRS-10	1978	55	50	6	3		10	3			
6	Floreni, AGRS-80	1980	55	50	12	3	6	80	47			
7	Rezina, GRS-II-70	1987	55	47	12	3		65	4			
8	Orhei, GRS-II-70	1987	55	47	12	3		74	4			
9	Balti	1989	55	54	12	12	3	3	201	50	40	20
10	Briceni AGRS	1990	55	54	6	3		10	5	2	1	
11	Edinet	1988	55	54	6	3						
12	Pervomaisk	1988	55	54	6	3		3	0	8		
13	Drochia	1988	55	54	12	3		80	0	05		
14	Floresti	1988	55	54	12	3		76				
15	Riscani	1993	55	54	12	3		70				
16	Soldanesti	1989	55	54	12	6	6	11	3	1	5	
17	Cupcini	1990	55	54	12	3		70				
18	Peresecino	1988	55	47	6	6		16	7	0	4	
19	Cruleni	1989	55	47	12	3		9	1	0	015	
20	Chitcani	1985	55	48	6	3		30	3	6		
21	Causeni	1981	55	48	6	3		20	5	7		
22	Stefan Voda	1983	55	48	6	3		3	0	3		
23	Ermoclia	1983	55	48	6	3		3	0	3		
24	Straseni	1992	55	48	12	3		30				
25	Chistelnita	1993	55	54	12	3		30				
26	Glodeni	1993	55	54	12	3		70				
27	Sofia	1994	55	54	12	3		30				
28	Sait	1995	55	54	6	3						
29	Iliciovca	1994	55	54	6	3		10	5			
30	Ocnita	1994	55	54	12	3						
31	Otaci	1995	55	47	6	3		30				
32	Sadaclia	1995	55	54	6	3		30				
33	Frunze	1995	55	47	6	4		30				
34	Cotijeni	1996	55	48	12	3		30				
35	Gura Galbena	1996	55	54	12	3		30				
36	Birladeni	1996	55	54	12	3		30				
37	Hodarauti	1996	55	54	12	3		30				

Dynamics of Natural Gas Consumption
mcm

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Right Bank				1371	2149	2186	2049	2079	2150
Left Bank				1727	875	819	1406	N/A	N/A
Total	4004	3833	3538	3098	3024	3005	3455	N/A	N/A



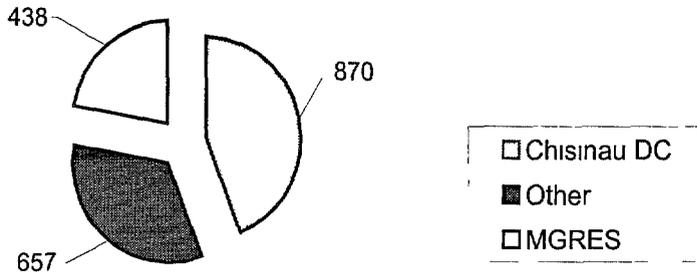
Moldova Gas customer profile

		1996							1997						
		Annual consumption		Annual revenue		Total paid			Annual consumption		Annual revenue		Total paid		
		mill cm	%	mill lei	%	mill lei	% of ann revenue	% from the total	mill cm	%	mill lei	%	mill lei	% of ann revenue	% from the total
1	Chisinau DC	713	40%	203	42%	188	93%	59%	870	44%	328	44%	210	64%	50%
2	Other	574	32%	150	31%	92	61%	29%	657	33%	230	31%	142	62%	34%
3	MGRES	511	28%	128	27%	40	31%	12%	438	22%	184	25%	68	37%	16%
4	Total	1798	100%	480	100%	319	66%	100%	1965	100%	741	100%	420	57%	100%

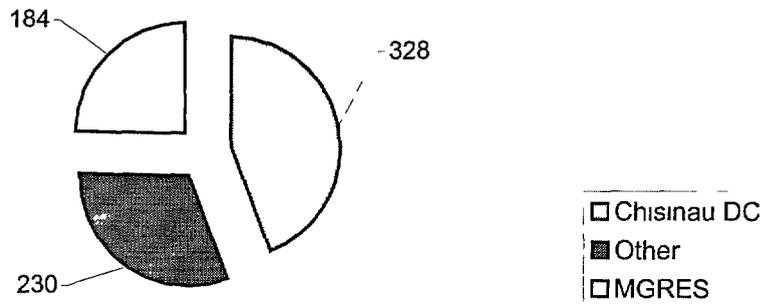
121

Moldovagaz (RB) sales performance for 1997

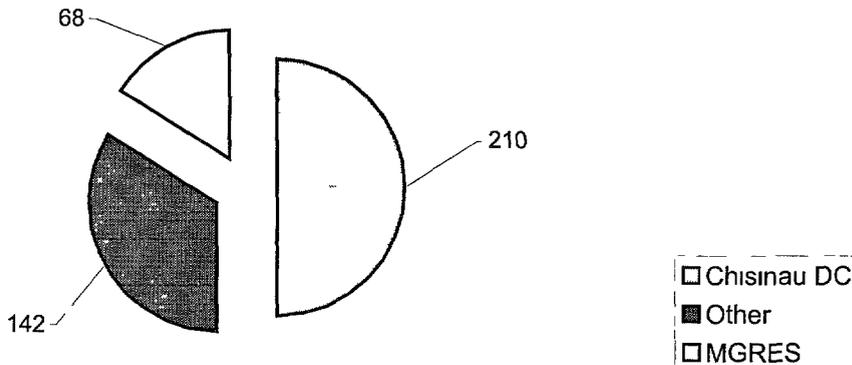
Annual Consumption, 1997
mcm



Annual Revenue 1997,
mln lei



Actual Payments 1997, mln lei



Natural Gas Production*

Billion cubic metres

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Change 1997 over 1996	1997 share of total
USA	479.8	492.8	499.7	514.2	510.4	514.5	520.4	541.8	534.9	540.4	545.3	0.9%	24.5%
Canada	78.6	90.8	96.7	99.3	105.4	116.1	125.5	135.9	148.2	153.6	156.8	2.1%	7.1%
Mexico	26.4	26.4	26.6	26.8	27.9	27.8	27.8	28.7	28.1	31.2	33.1	6.1%	1.5%
Total North America	584.8	610.0	623.0	640.3	643.7	658.4	673.7	706.4	711.2	725.2	735.2	1.4%	33.1%
Argentina	15.2	18.0	19.0	17.8	19.9	20.1	21.6	22.3	25.1	28.9	31.7	9.4%	1.4%
Bolivia	2.6	2.8	2.9	3.0	3.0	3.0	3.0	3.3	3.2	3.2	3.2	1.2%	0.1%
Brazil	3.3	3.7	3.8	3.8	3.9	4.0	4.5	4.5	4.8	5.4	5.9	8.4%	0.3%
Colombia	4.2	4.3	4.0	4.1	4.3	4.4	4.7	4.6	4.4	4.7	6.0	26.6%	0.3%
Trinidad & Tobago	4.5	5.1	5.1	5.3	5.7	6.0	5.9	6.2	6.1	7.1	7.1	1.1%	0.3%
Venezuela	18.6	19.0	19.5	22.0	21.9	21.6	23.3	24.7	29.8	29.7	30.9	4.0%	1.4%
Other S & Cent America	1.6	1.9	2.3	2.4	2.2	2.5	2.4	2.8	2.7	2.8	2.9	3.1%	0.1%
Total S & Cent America	50.0	54.8	56.6	58.4	60.9	61.6	65.4	68.4	76.1	81.8	87.7	7.1%	3.9%
Denmark	2.4	2.4	3.1	3.1	4.0	4.1	4.5	4.9	5.3	6.4	7.9	22.4%	0.4%
Germany	18.5	16.7	15.7	15.9	14.7	14.9	14.9	15.6	16.1	17.4	17.3	0.8%	0.8%
Hungary	6.1	5.4	5.2	4.2	4.3	4.0	4.3	4.1	4.2	4.0	3.7	6.5%	0.2%
Italy	16.3	16.6	17.0	17.3	17.4	18.2	19.5	20.6	20.4	20.0	19.5	2.9%	0.9%
Netherlands	62.4	55.4	60.1	60.6	69.0	69.1	70.0	66.4	67.0	75.8	67.1	11.5%	3.0%
Norway	29.7	29.8	30.8	27.8	27.3	29.4	28.9	30.8	31.2	41.0	46.7	13.9%	2.1%
Romania	33.5	32.8	29.4	25.4	22.8	20.3	19.2	17.4	16.8	16.1	14.0	12.9%	0.6%
United Kingdom	43.7	42.2	41.3	45.6	50.7	51.6	60.9	65.0	71.2	84.7	87.0	2.7%	3.9%
Other Europe	14.7	14.8	15.2	13.6	13.8	13.5	14.3	13.8	13.9	12.7	12.3	3.1%	0.5%
Total Europe	227.3	216.1	217.8	213.5	224.0	225.1	236.5	238.6	246.1	278.1	275.5	1.0%	12.4%
Azerbaijan	11.7	11.1	10.4	9.2	8.0	7.4	6.3	6.0	6.2	5.9	5.6	5.4%	0.3%
Kazakhstan	5.9	6.6	6.2	6.6	7.4	7.6	6.2	4.2	5.5	6.0	8.2	37.0%	0.4%
Russian Federation	507.7	550.2	574.4	597.9	599.8	597.4	576.5	566.4	555.4	561.1	531.0	5.4%	23.9%
Turkmenistan	82.2	82.4	83.9	81.9	78.6	56.1	60.9	33.2	30.1	32.8	16.1	50.9%	0.7%
Ukraine	33.2	30.2	28.7	26.2	22.8	19.6	17.9	17.0	17.0	17.2	16.3	4.9%	0.7%
Uzbekistan	37.1	37.2	38.3	38.1	39.1	39.9	42.0	44.0	45.3	45.7	45.9	0.4%	2.1%
Other Former Soviet Union	0.7	0.6	0.6	0.5	0.6	0.6	0.4	0.3	0.3	0.3	0.3	+	+
Total Former Soviet Union	678.5	718.3	742.5	760.4	756.3	728.6	710.2	671.1	659.8	669.0	623.4	-6.8%	28.1%
Bahrain	5.0	5.3	5.5	5.8	5.5	6.5	6.9	7.1	7.2	7.5	7.8	3.4%	0.4%
Iran	16.0	20.0	22.2	23.2	25.8	25.0	27.1	31.8	35.1	40.2	43.0	6.9%	1.9%
Kuwait	4.8	6.8	8.2	4.2	0.5	2.6	4.5	6.0	9.3	9.3	9.4	1.5%	0.4%
Oman	2.3	2.3	2.4	2.6	2.6	2.9	2.8	2.9	4.1	4.4	4.7	7.8%	0.2%
Qatar	5.6	5.9	6.2	6.3	7.6	12.6	13.5	13.5	13.5	13.7	13.9	1.4%	0.6%
Saudi Arabia	26.8	29.1	29.8	30.5	32.0	34.0	35.9	37.7	38.0	41.3	43.9	6.2%	2.0%
United Arab Emirates	16.9	17.4	20.4	20.1	23.8	22.2	22.9	25.8	31.3	36.3	38.9	7.4%	1.8%
Other Middle East	4.6	6.5	7.6	5.5	3.4	4.0	4.2	4.9	4.9	5.0	5.1	1.9%	0.2%
Total Middle East	82.0	93.3	102.3	98.2	101.2	109.8	117.8	129.7	143.4	157.7	166.7	5.7%	7.5%
Algeria	41.2	43.0	46.4	49.2	53.1	55.0	55.0	50.6	57.3	59.2	67.5	14.1%	3.0%
Egypt	5.3	6.0	6.5	6.8	7.8	8.4	10.0	10.6	11.0	11.5	11.8	2.0%	0.5%
Libya	4.5	5.1	6.3	5.7	6.3	6.6	6.2	6.2	6.2	6.2	6.3	1.4%	0.3%
Nigeria	3.0	3.7	4.2	4.0	3.9	4.3	4.2	4.4	4.6	4.6	4.7	1.9%	0.2%
Other Africa	0.7	0.8	0.9	0.8	0.7	0.7	2.4	2.6	2.7	3.7	3.8	3.2%	0.2%
Total Africa	54.7	58.6	64.3	66.5	71.8	75.0	77.8	74.4	81.8	85.2	94.1	10.4%	4.2%
Australia	15.0	15.4	17.8	20.6	21.7	23.5	24.5	28.1	29.8	30.6	30.0	2.0%	1.3%
Bangladesh	3.9	4.3	4.6	4.8	5.1	5.7	6.2	6.7	7.4	7.6	7.9	3.6%	0.3%
Brunei	8.6	8.9	8.8	8.9	9.1	9.8	10.3	10.4	11.5	11.6	11.6	0.4%	0.5%
China	12.9	13.3	14.0	14.2	14.9	15.1	16.2	16.6	17.6	19.9	22.2	11.6%	1.0%
India	7.7	8.9	10.7	12.4	14.2	15.9	16.1	17.3	18.8	20.4	21.4	5.1%	1.0%
Indonesia	35.5	38.8	41.3	45.3	51.5	54.3	56.2	62.9	63.8	67.1	69.0	2.8%	3.1%
Malaysia	15.6	16.4	17.5	17.8	20.4	22.8	24.9	26.1	28.9	36.7	39.4	7.4%	1.8%
Pakistan	9.2	9.8	10.6	11.2	11.1	11.5	12.0	13.2	14.5	15.2	15.8	3.9%	0.7%
Thailand	4.4	5.2	5.4	5.5	7.0	7.5	8.4	9.5	10.1	11.8	12.7	8.3%	0.6%
Other Asia Pacific	11.8	12.3	9.3	9.2	8.7	9.1	9.4	9.5	9.2	10.3	10.4	0.8%	0.5%
Total Asia Pacific	124.6	133.3	140.0	149.9	163.7	175.2	184.2	200.3	211.6	231.2	240.4	4.0%	10.8%
TOTAL WORLD of which	1801.9	1884.4	1946.5	1987.2	2021.6	2033.7	2065.6	2088.9	2130.0	2228.2	2223.0	-0.2%	100.0%
OECD	796.8	811.8	832.2	852.7	870.3	890.8	919.3	959.6	973.3	1022.3	1030.9	0.8%	46.4%
European Union 15	149.9	139.9	144.7	150.0	163.4	165.4	176.9	179.7	186.9	210.4	204.2	2.9%	9.2%
Other EMEs £	289.9	317.9	339.1	345.9	369.6	391.1	413.8	437.8	476.8	518.3	552.1	6.5%	24.8%

Excluding gas flared or recycled

+ Less than 0.05

£ Excludes Central Europe and Former Soviet Union

PRINCIPLES OF GAS TRANSPORTING AND RATE POLICIES

Additional items

- **Gas Transportation Contracting**

Principles for rate design vary with country Principles of US Rate Policies

Reference PART 284--CERTAIN SALES AND TRANSPORTATION OF NATURAL GAS UNDER THE NATURAL GAS POLICY ACT OF 1978 AND RELATED AUTHORITIES

General Provisions and Conditions

Sec 284 7 Rates

(a) Applicability Any rate charged for transportation must be established under a rate schedule that is filed with the Commission prior to commencement of such service and that conforms to the requirements of this section

(b) Rate objectives Maximum rates for both peak and offpeak periods must be designed to achieve the following three objectives

- (1) Rates for service during peak periods should ration capacity,
- (2) Rates for firm service during off-peak periods and for interruptible service during all periods should maximize throughput, and
- (3) The pipeline's revenue requirement allocated to firm and interruptible services should be attained by providing the projected units of service in peak and off-peak periods at the maximum rate for each service

(c) Rate design

- (1) Volumetric rates Any rate filed for service subject to this section must be a one-part rate that recovers the costs allocated to the service to the extent that the projected units of that service are actually purchased and may not include a demand charge, a minimum bill or minimum take provision or any other provision that has the effect of guaranteeing revenue Such rate must separately identify cost components attributable to transportation, storage, and gathering costs
- (2) Based on projected units of service Any rate filed for service subject to this section must be designed to recover costs on the basis of projected units of service The fixed costs allocated to capacity reservations, should be used along with the projected nominations accepted by the pipeline to compute the unit reservation fee The remaining fixed costs and all variable costs should be used to determine the volumetric rate computed on the basis of projected volumes to be transported The units projected for the service in rates filed under this section may be changed only in a subsequent rate filing under section 4 of the Natural Gas Act
- (3) Differentiation due to time and distance Any rate filed for service subject to this section must reasonably reflect any material variation in the cost of providing the service due to

Telecopy (403) 267-1074
(v) other matters
Attention Vice President, Transportation Services
Telecopy (403) 267-862

IN THE CASE OF SHIPPER

- (i) mailing address

- (ii) delivery address

- (iii) nominations
Attention _____
Telecopy _____
- (iv) invoices
Attention _____
Telecopy _____
- (v) other matters
Attention _____
Telecopy _____

Any such Notice shall be sent in order to ensure prompt receipt of such Notice by the other party. Such Notice sent as aforesaid shall be deemed to have been received by the party to whom it is sent at the time of its delivery if personally delivered or if sent by telecopier, or on the day following transmittal thereof if sent by courier, or on the third day following the transmittal thereof if sent by first class mail, PROVIDED however, that, in the event normal mail service, courier service, or telecopier service shall be interrupted by a cause beyond the control of the parties hereto, then the party sending the Notice shall utilize any service that has not been so interrupted or shall deliver such Notice. Each party shall provide Notice to the other of any change of address for the purposes hereof.

ARTICLE VII - MISCELLANEOUS PROVISIONS

- 7.1 The FT Toll Schedule, the List of Tolls, and the General Terms and Conditions set out in TransCanada's Transportation Tariff as amended or approved from time to time by the NEB are all by reference made a part of this Contract and operations hereunder shall, in addition to the terms and conditions of this Contract, be subject to the provisions thereof. TransCanada shall notify Shipper at any time that TransCanada files with the NEB revisions to the FT Toll Schedule, the List of Tolls, and/or the General Terms and Conditions (the "Revisions") and shall provide Shipper with a copy of the Revisions.
- 7.2 The headings used throughout this Contract, the FT Toll Schedule, the List of Tolls, and the General Terms and Conditions are inserted for convenience of reference only and are not to be considered or taken into account in construing the terms or provisions thereof nor to be deemed in any way to qualify, modify or explain the effect of any such provisions or terms.
- 7.3 This Contract shall be construed and applied, and be subject to the laws of the Province of Alberta, and, when applicable, the laws of Canada, and shall be subject to the rules, regulations and orders of any regulatory or legislative authority having jurisdiction.

Insert D

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the date first above written

TRANSCANADA PIPELINES LIMITED

per _____

141

Unauthorized Volumes of the General Terms and Conditions) for the first seven (7) days of service under the Contract

II - Firm Transportation Service Contract Requiring Displacement of a Firm Transportation Service Contract

Insert A

(nothing)

Insert B

- 1 1 As TransCanada does not otherwise have sufficient pipeline capacity on its system to offer this service, another shipper who has (a) long term Firm Transportation Service contract(s) for the purpose of delivering gas to the same Delivery Point(s) (the "Other Contract") must agree to reductions in the Contract Demand under the Contract equal to the Contract Demand hereunder effective as of the Date of Commencement
- 1 2 The date of commencement of service hereunder (the "Date of Commencement") shall be the date for which Shipper first nominates, and TransCanada authorizes deliveries hereunder, pursuant to the provisions of this Contract
- 1 3 Notwithstanding Section 5 1 hereof, if the Date of Commencement has not occurred on or before the ___ of _____, 199__, then either party may at any time thereafter, provided that service shall not have commenced hereunder, terminate this Contract forthwith by Notice to the other party
- 1 4 At least five (5) days prior to the Date of Commencement, as defined in Section 1 3 hereof, Shipper shall provide TransCanada with its best estimate of its nomination (pursuant to Section XXII, Nominations and Unauthorized Volumes of the General Terms and Conditions) for the first seven (7) days of service under the Contract

III - Firm Transportation Service Contract Not Following a Precedent Agreement and Not Requiring Displacement of a Firm Transportation Service Contract

Insert A

(nothing)

Insert B

- 1 1 The date of commencement of service hereunder (the "Date of Commencement") shall be _____,

Insert C

IV - Contracts with Emerson I and II, Dawn, Niagara Falls, and Iroquois as Delivery Points

4 2 Shipper shall pay for all delivery pressure service hereunder from the Date of Commencement in accordance with TransCanada's FT Toll Schedule, List of Tolls and General Terms and Conditions set out in TransCanada's Transportation Tariff as the same may be amended or approved from time to time by the NEB

(a) Emerson I (Viking) Delivery Point

Insert D

ARTICLE VIII - DELIVERY PRESSURE

8 1 TransCanada shall increase the line pressure of the gas it delivers to Shipper at the Delivery Point to the pressure necessary for Shipper to have Viking Gas Transmission Company accept receipt of such gas from Shipper for transportation from the Delivery Point, provided that, from the Date of Commencement until the termination of this Contract, TransCanada shall not be obligated to provide a pressure greater than 5 171 kPa (g)

(b) Emerson II (Great Lakes) Delivery Point

Insert D

ARTICLE VIII - DELIVERY PRESSURE

8.1 TransCanada shall increase the line pressure of the gas it delivers to Shipper at the Delivery Point to the pressure necessary for Shipper to have Great Lakes Gas Transmission Limited Partnership accept receipt of such gas from Shipper for transportation from the Delivery Point, provided that, from the Date of Commencement until the termination of this Contract, TransCanada shall not be obligated to provide a pressure greater than 5 430 kPa (g)

(c) Dawn Delivery Point

Insert D

ARTICLE VIII - DELIVERY PRESSURE

8.1 TransCanada shall increase the line pressure of the gas it delivers to Shipper at the Delivery Point to a pressure of not less than 4 850 kPa (g)

(d) Niagara Falls Delivery Point

Insert D

ARTICLE VIII - DELIVERY PRESSURE

8.1 TransCanada shall increase the line pressure of the gas it delivers to Shipper at the Delivery Point to a pressure of not less than 4 850 kPa (g)

(e) Iroquois Delivery Point

Insert D

ARTICLE VIII - DELIVERY PRESSURE

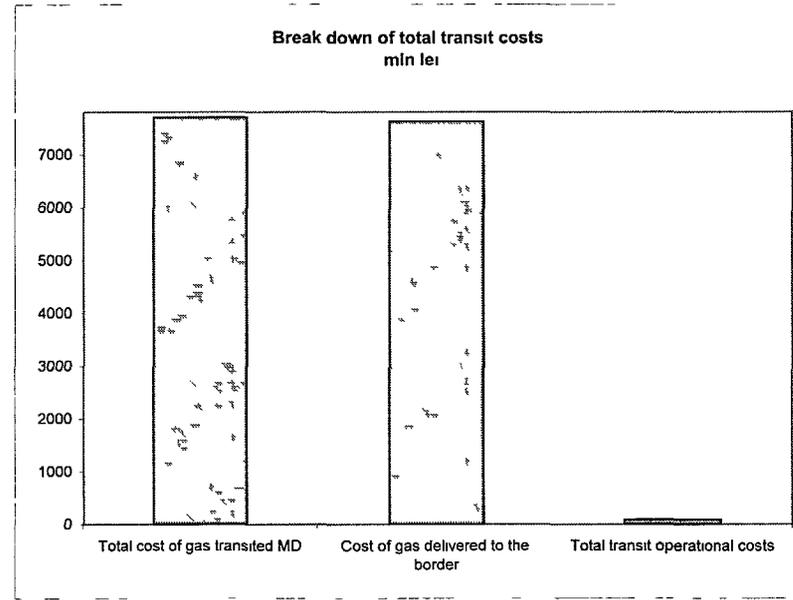
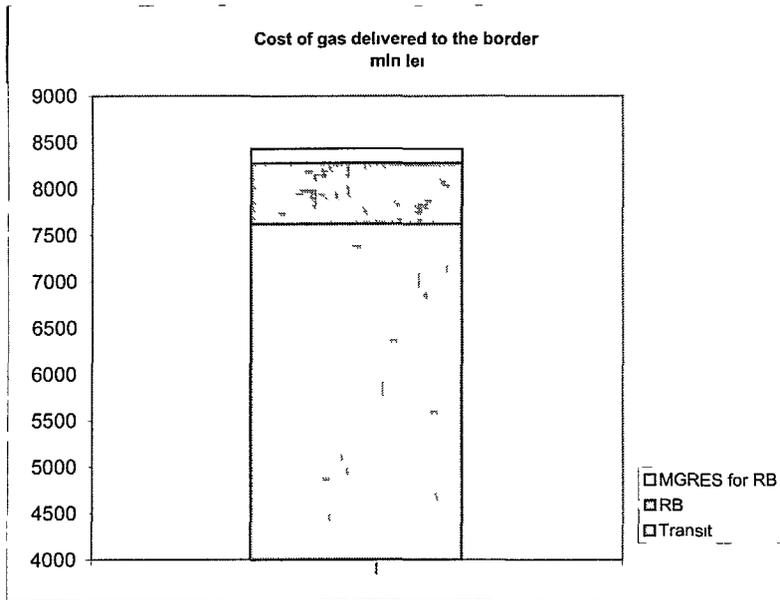
8.1 TransCanada shall increase the line pressure of the gas it delivers to Shipper at the Delivery Point to the pressure necessary for Shipper to have Iroquois Gas Transmission System, L P accept receipt of such gas from Shipper for transportation from the Delivery Point, provided that, from the Date of Commencement until the termination of this Contract, such pressure is not greater than 9 895 kPa (g)

Gas Tariff Costs Allocation

		Total	RB	MGRAS for RB	Transit
Gas purchased	mln cm	22417	1746	404	20267
Price for the gas	\$/1000 cm	80	80	80	80
Exchange rate	4.7				
Price for the gas	lei/1000 cm	376	376	376	376
Cost of purchased gas	mln lei	8429	656	152	7620
Share of gas transported		100%	8/	2/	90/
Gas used for pumping	mln cm	70	5.5	1.3	63.3
Losses at transmission level	mln cm	30	2.3	0.5	27.1
Gas transported	mln cm	22317	1738	402	20177
Operational costs for transportation					
<u>Variable costs</u>					
Electricity used for pumping	mln kWh	3.0	0.23	0.05	2.7
Tariff	lei/kWh	0.24	0.24	0.24	0.24
Total electricity costs	mln lei	0.72	0.1	0.01	0.7
Gas used for pumping	mln mc	70.0	5.5	1.3	63.3
Price of the gas	lei/1000 cm	376	376	376	376
Total gas cost	mln lei	26	2.0	0.5	24
Losses		30.0	2.3	0.5	27.1
Cost of Losses		11.3	0.9	0.2	10.2
Total VC	mln lei	38	3.0	0.7	35
Fixed Costs	/				
Fixed Costs	mln lei	44.5	3.5	1	40
Net Operational Costs	mln lei	83	6	1	75
Profit margin		10/	10/	10/	10/
Profit margin		7.2	0.56	0.13	6.5
Total Operational Costs		90	7	1.6	81.4
Transportation tariff	lei/1000 cm	3.71	3.71	3.71	3.71
Total transportation costs		8519	664	154	7702
Tariff of the gas delivered to DS	lei/1000 cm	382	382	382	382
Losses in Distribution System	mln cm		67.2		
Gas delivered to customers	mln cm		1671		
<u>Operational costs for distribution</u>					
Materials	mln lei		14		
Salaries	mln lei		12		
Social fund	mln lei		4		
Depreciation	mln lei		13		
Losses	mln lei		26		
Other	mln lei		5.2		
Net operational costs	mln lei		74		
Profit margin			10/		
Profit margin			7.4		
Total operational costs			81.0		
Distribution tariff	lei/1000 cm		48.5		
Cost of gas delivered to DS	mln/lei		664		
Total distribution costs	mln lei		744		
Retail tariff	lei/1000 cm		446		
Debt service	lei/1000 cm		39		
Final Retail tariff	lei/1000 cm		485		

144

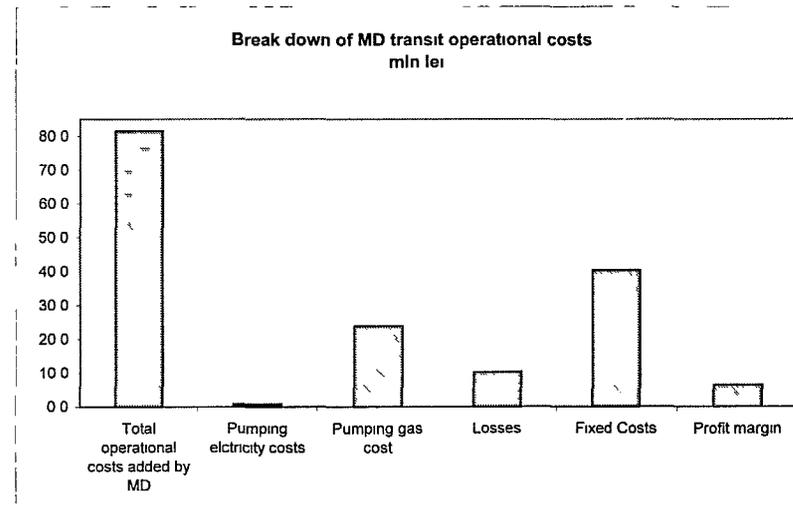
Allocation of 1998 ANRE costs



All charts exclude LB gas

Total operational costs added by MD do not include

right of way
environmental protection
life insurance
VAT etc



145

Individual plan of
Reorganization and Privatization
of Gas Sector of the Republic of Moldova
(general directions)

I. Created Situation

During the last 4-5 years the gas sector of the Republic of Moldova is in a deep financial crisis. According to the situation as of December 1 only the customers of the Right Bank didn't pay for the gas supplied from Russia the amount of 1.1 billion Lei (240 million USD). During the last year the debts increased with 315 million Lei or with 30%. The Right Bank is paying only 55-60% of the gas supplied using different forms of clearance (cash transfers, barter, other services). The payments for the gas supplied to the Left Bank amount to 10% only.

As a result the Moldovan's debts to Russian JSC "Gazprom" are increasing and at present they amount to 650 million USD, from which the Right Bank should pay 300 million USD. From the above-mentioned sum of 300 million USD 140 million USD are temporarily covered by obligations (with a rate of interest of 7.5%/year for 7 years), the penalties for non-payments during 1994-1997 amounted to 60 million USD and about 100 million USD are due for the non-paid gas.

The financial situation is continuously aggravating especially during the autumn-winter period because of the increase of daily and monthly limits for the gas supplied. Due to the lack of discipline from consumers the Russian JSC "Gazprom" reduces the gas supply through the high-pressure pipelines, applies financial penalties.

Taking into consideration all these facts, at the beginning of this year the management of Russian JSC "Gazprom" advanced to the Government of the Republic of Moldova the proposal of reorganization of the structure and the administration of gas sector of Moldova. After a number of discussions between Parties, the president of administration board of Russian "Gazprom" and the Prime Minister of the Republic of Moldova have signed on March 28, 1997 the correspondent documents.

In the basis of these documents the DoE and "Moldovagaz" Concern have elaborated and coordinated with all interested parties an Individual Plan for the reorganization and privatization of gas sector of the Republic of Moldova. The plan and the proposals to the plan have been examined to the session of the republican commission on the restructuring of the energy sector. It was approved to the governmental session.

II General requirements of the Individual plan:

1 The plan is elaborated in accordance with the Law of the Republic of Moldova "Regarding the program of privatization for 1997-1998", the program of activity of the GoM during 1997-1998 and in accordance with the "Program on gas debts reimbursement and development of future cooperation" signed in May by the authorities of the Republic of Moldova and Russian "Gazprom".

2 It is supposed to create a moldo-russian joint venture "Moldovagaz" instead of the existing "Moldovagaz" concern and "Gazsnabtransit"

3 Shareholders of the new entity will be the Republic of Moldova, Transnistria, Russian JSC "Gazprom"

Founders of the new Joint Venture will be the Ministry of privatization and state administration of the Republic of Moldova, the Committee on state administration of Transnistria and the Management of Russian JSC "Gazprom"

4 Except the above-mentioned legal persons, shareholders of the Joint Venture could be 1990 private persons – actual shareholders of "Moldovagaz", after converting their shares to the shares of the Joint Venture

5 The statutory capital of the Joint Venture is consisting from the funds of the energy sector belonging to each founder or shareholder

6 The statutory capital equal to 1 bill 366 mil lei (300 mil USD) is supposed to be divided between the shareholders as follows

The Republic of Moldova - 50%

Including

Transnistria – 14%

Private persons – 1%

Russian JSC "Gazprom" – 50%

7 During the first 3 years the Moldova's share to the statutory capital of the Joint Venture will be not less than 35% Further decrease of this share will be accomplished only by Parliamentary decision

8 The Joint Venture will own the funds transferred to its statutory capital by founders contributions

9 The Joint Venture will have simple nominative shares of 100 lei and a common register of shareholders

10 As a result of the reorganization the actual 39 JSC of Moldovagaz and 6 gas companies of Transnistria will obtain the statute of enterprises of the Joint Venture

11 Further the number of Joint Venture's enterprises will be reduced by their increase in accordance with the administrative-territorial reform of the Republic of Moldova or relative to the economic efficiency

12 The Joint Venture's enterprises will be legal entities, having their own bank account, balance sheet, administration and Statute, which will be approved both by the Joint Venture and the founder

13 The Joint Venture's enterprises will activate on the basis of the property that was on their balance before entering the new Joint Venture, and which will be fixed by the founders

14 The administration and Supervision Board of the Joint Venture will consist from the General meeting of shareholders, Supervisory Board, Administration, Commission for Revision and the external auditor

15 The Joint Venture will be a legal person acting in accordance with the legislation of the Republic of Moldova and to its Statute

16 The Joint Venture will be located in Chisinau

III The fulfillment of this plan will contribute to

- set up a new operational structure, more simple and safe, and to set up the mechanism of administration of the gas sector from both banks of Nistru,
- consolidate the economic relationship of gas enterprises from the Left and the Right bank in a common joint stock company,
- observe the technological and financial discipline, to improve the gas metering, to reduce the debts,
- further development of cooperation between the Republic of Moldova and Russian "Gazprom",
- increase the interest of Russian "Gazprom" as a big shareholder of the created Joint Venture in problems relative to the work improvement and development of gas industry in Moldova, as well as to increase the volume of gas supplied to the Republic of Moldova and its transit to Balkan countries,
- speed up the gasification of the Republic of Moldova,
- increase the attractiveness and market price of shares of the gas industry of the Republic of Moldova for the retail sales and big investors

Department of Energy
Energy Resources and Fuel

Concern "Molodvagaz"

GOVERNMENT OF THE REPUBLIC OF MOLDOVA

RESOLUTION NO _____

“ _____ ” _____ 1997

Regarding the Individual plan
of reorganization and privatization of
Gas sector of the Republic of Moldova

In order to fulfill the Law “Regarding the program of privatization for 1997-1998” and in order to fulfill the stipulations of the Protocol of discussions “On debts reimbursement for the gas supplied during 1994-1997 and further cooperation” that was signed on March 28, 1997 between the Governmental delegation of the Republic of Moldova and the delegation of Russian “Gazprom”, as well as to fulfill the conditions of the Protocol of discussions held on October 10, 1997 in Moscow between the delegations of Russian “Gazprom”, the Republic of Moldova and Transnistria,

The Government of the Republic of Moldova

DECIDES

1 To approve the Individual plan of reorganization and privatization of gas sector of the Republic of Moldova (See attached)

2 To present the above mentioned Individual Plan of reorganization and Privatization of gas industry of the Republic of Moldova for discussions to the Parliament

Ion CIUBUC
Prime Minister of the
Republic of Moldova

PARLIAMENT OF THE REPUBLIC OF MOLDOVA

RESOLUTION

Regarding the Individual plan of reorganization
and privatization of the gas sector
of the Republic of Moldova

To fulfill the conditions of the Law "Regarding the Program of privatization for 1997-1998"

The Parliament adopts the present Resolution

Art 1 To approve the Individual Plan of reorganization and privatization of gas sector of the Republic of Moldova submitted by the Government and attached to the present Resolution

Art 2 To consider rational the termination of the activity of both "Moldovagaz" Concern and Moldovan - Russian limited liability joint venture "Gazsnabtransit" and to reorganize them by merging in a single opened Joint Venture with the participation of "Moldovagaz" Concern, Republican enterprise of high pressure pipelines "Moldovatransgaz", Regional Administration of high-pressure pipelines "Tiraspoltransgaz", gas enterprises of Transnistria and Russian JSC "Gazprom"

Art 3 To agree with the Governmental proposal to increase the share of the Russian JSC "Gazprom" in the statutory capital up to 50%, due to the transfer on its account of state shares of gas sector enterprises of the Republic of Moldova and Transnistria

Art 4 In case of alienation of Joint Venture's shares belonging to the Republic of Moldova or in case of additional shares issuance, to establish that during the first 3 years after the creation of Joint Venture the state's share in the statutory capital will be not less than 35%. Further decrease of this share will be accomplished only by Parliamentary decision

Art 5 To charge persons designated by the Government from the central authorities to respect the interests of the Republic of Moldova in the Joint Venture. To charge these persons to administrate the stake of shares and to vote to the General Meeting of shareholders as a single shareholder

Art 6 Relative to the present Resolution, during the I semester of 1998 the Ministry of Privatization and State Property Administration should prepare and present in an established manner the existing changes to the Law "Regarding the high-pressure

pipelines” at chapters dealing with the administration and the right of ownership (Art 3,4), as well as the amendment to the Law “Regarding the Joint Stock Companies”, providing for introducing on a new article “The enterprises of the Society”

Art 7 For the purpose of developing the market of gas supply in the Republic of Moldova to determine that the Joint Venture assure the access to its pipelines and to the distribution system to other gas suppliers (sellers) in Moldova on a contractual basis

Art 8 Taking into the consideration that the Statutory capital of the Joint Venture, including the share of Russian JSC “Gazsnabtransit” is formed on a non-cash basis, on the account of state funds of the Republic of Moldova, to set free the Joint Venture from the payment of state fee

Art 9 The control over the fulfillment of the present Resolution will be effectuated by the Commission for economy, industry and privatization

Art 10 The present Resolution enter into force the day of its publishing in the Monitorul Oficial of the Republic of Moldova

Art 11 To abrogate the Parliamentary Resolution NO 611-XIII for October 27, 1997 “Regarding the Individual plan of reorganization and privatization of the enterprises of “Moldovagaz” State Concern (Monitorul Oficial of the Republic of Moldova NO 67, from November 30, 1995)

D MOTPAN
Chairman of the Parliament

Supplement
To the Governmental Decision of the
Republic of Moldova
No ____ from _____ 1997

INDIVIDUAL PLAN OF
REORGANIZATION AND PRIVATIZATION OF GAS SECTOR
OF THE REPUBLIC OF MOLDOVA

On the basis of the Law of Moldova Republic "Regarding the Program of privatization for 1997- 1998 years ", appropriate normative acts of Transnistrian territory and with the purpose of realization of Moldova Republic Governmental delegation and the delegation of Russian joint-stock company "Gazprom" negotiations Protocol about repayment of debts of Moldova Republic for deliveries of Russian natural gas in the years 1994-1997 and further development of cooperation according to the document, signed on March 28, 1997 in Moscow, and Record of negotiations, took place on October 10, 1997 in Moscow between delegations of Russian joint-stock company "Gazprom", Moldova Republic and Transnistrian territory, the following Individual project of reorganization and privatization of Moldova Republic gas complex is developed

1 GENERAL CHARACTERISTIC

The structure of existing gas complex include - Concern " Moldovagaz", which is uniting 41 joint-stock companies, Industrial association " Tiraspoltransgas ", which is uniting 7 gas facilities of Transnistrian territory, and also joint Moldo-Russian enterprise - joint-stock company of the closed type " Gazsnabtransit " In the branch as a whole worked more than 5 thousands people, from which about 2 thousands people own the stock certificates of the gas enterprises

The basic subject of a gas complex activity is providing of the consumers by natural gas, delivered by Russian joint-stock company "Gazprom" and the export of Russian gas through Moldova Republic territory to Balkan Besides, the enterprises of gas complex are selling to the consumers the liquefied gas, carrying out design and construction of gas pipelines, conduct other activity, permitted by legislation

During last years the Republic consumes annually on her internal needs more than 3 billions cubic meters of gas, from which about 40 percents referred to Transnistrian territory Nowadays the natural gas is providing for 30 districts of Moldova's territory and to the inhabitants of more than 300 thousands apartments and individual houses The liquefied gas is used by about 1 mil families, to gas networks are connected over one thousand enterprises, organizations and institutions

The annual cost of received by Moldova gas makes more than 250 ml US dollars
The level of its annual payment by the usual forms of accounts is equal in average to 25-30%

By the date of December the 1-st, 1997 the common duty of Moldova consumers to Russian joint-stock company "Gazprom" makes up more than 350 ml US dollars, from which more than two thirds are the debts of Transnistrian territory

Besides, 160 ml US dollars makes up the penalties charged for delayed payments in 1994-1997, from the latter more than a half referred to Transnistrian territory Besides this, during years 1999-2003 the Republic is obliged to redeem the bonds, which were let out and transferred to Russian joint-stock company "Gazprom" for re-structuring of the debt in the sum of 140 mln US dollars under 7,5 % annual

II PURPOSE

The purpose of reorganization and further privatization of Republic gas complex is formation of market conditions of branch functioning, perfection of management of the gas enterprises in the direction of natural gas accounts improvement and liquidations of debts for gas payments, observance of the established norms, rules and limits of consumption of gas, realization of uniform technical policy in the gasification of Republic and development of transportation system of Russian gas through Moldova territory for the export to third countries

III THE MAIN DIRECTIONS OF ACTIVITY

Import, transportation, wholesale and retail delivery of natural gas and selling of the liquefied gas

Realization of the in time accounts for gas, liquidation of debts, strengthening of financial condition and providing of profitable state of gas complex

Expansion of the natural gas selling market

Maintenance of uninterrupted delivery of Russian natural gas through Republic's territory to the third countries

Increasing of export capacities and volumes of gas transit on Balkan

Realization of uniform technical and investment policy in Republic's provision of gas supply

Design and construction of new and modernization of working gas pipelines and distribution gas networks on Republic's territory

Maintenance of reliable and safe operation of gas pipelines and their equipment

Effective management of transit and distribution gas pipelines, maintenance of gas transportation objects, gas consumption control

General management, coordination and control of gas complex enterprise activity, rendering to them necessary organizational and legal help, protection of rights and lawful interests

Purchasing and selling of technological assignment production and of consumer goods Commercial work

Foreign trade activities Other kinds of the activities, which has been not forbidden by the legislation

IV REORGANIZATION, STATUS, RELATIONS

1 Concern "Moldovagaz" and combined Moldo-Russian enterprise - joint stock company of closed type "Gazsnabtransit" will terminate their activity and will be reorganized by merge in uniform joint-stock company of the opened type (further "Society")

2 The joint-stock companies of Concern "Moldovagaz" stop their activity and will be reorganized by transformation to the enterprises of Society, which acts as their founder (further Enterprises)

3 The decision about the termination of activity and reorganization of Concern in a Society accepts the Parliament of Moldova Republic on Government presentation

4 The decision about the termination of activity and reorganization of joint stock company of closed type "Gazsnabtransit" take the assembly of the shareholders as agreed in the appropriate institutions of Moldova Republic, Transnistrian territory and Russian joint-stock company "Gazprom"

5 The decision about the termination of activity and reorganization of included in structure of Concern "Moldovagaz" joint-stock companies take the assemblies of the shareholders with the knowledge of Ministry of a privatization and management of State property of Moldova Republic

6 Industrial association "Tiraspoltransgas" with Transnistrian territory gas facilities are included into the structure of Society, being reorganized in its Enterprises, on the basis of the decision of the appropriate institutions of Transnistrian territory

7 Termination of activity of joint stock company of closed type "Gazsnabtransit", of Concern "Moldovagaz" and its joint-stock companies is made in the established by the law order, after the State registration of Society

8 The Enterprises act on the basis of their charters, confirmed by Society

9 The Enterprises are the legal persons

10 The Enterprises act on the basis of the permanent assets, which are fixed to them by the founders of a Society

11 Society develops and approves the Statute, which stipulate conditions and the order of mutual relations between Society and Enterprises, and also the forms of the Society control above the activity of the Enterprises

12 By virtue of their technical and production-technological importance the Republic's enterprise of main gas pipelines "Moldovatransgas" (Drochia) and Regional management of main gas pipelines "Tiraspoltransgas" act in structure of Society on the basis of separate Statutes, which, as well as their charters, are affirmed by the assembly of Society members

13 The Society is the proprietor of the means, transferred to it by the founders as the contributions in registered capital, according to the current legislation of Moldova Republic, constituent contract and charter of Society

V FOUNDERS REGISTERED CAPITAL THE SHAREHOLDERS,

14 The following legal persons act as the founders of Society

- Ministry of privatization and management of State property of Moldova Republic,
- Committee on Transnistrian territory property management,
- Russian joint-stock company "Gazprom"

15 Registered capital of Society is formed by the founders at the expense of

- Means of the registered capital of joint stock company of closed type "Gazsnabtransit",
- State share of joint-stock companies of "Moldovagaz" Concern means,
- Means of gas facilities of Transnistrian territory,
- Means of the private persons - shareholders of "Moldovagaz" Concern

16 The individual shares of Moldova Republic and Transnistrian territory in the registered capital of Society are determined, proceeding from the cost of gas property, located accordingly in Moldova Republic and Transnistrian territory

17 The participation of Russian joint-stock company "Gazprom" in the registered capital of Society is determined by its share in joint stock company of closed type "Gazsnabtransit" and can be increased at the expense of the actions, transmitted according to established order to Russian joint-stock company "Gazprom" by the Moldavian party on account of gas payments

18 Registered capital, its prospective value and individual share of the shareholders of Society are specified in the table (Appendix N 1)

19 The physical persons - present shareholders of the enterprises of Concern "Moldovagaz" and joint stock company of closed type "Gazsnabtransit" - have the right to convert (to exchange) their actions in the actions of Society For this the Ministry of privatization of Moldova Republic, as the founder, reserves in the share of the registered capital of Society the appropriate part Not converted actions can be redeemed by the Society in the established manner

20 The estimation of means cost, which are brought in by each of the parties in the registered capital of Society, is made by uniform methodology according to Moldova Republic effective normative acts and is affirmed by constituent assembly of Society

21 In the first half of the year 1998 the cost of the property, which has been brought in the registered capital of Society, will be estimated by one of the world wide recognized firms, proceeding from the world market prices, with the subsequent change of the registered capital of Society

V SHARES

22 The Society lets out uniform simple inscribed stocks The privileged actions Society do not let out

23 Nominal cost of the action is 100 lei

24 At the assembly of the shareholders each action gives to it's owner one vote

25 All actions of Society have the equal rights at the distribution of the profit to the dividends

26 The shareholder has the right at any time without the consent of Society to alienate belonging to him actions

27 At the alienation of belonging to Moldova Republic actions of Society or subsequent issues of the actions, the State share in registered capital of Society during first three years from the date of establishment of Society is kept at the level not less, than 35 percents

VII THE STRUCTURE OF A SOCIETY

28 The enterprises of Society descent from Concern "Moldovagaz" are specified in the list (Appendix N 2)

29 The enterprises of Society descent from Tiraspoltransgaz" are specified in the list (Appendix N 3)

30 The joint-stock companies of Concern "Moldovagaz", not included in the Society structure, are specified in the list (Appendix N 4)

31 The number of the Enterprises of Society at the expense of integration or otherwise can be reduced according to new administrative - territorial division of the Moldova Republic, or in connection with production or economic expediency

VII ADMINISTRATION OF SOCIETY

32 The supreme body of Society is the general meeting of the shareholders (further Assembly)

33 In the periods between assemblies the Observant Council represents the interests of the shareholders, carries out a general management and controls the activity of Society

34 Executive Committee organizes and carries out daily current activity of Society on the basis of the Charter of Society and its Regulations

35 The chiefs of the Enterprises of Society are appointed and responded by Executive Committee

36 The chiefs of "Moldovatrangas" and of "Tiraspoltrangas" are nominated and responded by the Assembly

37 The observance of Moldova Republic interests in Society can be assigned to the persons, nominated by the Government from central bodies of authority The specified persons have to operate with a package of the actions belonging to the State, and to vote at the Assembly as a single shareholder The similar rule can be distributed and to other legal persons - shareholders of a Society

IX ASSIGNMENT OF RIGHTS

38 The Society in relation to duties and obligations is the assignee of Concern "Moldovagaz" and joint Moldo-Russian enterprise - joint stock company of closed type "Gazsnabtransit"

At that, Moldova Republic's and Transisrean territory's obligations on repayment of debts for natural gas, received by each party for it needs in the years of 1994-1997 and payments of their current deliveries are kept

39 The enterprises of Society in the relation of duties and obligations are the assignees of the appropriate joint-stock companies of Concern "Moldovagaz" and gas facilities of Transisrean territory

40 In other, not stipulated by the present Individual project, the appropriate rules of the constituent contract and charter of Society have effect

41 The society is the legal person and acts according to the Moldova Republic legislation and the charter

42 The title of Society

Complete dual Moldo-Russian joint-stock company "Moldovagaz" Reduced "Moldovagaz" JSC

43 Place of registration and residence of Society - Chisinau

CO-ORDINATED

Ministry of economy and reforms of the Republic of Moldova

Ministry of privatization and management of state property of the Republic of
Moldova

Department of power, fuel and energy resources of the Republic of Moldova

State commission on the market of valuable papers of the Republic of
Moldova

From Transnistrian territory

Russian joint-stock company "Gazprom"

Concern "Moldovagaz"

Joint-stock company of the closed type "Gazsnabtransit"

The Republic enterprise of main gas pipelines "Moldovatransgas"

Regional management of main gas pipelines "Tiraspoltransgas"

Appendix 1
Individual Plan of
Reorganization and Privatization
Of Gas sector of Moldova

Statutory Capital,
forecasted volume and
shares of shareholders
of Moldovagaz JSC

Shareholders	Lei	NO of shares	%
Republic of Moldova	683 000 000	6 830 000	50
Including			
Transnistria	187 000 000	1 870 000	14
Private persons	17 000 000	170 000	1
Russian JSC "Gazprom"	683 000 000	6 830 000	50
Total Statutory capital	1 366 000 000	13 660 000	100

Individual Plan of
Reorganization and Privatization
Of Gas sector of Moldova

LIST of Enterprises
of Moldovagaz Concern

- 1 Moldovatrangaz, Drochia
- 2 Gas Enterprise Chisinau
- 3 Gas Enterprise Balti
- 4 Gas Enterprise Aneni Noi
- 5 Gas Enterprise Basarabasca
- 6 Gas Enterprise Briceni
- 7 Gas Enterprise Vulcanesti
- 8 Gas Enterprise Glodeni
- 9 Gas Enterprise Donduseni
- 10 Gas Enterprise Drochia
- 11 Gas Enterprise Edinet
- 12 Gas Enterprise Cahul
- 13 Gas Enterprise Cantemir
- 14 Gas Enterprise Comrat
- 15 Gas Enterprise Criuleni
- 16 Gas Enterprise Calarasi
- 17 Gas Enterprise Causeni
- 18 Gas Enterprise Leovo
- 19 Gas Enterprise Nisporeni
- 20 Gas Enterprise Ocnita
- 21 Gas Enterprise Orhei
- 22 Gas Enterprise Rezina
- 23 Gas Enterprise Soroca
- 24 Gas Enterprise Straseni
- 25 Gas Enterprise Sangerei
- 26 Gas Enterprise Taraclia
- 27 Gas Enterprise Telenesti
- 28 Gas Enterprise Ungheni
- 29 Gas Enterprise Floresti
- 30 Gas Enterprise Falesti
- 31 Gas Enterprise Hancesti
- 32 Gas Enterprise Ciadar Lunga
- 33 Gas Enterprise Cimislia
- 34 Gas Enterprise Stefan Voda
- 35 Gas Enterprise Soldanesti

- 36 Gas Enterprise Ialoveni
- 37 Enterprise "Complectgaz" Chisinau
- 38 Enterprise "Flacara Albastra" Chisinau
- 39 Enterprise Gazsnabsbit" Straseni

Appendix 3

Individual Plan of
Reorganization and Privatization
Of Gas sector of Moldova

LIST of enterprises of
Production Association
"Tiraspoltransgaz"

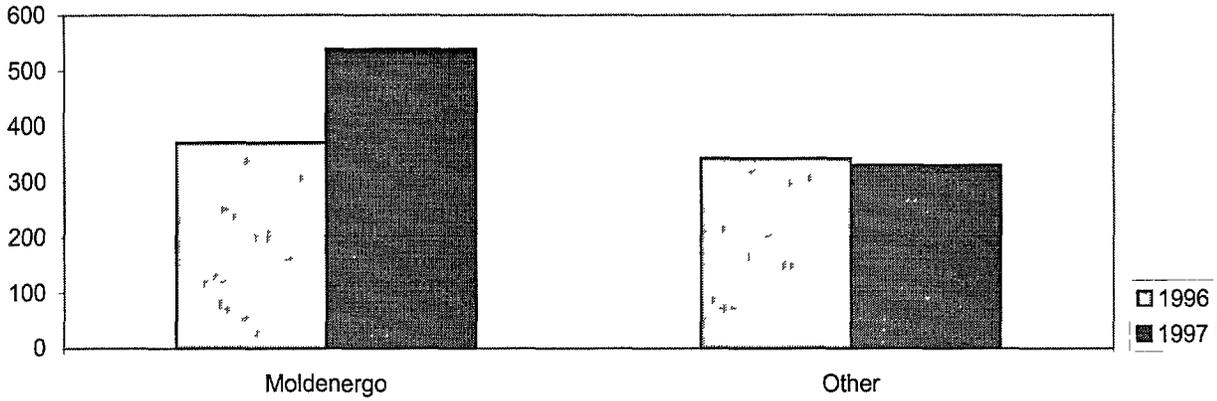
- 1 Regional administration of high pressure pipelines "Tiraspoltransgaz"
- 2 Production gas sector administration of Tiraspol
- 3 Production gas sector administration of Bender
- 4 Production gas sector administration of Ribnita
- 5 Production gas sector administration of Slobozia
- 6 Production gas sector administration of Dubasari

Individual Plan of
Reorganization and Privatization
Of Gas sector of Moldova

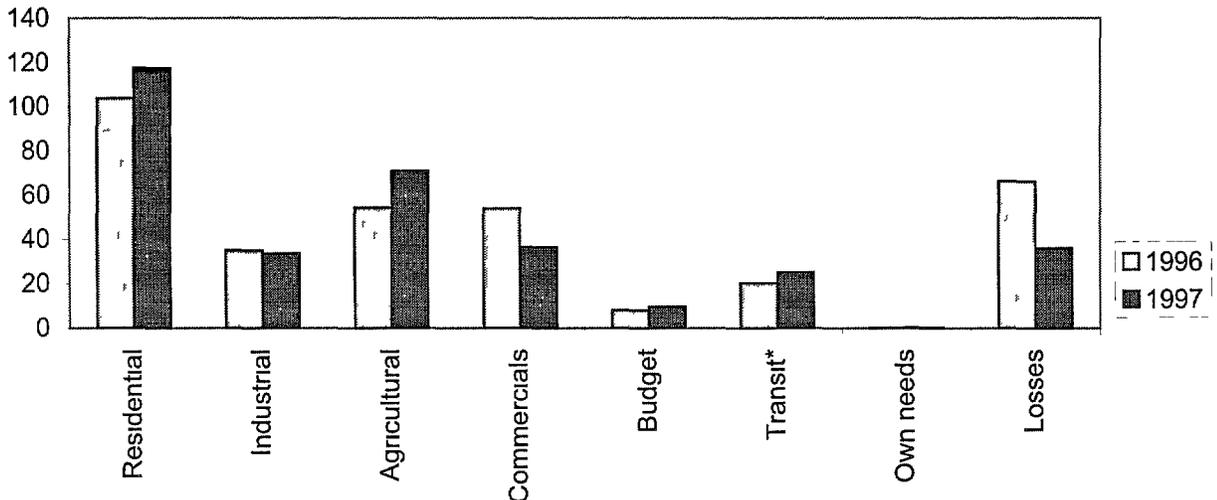
LIST of additional JSC of Moldovagaz Concern
that do not enter the Society

- 1 "Incorgaz" JSC, Chisinau
- 2 "Gazproekt" JSC, Chisinau

**Total Chisinau DC Gas Load,
mcm**

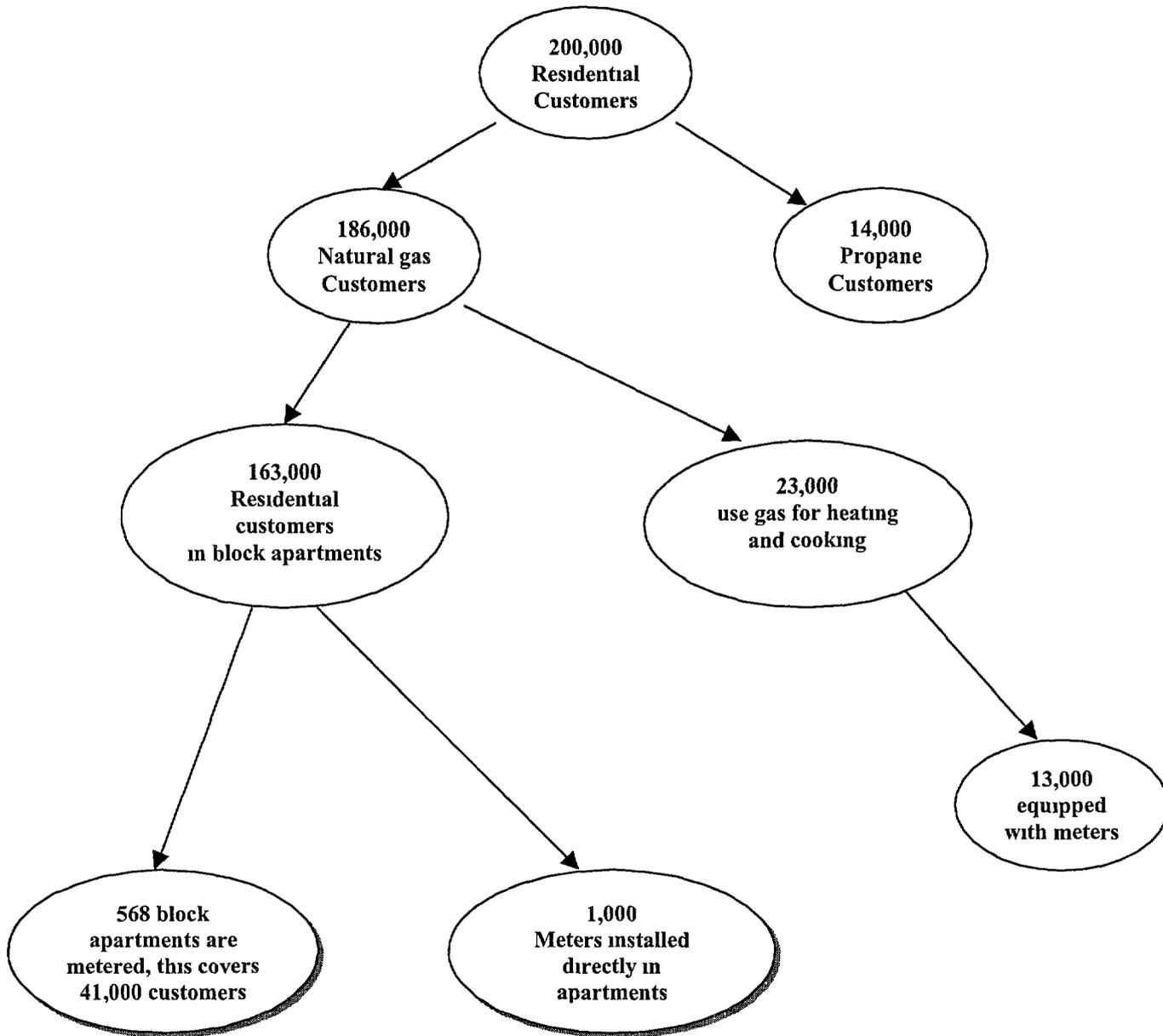


**Chisinau DC Gas Load excluding ME,
mcm**



* Transit means the gas delivered by CDC to neighbor DC s

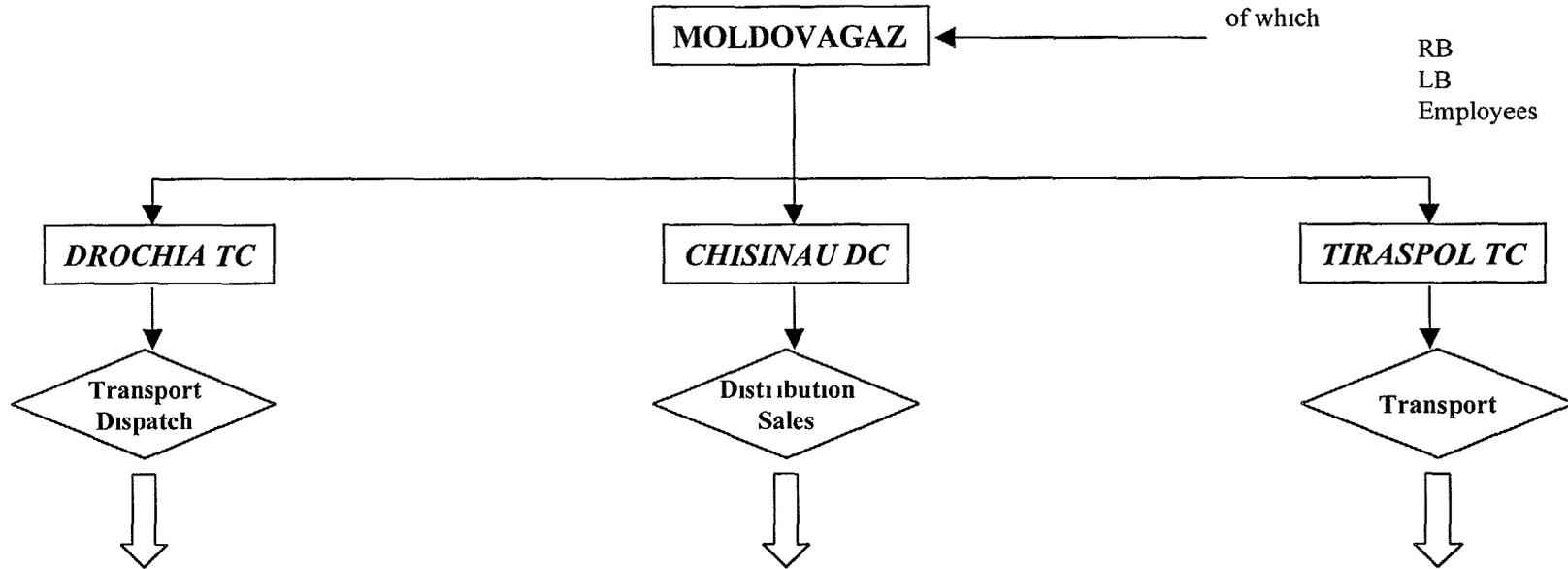
Description of Residential Customers and metering chart



MOLDOVAGAZ

Functions & Responsibilities

RAO Gazprom	50%
Moldova	50%
of which	
RB	35%
LB	14%
Employees	1%



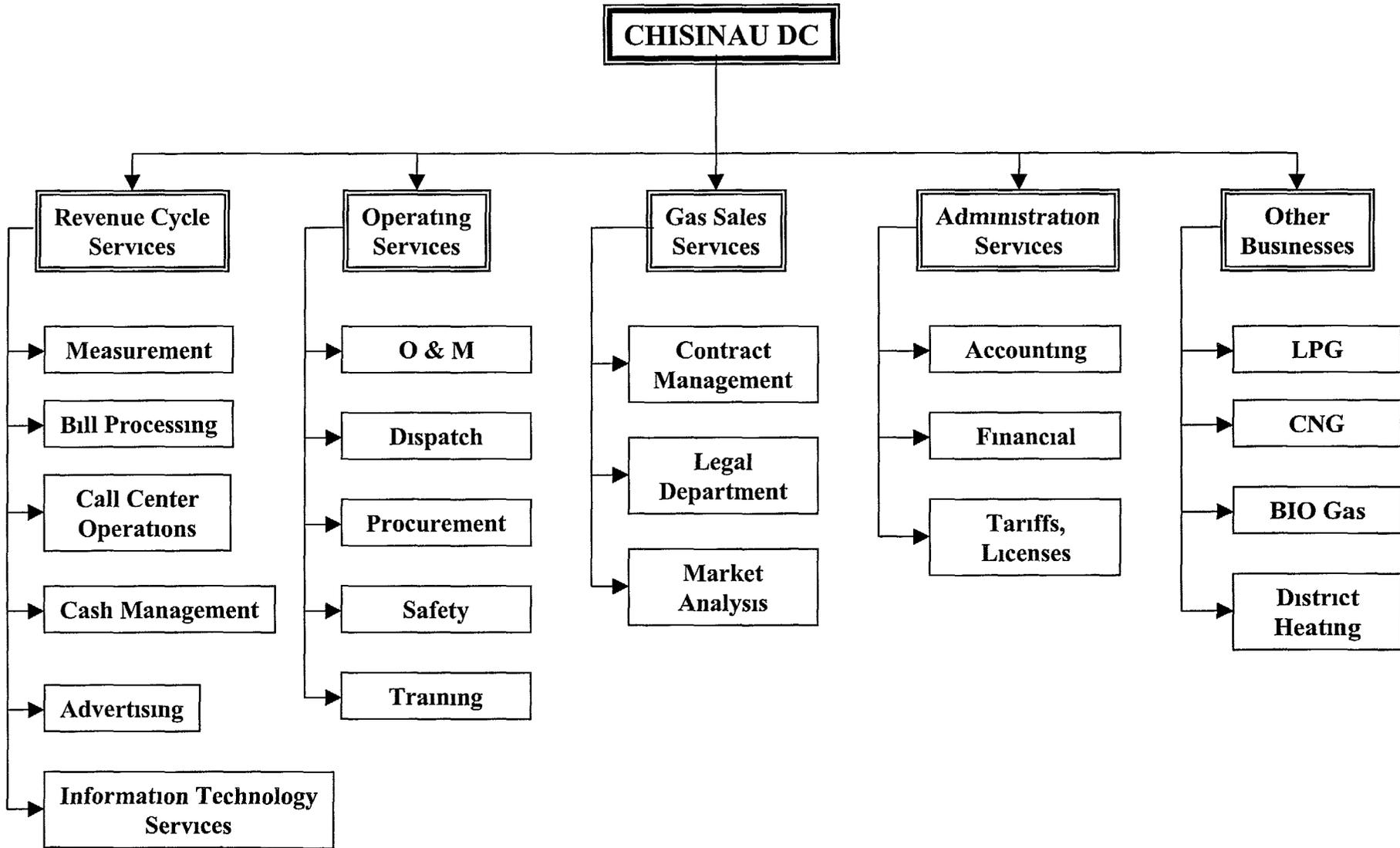
- Transit of the Gas through Moldova
- Transport of Gas within Moldova
- Repairing & Maintenance of HP Lines
- Operating of Compressor Stations (CS)
- Gas Measurement
- Purchase of Gas for Operating the CS
- Contract the Operation & Maintenance of HP lines and CS with Tiraspol TC on the left bank
- Reliable Supply of Gas to End Users
- Guarantee Safety Operation of HP System

- Gas distribution to Customers within Chisinau DC
- Gas distribution to 35 DC's
- Gas distribution to Direct Contractors
- Balanced Gas Dispatch
- Repairing & Maintenance of MP, LP Lines
- Gas Measurement
- Reliable Supply of Gas to End Users
- Guarantee Safety Operation of HP System

- Transport of Gas through Left bank
- Transport of Gas within Left bank (to three DC's)
- Operating & Maintenance of HP Lines & CS under Contractual Agreement w/ Drochia TC
- Gas Measurement
- Reliable Supply of Gas to End Users
- Guarantee Safety Operation of HP System

165

MOLDOVAGAZ
Functional-Organizational Chart
of
Chisinau DC



PRIVATIZATION RISK ANALYSIS

Energy project development and privatization involve risk for all parties - the Host government, the Investors (Utility Project Company), and the Lenders. These risks fall into one of three categories:

- i) Commercial risks,
- ii) Political or country risk, and
- iii) Non-political or force majeure risks

The requirements sovereign guarantees are also discussed. Understanding and quantification of risks associated with each of the three categories is critical to reduce and/or limit Host government exposure to commercial risks that should remain with the Investors and Lenders.

Risk management is the key to a sound financial structure. During privatization process, project development and structuring of Security Package, every project risk should be assigned, transferred or mitigated. Risk must be allocated properly among all parties through the various contracts, insurance policies, cash management operations, bonds, or letters of credit. The most important element is that the parties most suited to bear them accept risks.

Separation of risks, i.e. "unbundling", is based on the concept that there must be a genuine risk sharing between the public sector and the private sector. There must be certainty for the private sector investors and lenders about the current and future investment, legal and regulatory framework. The Security Package must provide for an un-interruptible cash flow, if the investors and lenders meet the contractual agreements. In order for these conditions to be met for the private investors, it may be necessary for the government to set aside income from other sources (i.e. cross-subsidy, independent cash management, guarantee corporation), to assure investors of the un-interruptible cash flow.

A well structured privatization process while satisfying the investment criteria for Investors will reduce the requirements for Host government sovereign guarantees which impact the lending credit capacity for the Host government. The privatization process must also meet the social and political need of the Host government.

1 COMMERCIAL RISKS

In assuming commercial risk, utility availability, customer service, plant betterment, operations and management performance and costs are commercial risks faced by the Utility Project Company. Market risk, associated with the demand forecast may be a commercial risk. Tariff pricing, is considered a political risk because actions of the government (ANRE and other government departments) have a significant impact on decisions outside the control of the Utility Project Company. The Host government, for example, faces the risk that the utility capacity, they are seeking to privatize, will not be required and/or not required at tariff rates sufficiently

high enough, to provide the required revenue generation to repay both the loan principal and interest and the investors equity and a reasonable rate of return on equity

The Project Utility Company is exposed to the risk that "Budget" entities will not pay, in a timely fashion, for energy and services rendered. The Host government must assume risks associated with services provided to State Corporations and government entities.

The commercial risks faced by the Utility Project Company are generally under its control. For example, the failure to meet contractual obligations, is a risk that arises primarily from the performance of the Utility Project Company and its contractors. Evidence of that failure, during the plant betterment phase, can be manifested through delays in completion and/or increases in construction costs. For example, problems related to improper management practices, such as improper budgeting and cost overruns can increase the project investment costs substantially. During the operating phase, failures are manifested through poor technical and financial performance. Arranging a well-thought-out project structure with reliable and experienced utility companies providing operations and maintenance mitigates these risks.

In a utility project, the central contract is the Concession Agreement. It is from the Concession Agreement, that the Project Company generates revenues. The sale of "utility capacity" provides the revenues or cash flow to meet debt service, operating costs, maintenance, and return on investment. For this reason the "creditworthiness" of the entity granting the Concession is a key factor in assessing commercial risk. A utility privatization must be structured around the Host government entity granting the Concession that

- i) Needs the utility capacity,
- ii) Can fulfill the contractual obligations, and
- iii) Has creditworthiness (Or can arrange an acceptable guarantee structure) acceptable to the lenders

If the granting Host government has anything less than an impeccable history of debt servicing and management, a World Bank guarantee and counter-guarantee may be required. This additional layer of risk mitigation may be provided, in some cases, through a direct sovereign guarantee of the entity obligations or an irrevocable letter of credit facility.

The Concession Agreement must be structured to provide an un-interruptible cash flow when the utility is operating and fulfilling the Project Companies obligations.

Utility down times i.e. disruption to energy operations through maintenance work, can expose the Utility Project Company to interruption in cash flow and therefore can disrupt debt-service payments. Because the Utility Project Company is associated with the operation of the utility, adequate risk mitigation becomes necessary outside of the Concession Agreement.

The degree to which commercial and operational risks can be reduced depends largely on the quality of the utility company. Investors. Accordingly, it is essential that the strategic Investors possess the technical, managerial, and financial capabilities to assure plant betterment to provide quality utility services and provide continuing smooth operation.

2 POLITICAL OR COUNTRY RISKS

Country or political risks are those, that are beyond the control of the Utility Project Company, such as foreign exchange availability and exchange rate, expropriation, and tariff pricing risks

Political or country risks, inherent to the country in which the utility is being privatized, and are of greatest concern to lenders because such risks could adversely affect the development and operation of the utility. A prerequisite of a successful utility privatization process, therefore, is commitment by the government to improved legal infrastructure and the opening of capital markets, that will encourage private investment in the utility sector. Private project participants – Sponsors, Strategic Investors and Lenders - will specifically assess the degree of the government's commitment and the risk that the government will lack the political will to reform. Mitigation of risks by the government - through new laws, regulations, or guarantees - reflects a trade-off between the costs of mitigation and the risk premiums that will be paid either in higher tariffs and/or government subsidy.

To attract Strategic Investors and Lenders, governments should be expected to reduce political risks by creating and implementing policies and legislation that provide the necessary institutional and legal infrastructure. This may involve actions such as providing sovereign guarantees to attract investors, legislation that will provide adequate protection to investors against political risks, and streamlining of bureaucratic processes associated with utility privatizations.

Where, for example government guarantees of contractual obligation may be required, the extent to which these mitigating measures will be required, depends on the country's political and financial conditions. In addition, investors and lenders may obtain insurance against political risks, as defined above from multilateral and bilateral financial institutions such as the World Bank.

3 NON-POLITICAL OF FORCE MAJEURE RISKS

Non-political or force majeure risks are caused by natural disasters or accidents such as fires, floods, storms, or earthquakes. Investors and Lenders should be expected to assume commercial risks to a limited extent. Non-political or force majeure risks can generally be mitigated through commercial insurance. The Project Company is responsible for obtaining and paying for the necessary insurance coverage, which should be comprehensive throughout the construction and operation phases of the project. The ability to obtain insurance and account for it in the Concession Agreement is crucial to securing project financing. Certain force majeure risks will remain the responsibility of the government.

4 SOVEREIGN GUARANTEES

Sovereign or government guarantees are needed to assure the Project Company that certain events within the government's control will or will not occur. If such assurance is breached, the Project Company and investors will be compensated or relieved from the consequences of such

events Most of these events would fall within the one of the political, legal, regulatory, and financial risk categories discussed above

5 REASONS TO IMPROVE EXTERNAL CREDITWORTHINESS

There are two major incentives for Moldova to improve external creditworthiness First, without certain minimal level of creditworthiness multilateral organizations would substantially reduce their concessional lending to the country Second, Moldova could reduce its cost of capital on international markets by improving creditworthiness recent studies have found a direct link between creditworthiness and cost of capital on international markets Recent studies have also identified (i) external debt/GNP (ii) debt servicing/exports (iii) GDP growth rates, (iv) non-gold reserves/imports (v) current account/GDP ratio (vi) fiscal deficit/GDP ratio and (vii) inflation as the key domestic macroeconomic factors that influence external creditworthiness of developing countries There is also a direct link between a country's external creditworthiness and its overall level of economic liberalization, and its political and social stability The expected worsening of debt indicators in the medium term, therefore, has to be offset by stronger performances of other creditworthiness indicators to improve creditworthiness

IMPLICATIONS OF THE PRIVATIZATION OF THE GAS COMPANY

WHY GOVERNMENTS PROMOTE PRIVATIZATION

Host governments support the development of corporatized state entities and the formation of Foreign Investment Enterprises (FIE's) to 1) Seek participation of the private sector in sharing commercial risk, 11) Access local and international capital markets, 111) Access international management and technical transfer, 1v) Access international investors and export marketing in the industrial and commercial sector, and v) Ultimately to reduce sovereign guarantees in comparison to traditional borrowing. There are, however, both pluses and minuses for the Host government.

PLUSES

- 1 Pressure from multilateral lending agencies to develop private capital flow
- 2 Increase foreign direct investment by access to new/additional lenders and investors
- 3 Spread the risk to private sector, and hence reduce risk to the public sector,
- 4 Limited-recourse financing – off-balance sheet financing
- 5 Private-sector efficiency potentially lowers cost to the consuming public, and
- 6 Unbundling risk allows allocation to entities most able to manage risk

MINUSES

- 1 Higher tariffs

Commercial – full recovery tariffs can create economic dislocation. Commercial rates must provide for higher internal-rate-of-return to compensate for the risk taken by the investor.

- 2 Surrender of Autonomy

Utilizing corporatization – foreign investment model results in surrendering some sovereign autonomy in utility control and management. The model reduces the potential to further social objectives such as employment, to achieve regional integration, or extend political favoritism.

Committing to a concession/license, which is an integral part of the Security Package, limits the Host government's options to reduce or eliminate Tariffs, without compensation to the Investors in the Utility Company.

COMPARATIVE ANALYSIS OF DISTRICT AND GAS HEATING

		Project district heating* CHP-1	Project district heating* CHP-2	Total heat delivery	Gas heating High efficiency High O&MC	Gas heating Lower efficiency Total O&MC	Gas heating Lower efficiency Low O&MC	Gas heating Lowest efficiency Low O&MC
Heat generation	th Gcal	762	1770	2532	2152	2152	2152	2152
Efficiency	%	90	84	85	90	80	80	70
Gas consumption	mil cm	107	267	374	301	339	339	387
Heavy fuel oil consumption	tones	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Natural gas price	lei/th cm	454	454	454	454	454	454	454
Heavy fuel oil price	lei/tonne	480	480	480	480	480	480	480
Costs of gas	mil lei	48 5	121	170	137	154	154	176
Costs of heavy fuel oil	mil lei	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Total fuel costs	mil lei	48	121	170	137	154	154	176
O&M costs	mil lei	14 4	22 9	37 4	37 4	37 4	18 7	18 7
TOTAL OPERATIONAL COSTS	mil lei	63	144	207	174	191	172	194
Per unit heat costs	lei/Gcal	82 5	81 4	81 7	80 9	88 8	80 1	90 3
Percentage heat losses	%	0 15	0 15	0 15	0 0	0 0	0 0	0 0
Heat losses in the pipes	th Gcal	114	265	380	0 0	0 0	0 0	0 0
HEAT DELIVERED	th Gcal	648	1504	2152	2152	2152	2152	2152
Costs of delivered heat	lei/Gcal	97 1	95 8	96 2	80 9	88 8	80 1	90 3
O&M of heat transmission and distribution pipes	lei/Gcal	30	30 0	30 0	0 0	0 0	0 0	0 0
Heat tariff	lei/Gcal	127	126	126	81	89	80	90

*) Note CHP-1 includes boiler house Sculeni and CHP-2 includes Eastern boiler house

178

Dynamics of fuel and energy costs and comparison of different cooking options

Tab 1

Type of fuel or form of energy	Unit	1994	1995	1996	1997 tce	Cooking 3 persons/month kgce	Costs for cooking Lei/month
Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	388	538	79.8	43
Natural gas for population	lei/1000cm	282	282	282	400	23.9	10
Natural gas for other consumers	lei/1000cm	465	346	346	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2082	1887	1997	1272		
Electricity	lei/kWh				0.18	13.4	20
<i>Assumptions for Tab 1</i>							
Electricity tariff for cooking constitutes 75% of full tariff							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves 50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=65%							

Tab 2

Type of fuel or form of energy	Unit	1994	1995	1996	1997 tce	Cooking 3 persons/month kgce	Costs for cooking Lei/month
Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	387.5	538	79.8	43
Natural gas for population	lei/1000cm	282	282	282	400	23.9	10
Natural gas for other consumers	lei/1000cm	465	346	346	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2082	1887	1997	1272		
Electricity	lei/kWh				0.18	12.4	18
<i>Assumptions for Tab 2</i>							
Electricity tariff for cooking constitutes 75% of full tariff							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves=50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=70%							

Tab 3

Type of fuel or form of energy	Unit	1994	1995	1996	1997 tce	Cooking 3 persons/month kgce	Costs for cooking Lei/month
Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	387.5	538	79.8	43
Natural gas for population	lei/1000cm	281.5	281.5	281.5	400	23.9	10
Natural gas for other consumers	lei/1000cm	465.1	346.2	346.2	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2081.5	1886.5	1997	1272		
Electricity	lei/kWh				0.24	13.4	26
<i>Assumptions for Tab 3</i>							
Full electricity tariff for cooking							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves=50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=65%							

Tab 4

Type of fuel or form of energy	Unit	1994	1995	1996	1997 tce	Cooking 3 persons/month kgce	Costs for cooking Lei/month
Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	387.5	538	79.8	43
Natural gas for population	lei/1000cm	281.5	281.5	281.5	400	23.9	10
Natural gas for other consumers	lei/1000cm	465.1	346.2	346.2	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2081.5	1886.5	1997	1272		
Electricity	lei/kWh				0.24	12.4	24
<i>Assumptions for Tab 4</i>							
Full electricity tariff for cooking							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves=50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=70%							

DEFINITION OF REGIONS

Regional Definitions used for Purpose Comparisons

Commonwealth of Independent States

North America

USA (excluding Puerto Rico), Canada and Mexico

South and Central America

Caribbean (including Puerto Rico), Central and South America

Western Europe

European members of OECD (apart from Czech Republic, Hungary and Poland), plus Cyprus, Gibraltar and Malta

Central Europe

Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Former Yugoslav Republic of Macedonia, Poland, Romania, Slovakia, Slovenia, Yugoslavia

Europe

Western Europe and Central Europe

Middle East

Arabian Peninsula, Iran, Iraq, Israel, Jordan, Lebanon, Syria

North Africa

Territories on the north coast of Africa from Egypt to Western Sahara

West Africa

Territories on the West Coast of Africa from Mauritania to Angola, including Cape Verde Islands

East and Southern Africa

Territories on the East Coast of Africa from Sudan to Republic of South Africa Also Namibia, Malawi, Zambia, Zimbabwe, Uganda, Madagascar

Asia Pacific

Brunei, Cambodia, China, China Hong Kong SAR*, Indonesia, Japan, Laos, Malaysia, Mongolia, North Korea, Philippines, Singapore, South Asia (Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan and Sri Lanka), South Korea, Taiwan, Thailand, Vietnam, Australia, New Zealand, Papua New Guinea and the South West Pacific Islands

***Special Administrative Region**

Australasia

Australia, New Zealand

Country groupings are made purely for statistical purposes and are not intended to imply any judgement about political or economic standings

OECD members

Europe Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom

Other member countries Australia, Canada, Japan, Mexico, New Zealand, South Korea, USA

OPEC members

Middle East Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates (Abu Dhabi, Dubai, Ras-al-Khaimah and Sharjah)

North Africa Algeria, Libya

West Africa Nigeria

Asia Pacific Indonesia

South America Venezuela

(Since Ecuador and Gabon have withdrawn from OPEC, they are excluded from all OPEC totals)

European Union members

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK

EMEs (Emerging Market Economies)

South & Central America, Central Europe, Former Soviet Union, Africa, Middle East and Non-OECD Asia Pacific In this Review, the term 'Other EMEs' excludes Central Europe and Former Soviet Union

Other terms

Tonnes = Metric tons

Percentages

Calculated before rounding of actuals All annual changes and shares of totals are on a weight basis except on the oil refinery capacities, oil refinery throughputs, oil trade movements and oil inter-area movements tables

Rounding differences

Because of rounding, some totals - including the 1997 share of total - might not agree exactly with the sum of their component parts

Premium gasoline

Up to the end of 1985, 0.4g lead per litre gasoline was the standard. From 1986, low-lead (0.15g lead per litre) product has been the main marker.

US processing gains

Gains in volume occur in the refining of crude oil into products. For the USA, which accounts for most of the world's processing gains, it is conventional to deduct these gains from volumetric consumption levels to reflect more accurately the effective demand on crude oil resources.

DEFINITION OF TERMS USED IN NON-TRADITIONAL FINANCING

AMERICAN DEPOSITORY RECEIPTS (ADR) are registered securities, with the U S Securities and Exchange Commission (SEC), sold and listed on Stock Exchanges in the U S , representing ownership in a foreign company ADR's evidencing ADS's are issuable pursuant to a "Deposit Agreement" between the foreign company (company), a financial institution (e g Citibank N A in New York) , as depository, and the holders from time to time as ADR's issued hereunder

AMERICAN DEPOSITORY SHARES (ADS) each ADS represents (x) N shares issued by a Chinese company, deposited in accordance with the Deposit Agreement with the Depository

ASIAN DEVELOPMENT BANK (ADB) is a multilateral bank lending to developing countries in Asia

BALANCE SHEET FINANCING allows corporations to initiate new projects with financing that is obtained based on their credit standing in the capital markets Financing is based on the balance sheet risks of the company as a whole rather than the project

CERTIFICATES OF DEPOSIT (CD'S) are securities issued and guaranteed by banks and financial institutions, usually short term in nature

CONCESSION AGREEMENT is a "contractual document" between the Project Company and the Host government entity with authority to commit the government to the concessions and incentives

CONVERTIBLE BOND combines a bond and an option to convert to the equity of a bond issuer at a pre-determined date for shares on pre-arranged terms

COUNTRY EXPOSURE CAPACITY is the limit set by commercial banks based on the country exposure (lending limit) they are willing to assume for a particular country or region

DEBT SERVICE Periodic payment of principal and interest on loans, bonds, or fixed/floating-rate notes

DEVALUATION a government action to reduce the purchasing power or value of local currency against convertible currencies

DISTRIBUTION COMPANIES – DISCO (OBTAIN FROM FRANK)

EASEMENTS a right given to an individual or group to make limited use of another's real property

EXPROPRIATION a forced transfer of ownership from a private owner to a government entity

Federal Regulatory Commission – US The Federal Energy Regulatory Commission (FERC/Commission) is an independent agency that oversees America's natural gas industry, electric utilities, nonfederal hydroelectric projects, and oil pipeline transportation system. The Commission's primary responsibility is to ensure that consumers have an adequate supply of natural gas, electricity and oil at reasonable rates.

FERC was created through the Department of Energy Organization Act on October 1, 1977. At that time, the Commission's predecessor, the Federal Power Commission (FPC), was abolished, and the new agency (FERC) inherited most of the FPC's responsibilities.

The Commission is composed of five members who are appointed by the President, with the advice and consent of the Senate. Commissioners serve five-year terms, and have an equal vote on regulatory matters. No more than three members may belong to the same political party. One member is designated by the President to serve as Chair, and FERC's administrative head.

FINANCIAL CLOSING occurs when all conditions of lenders and investors have been met, and financial disbursements can take place.

FIDUCIARY TRUST is an irrevocable entity established by a project company, to which is transferred certain rights and assets granted under a concession agreement. The Trust is managed by a financial institution, and may issue notes and bonds on the international markets, usually under Rule 144A. A method used to securitize operating projects, to allow expansion and or allow project companies investors and/or lenders to recapture their investment.

FINANCEABLE means the project can attract enough project financing, going in, to assure project completion.

FOREIGN DIRECT INVESTMENT (FDI) means the foreign investment made directly into Foreign Invested Enterprises (FIEs) for Chinese production, manufacturing, tourism and infrastructure projects.

FOREIGN INVESTED ENTERPRISES (FIEs) represent companies formed under the Cooperative Joint Venture, Equity Joint Venture, and Wholly Owned Enterprise Laws and Regulations and the Procedure for Establishment of Investment Companies by Foreign Investors. Also known as a Sino-Foreign joint venture.

FRANCHISE The grant of certain rights to an individual group, partnership, or corporation, sometimes called a concession.

HARD CURRENCY all major convertible currencies, such as the U.S. dollar, the British pound, the German mark, the Japanese yen, the Swiss frank, the Italian lira, the Dutch guilder.

HOME COUNTRY The country in which the foreign sponsor/developer is registered.

HOST COUNTRY the country in which the infrastructure project is taking place

INDEXED TARIFF An adjusted tariff, based on a variable such as fuel price, interest rates, (local and foreign), exchange rates, and/or inflation

IMPLEMENTATION AGREEMENT project-specific agreements that provide government assurances and guarantees to foreign project developers required for successful project development and allocation of risk

INVESTMENT GRADE SECURITIES are bonds or notes awarded a credit rating of BBB- by S&P, or Baa3 by Moodys

INVESTORS individuals, groups, or companies that invest cash or "sweat" equity in an infrastructure development or Project Company

LENDERS commercial banks or other lending institutions that provide loans for investors or directly to a "project" company for the purpose of developing, building and operating an Infrastructure project

LIMITED-RECOURSE FINANCING a lending arrangement under which repayment of the loan and recourse in the event of default relies mainly on the project's cash flow

MOODYS INVESTORS SERVICE/STANDARD & POORS CORP (S&P) are privately owned and independent credit rating agencies. The agencies are paid by corporations, utilities and governments to look at their books and issue a rating. As a general rule, the higher the credit rating the lower the interest the credits need to pay to creditors. Non-sovereign debt usually has a lower rating than sovereign debt.

TABLE A-1

COMPARISON OF CREDIT RATINGS

S&P	MOODYS	S&P	MOODYS
INVESTMENT GRADE		SPECULATIVE GRADE	
AAA	Aaa	BB+	Ba1
AA+	Aa1	BB	Ba2
AA	Aa2	BB-	Ba3
AA-	Aa3	B+	B1
A+	A1	B	B2
A	A2	B-	B3
A-	A3	CCC+	Caa1
BBB+	Baa1	CCC	Caa2
BBB	Baa2	CCC-	Caa3
BBB-	Baa3	CC+	Ca1

S&P	MOODYS	S&P	MOODYS
		CC	Ca2
		CC-	Ca3
		C+	C1
		C	C2
		C-	C3

NET FIXED ASSETS represents the Net Worth of the company, used by the Ministry of Electric Power (MEP), in the calculation of the rate of return, allowed, on equity, for FIE's operating in the power sector in China

NET DEBT FLOW Means loan disbursements from the international lender, minus interest and principal repayments by the developing country borrowers

NET PRINCIPAL FLOWS Means the loan disbursements coming in minus loan principal repayments going out

NON-RECOURSE FINANCING Recourse for debt repayment, default, or both belongs exclusively to the project company

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT(OECD)

"PACKAGED" PROJECT is a project which have been sufficiently defined technically, the proposed terms and conditions of the Concession Agreement and the legal infrastructure exists, and has project approval by the appropriate Host government agencies to allow proceeding with a smooth and rapid negotiation with Investors and Lenders

THE NATIONAL BANK OF MOLDOVA (NBM) - an autonomous public legal entity reporting to the Parliament of Moldova NBM has the capacity to (1) enter into contracts and issue obligations, (2) acquire and dispose of property to further its objective, (3) initiate legal proceedings and be the subject of legal proceedings The main objective of NBM is to achieve and maintain the stability of the national currency, the leu

PERFORMANCE BONDS guarantees purchased by "Project Company", issued by commercial banks or insurance companies for an entity to guarantee full and successful implementation of the contract according to pre-specified performance guidelines

MOLDOVA COMPANY LAW is the law that allows and regulates the formation of wholly owned Moldovan companies to become limited-liability companies

PROJECT COMPANY the special-purpose entity that assumes legal and financial responsibility for construction and operation of the project, i e , the Concession holder Recourse is limited to the project company

PROJECT RISK the total risk, including commercial, political, and force majeure risks

"PROJECT VIABILITY" refers to the projects ability to survive on its own, commercially and financially, and without outside support "QUALIFIED INSTITUTIONAL BUYERS" (QIB) investors qualified because of net worth and sophistication to purchase notes and bonds issued under Rule 144A of the Regulation S under the US Securities Act

RISK PROFILE The level of risk due to political, economic, or financial uncertainty to which an investor is exposed This determines the rate of return that an investor requires in order to tolerate exposure to the level of adversity in any country

RISK UNBUNDLING means the separation of the total project risks into manageable pieces, which are assignable to appropriate entities that have a means of controlling the risk

RULE 144A provides a method for foreign corporations, to access US and other international capital markets, through the issuance of Notes and Bonds as securities, without meeting the registration requirements for the same detailed financial information required for a public offering sale to the general public Notes and Bonds are sold offshore in reliance on Regulation S under the US Securities Act Rule 144A allows the sale of restricted investment grade securities (Notes and Bonds) to "Qualified Institutional Buyers" (QIB), without registration with the US Securities and Exchange Commission Typical QIB's are insurance companies, pension funds, and mutual funds The securities are quite often traded on the Luxembourg Stock exchange, held as Global notes Three years after issue, 144A securities can be freely traded in the US Market

SECURITY PACKAGE (SP) is established through the various contractual arrangements and comprises the key agreements, contracts, and government undertakings Lenders look to the SP to provide security for the loans, and in the event of a breach of any of the agreements they may seek the right to take over the company and install their own managers within the framework of the agreements Typically the SP may include the Implementation Agreement, Joint Venture Contract, Shareholders Agreement, Concession Agreement, Tariff Agreement, Land Conveyance Agreement, Ownership structure and agreements, Construction Contract, Operations and Maintenance Agreement

SOVEREIGN GUARANTEE government guarantee (e.g. of the obligation of the Concession or Implementation Agreement)

STATE CORPORATIONS – PREPARE LIST

STATE TREASURY BONDS are securities, also known as Treasuries, issued by the NBOM, and carry sovereign government guarantee ?

SWEAT EQUITY is equity contributed by a contractor or developer for services provided in lieu of cash

TURNKEY CONTRACT also referred to as a "Turnkey Fixed Price " (TKFP), is a contract given by the project company to a prime contractor who will be responsible for the design and implementation of the project from start to finish, and who will provide a completed, operational project on a stipulated date, on a lump-sum basis

US SECURITIES AND EXCHANGE COMMISSION an agency of the U S government responsible for the regulation and control of securities

Pipeline Conventions

Transporter Provides natural gas transportation service,

Shipper Firm requesting firm transportation service from Transporter,

Transportation Services Includes storage, exchange, backhaul, displacement, or other methods of transportation

Market Center Means an area where gas purchases and sales occur at the intersection of different pipelines

CONVERSION FACTORS

Tab 1 Gross heat content (for Moldova)

Natural gas	kCal/cm	7994
	kCal/cf	226
	MBTU/cm	31728
	MBTU/cf	898
Heavy fuel oil	kCal/kg	9590
	BTU/kg	38060
Gasoline	kCal/kg	10430
	BTU/kg	41394
Diesel Fuel Oil	kCal/kg	10010
	BTU/kg	39727
Coal	kCal/kg	5250
	BTU/kg	20836
Liquefied Petroleum Gas	kCal/kg	10990
	BTU/kg	43616
<i>Note 1 cm=35 3147 cf (cf cubic feet)</i>		

Tab 2 General conversion factors for energy

From \ To	(multiply by)	TJ	Gcal	Mtce	Mtoe	MBtu	GWh
TJ		1	0 2388	3 41E-05	0 00002388	947 9	0 2778
Gcal		4E 3	1	1 429E 07	9 9998E-08	3 969	0 0012
Mtce		29E+3	7E+06	1	0 7	28E+6	8141
Mtoe		42E+3	10E+6	598	1	39 7E+6	12E+3
MBTU		1 055E 03	2 5E-01	3 6E 08	2 5E 08	1	2 931E-04
GWh		3 6	860	0 000123	8 598E-05	3412	1

183

WORLDWIDE PRICES OF ENERGY SOURCES FOR HOUSEHOLDS

COUNTRY	Natural gas price		LPG price	Electricity price
	\$/1000 cm	\$/MBTU	\$/kg	\$/kWh
Republic of Moldova	80	2 5	0 24	0 051
Australia	315	8 4		0 083
Austria	439	11 7		na
Belgium	428	11 4		0 191
Canada	154	4 3		na
Czech Republic	119	3 3		0 039
Denmark	723	18 6		0 215
Finland	170	4 6		0 109
France	453	11 9		0 164
Germany	349	11 1		0 18
Greece				0 115
Hungary	117	3 4		0 06
Ireland	426	11 9		na
Italy	608	16 8		0 178
Japan	1269	32 6		0 23
South Korea				0 103
Luxemburg	312	8 0		0 142
Mexico			0 30	0 048
Netherlands	289	9 2		0 148
New Zealand	384	10 5		0 088
Norway				0 081
Poland	165	5 9		0 067
Portugal				0 176
Spain	623	15 5		0 191
Sweden				0 11
Switzerland	487	12 7		0 16
Turkey	192	5 3		0 087
United Kingdom	305	8 2		0 125
United States	221	6 1	0 42	0 084
Brazil			0 55	0 146
Chinese Taipei				0 091
India				na
Russia				na
Slovak Republic	61	2 0		0 031
South Africa				0 045
Venezuela	10 66	0 3	0 13	0 017
Thailand				0 086

It is not clear that the Regulatory Framework as established by the proposed Gas Act provides adequate protection for the Security Package

3 Requirement for Foreign Currency

Utilizing the corporatization model may result in requirements for higher foreign currency because, 1) The need for foreign exchange to repay loan principal, 11) Interest on foreign loans, and, 111) Repatriation of dividends and investment (including return-on-investment) made by foreign shareholders in utility Local Distribution Companies does not earn foreign currency

4 Objections to Foreign Ownership

Objections may be raised to foreign participation in ownership of utility assets, however, operating control is not "ownership", nor does the management of the Chisinau Gas Distribution Company represent a risk to sovereignty

5 Land Conveyance

Corporatization and privatization of utility assets requires the assembly of all right-of-way, and/or government guarantees of right-of-way, including trench access prior to Financial Close Right-of-way and access must be cleared, including right to mortgage property, transfer ownership by government prior to invitation to tender, or significant delays will occur and increased costs result

6 Financeability Outcome is Uncertain

Even though the Tender process goes well, the privatization may NEVER succeed in attracting financing after a prolonged development process

7 Allowance for Capital-Cost Recovery

In the hope of attracting the private foreign capital, the government, through the Regulatory Framework, must allow the Chisinau Gas Distribution Company to compensate fairly its contractors, suppliers and investors for their risks, and to generate market rates-of-return to the lenders and investors for also taking significant risks This means, in turn, full-cost-recovery tariff pricing, for the services and fuel in the currency expended, provided to the customers by the Chisinau Gas Distribution

Company Allowance for full capital-cost recovery in currency of expenditure may not be politically feasible

8 Higher Financing Cost

The interest rate may be higher for loans from commercial banks to corporatized/ privatized companies than similar loans guaranteed by the Host government, but the principal is the same. Government funded projects shift the economic costs from the gas users to the general tax-paying customer

9 Unproved = Riskier Financeability

Financeability for privatized utility systems are unproved in Moldova, hence tendering and implementation is riskier and more expensive for both government and potential investors

WHY FOREIGN INVESTORS PROMOTE PRIVATIZATION PROJECTS

Understanding the motives of investors to participate in privatization can lead to a better tendering process

Pluses

- 1 Financial organizations expect equal or higher rates-of-return, commensurate with risk, than can be expected from investments in OECD countries. Returns will come from
 - i) Investment returns,
 - ii) Transaction fees,
 - iii) Market growth,and will be expected to be reasonable and consistent with the risks taken
- 2 International gas companies will seek participation as positioning for future projects in transportation and distribution company operations in Moldova and the CIS
- 3 International gas companies will seek positioning for gas trading opportunities expected to develop in Europe, Central Europe, and the CIS

Minuses

- 1 Moldova has not experienced an economic growth rate
- 2 Gas is imported from a single source and must be paid for in foreign currency
- 3 International competition for funds

Investment opportunities in infrastructure and utility projects worldwide exceed the availability of funds. Investment competition for funds between sectors i.e. power, gas, telecommunications, transportation exists in both the OECD and non-OECD countries. There will be competition for available funds and only those countries with well-defined "Packaged" projects and adequate laws and regulations and incentives will be able to attract investment.
- 4 Chisinau Gas Company does not anticipate significant potential to increase customer base
- 5 Payment history of customers has not been acceptable
- 6 System losses and theft are significant factors and correction may be politically unacceptable
- 7 Privatization and cost-recovery tariffs may not be politically or socially acceptable
- 8 Energy expenditures represent a very high percentage of GDP
- 9 Lack of "tested" legal and commercial infrastructure
- 10 Historic accounting has not been accomplished to international accounting standards
- 11 A significant portion of receipts are in-kind transactions where foreign investors lack experience

WHY LENDERS LEND LIMITED RECOURSE TO PRIVATIZATION PROJECTS

The Lenders are the last and maybe the most significant participants in the project. Financial Close for the investment cannot proceed until the project is financed. The first significant question Lenders must answer before lending to a project is: For a given use of country exposure capacity, can lending limited-recourse to the privatization of the Chisinau Gas Distribution Company improve repayment prospects for the bank? If the answer is yes, then the key factors of interest to the commercial Lenders in descending order of importance are:

- i) Attractive loan pricing
- ii) Relationship with corporate customers
- iii) Portfolio considerations, and
- iv) Well-analyzed and structured project

For example, if a commercial bank has a US\$ 100 million exposure capacity for Moldova, the bank may conclude that the privatization of a well structured Chisinau Gas Company privatization offers better – or at least no worse repayment prospects than a pure sovereign credit of the same term

If he can also charge a higher interest rate and support an existing client-investor by lending to the project, when other lenders say no, and if he has room in his portfolio for a limited-recourse credit, with its longer term and higher risk and return, he may judge the credit risk acceptable

EVALUATION OF PRIVATIZATION VIABILITY

“Privatization Viability” refers to the ability of the utility to survive on its own, commercially and financially, and without outside support

The primary issues impacting Privatization Viability are

- i) Financial Viability
- ii) Economic Viability
- iii) Financeability

The privatization may be financially viable and economically viable, but the project can not proceed without the commitment of the Lenders to provide financing. Ultimately, the success of the privatization will be determined by the ability of the utility to succeed commercially and financially, throughout its life, meet the expectations of the Host government, investors and Lenders, without outside support

- Critical Elements for Privatization Success
 - Attracting legitimate and credible investors for privatization of Chisinau Gas Distribution Company

The credibility of foreign investors in the utility will impact the ability of the utility to negotiate competitive gas purchases without sovereign guarantees for payment and limited-recourse financing

- Privatization meets a compelling need

The evaluation, of privatization meeting a compelling need, can be answered by asking the following questions

- i) Are the Host government and government's sponsoring entity committed to privatization of the Chisinau Gas Distribution Company?
- ii) Do they have staying power?
- iii) Have they established the negotiating parameters to allow foreign Investors and Lenders to properly evaluate the potential success? (The Commercialization Process)

- Expected profits exceed expected proposal and ownership

The potentially interested Investors have to decide whether the possible rewards, for them, are worth the substantial cost, the effort, and the risk of the tendering process. Will the Investors have the banking relationships to interest financial institutions and RAO Gazprom to take the risk with them in providing gas without sovereign and/or Investor payment guarantees?

- Attractiveness compared to opportunities in other countries

Does the privatization of the Chisinau Gas Distribution Company compare in attractiveness of similar opportunities in other countries?

- Project Financial viability

The measuring tools used by most Investors and Project Lenders to judge the basic financial viability of a privatization includes affirmative answers to the following questions

- i) Can the project pay for itself?
- ii) Are the economics robust?
- iii) Does the privatization provide an acceptable Rate-of Return on Investment and Rate-of Return on Equity (ROI and ROE)?
- iv) Is the privatization resilient to "worst case" adversity?
- v) Can privatization compete at socially and politically acceptable prices?
- vi) Does the privatization have acceptable coverage (including foreign exchange) for debt service and gas purchase exposure?

- Project economic viability

To address the economic viability of the privatization of the Chisinau Gas Distribution Company – Host government, Investors and Lenders – must ask the following question: Why are we privatizing the utility? To assist in the project economic viability evaluation, consideration must be given to technical, social, environmental, gas supply and security of supply and economic factors for the privatization. Some of the questions, which must be answered in the affirmative, are

- i) Is there a basic economic rationale for investing in the privatization?
- ii) Does the privatized Chisinau Gas Distribution Company offer competitive cost-of-service compared to other alternatives?
- iii) Does the privatization satisfy good business judgment?
 - Unit energy cost - \$/therm
 - Unit “full-recovery” costs
 - Usage – energy forecast/capacity factor
- iiii) Does the privatization have acceptable Economic Rate-of-Return?
 - Project Financeability

Assuming the project can meet the criteria established by – Investors, the Host government, gas suppliers and Lenders – for Financial and Economic Viability, the next question to be addressed is whether the project is financeable? The Financeability of the privatization depends primarily on the credibility and creditworthiness, the legal and capital infrastructure of the Host government, and the Investors

The Privatization Financeability depends on

- i) Country credit-worthiness and customer credit-worthiness,
 - ii) Convertibility and stability of currency
 - iii) Competing claimants on country lending capacity and priority of payment guarantees of State Enterprises for energy purchased
 - iv) Government guarantees of Regulatory Framework
 - v) Licensing conditions for tariff and exclusivity
 - vi) Government designation of privatization as a top priority,
 - vii) Project cost scale,
 - viii) Economic and financial viability,
 - ix) “Watertight” legal and regulatory framework and License,
 - x) Land rights
 - xi) Acceptable risk-reward balance
 - xii) Effective development team for tendering
- Issues of Financeability to be Addressed by Host Country
 - Institutional restructuring
 - Foreign exchange
 - Currency stability
 - Government stability
 - Environmental concerns
 - Government acceptance of World Bank guarantee program
 - Issues to be Addressed by Investor
 - Effective development and process management team

- Cost for negotiation and conclusion
- Staffing and management of system
- Ability to arrange limited-recourse loans
- Comparative evaluation for the sale of Hungarian gas LCD's

Options in Underground Gas Storage Facilities

1 THE FUNCTIONS OF GAS STORAGE

The initial function of underground gas storage is to balance gas consumption and resources at all times (seasonal, daily and hourly fluctuations), chiefly in the residential-commercial sector, which is especially sensitive to changes in temperature. In addition, storage makes it possible to meet peak winter demand. The relative peak demand on the coldest day of the year is a very important parameter for the gas industry, because it conditions the size of the gas distribution network. In France for instance, during the historical maximum daily sendout, storage facilities supplied around 60 % of demand. In fact, storage reservoirs provide many more services. They can play an important role in eliminating the risk of supply shortages (interruption of a supply source, technical problems in the pipeline network). They enable gas transportation and distribution companies to operate their networks more efficiently throughout the year by allowing a high load factor, thus reducing the final cost of gas distribution. They also allow multi-annual adjustment of supply. In addition to their traditional function, underground gas storage facilities offer commercial possibilities: speculative buying, better terms on import contracts and export of storage capacity.

2 MAIN CHARACTERISTICS OF UNDERGROUND GAS STORAGE

The main drawback of natural gas as far as storage is concerned stems from its physical characteristics. Since it is a liquid only at -160°C , storing enough to meet the domestic market demand would be much too expensive in this form. This is why underground storage is favored.

The principle is to store large amounts of gas at very high pressure. The best way is to use a depleted gas field or to create an artificial gas field if necessary, that is filled during periods of low consumption. In the event of an increase in demand the gas is withdrawn, thereby supplementing traditional means of supply. Natural gas is stored underground in

- a Depleted natural gas fields,
- b Cavities leached out in salt-bearing formations,
- c Anticlinal aquifer structures depleted oil fields with associated gas,
- d Abandoned mines

Other solutions have been investigated or might be considered

- a Cavities mined out in hard rock,
- b Depleted oil fields without associated gas,
- c Gas fields (of any sort),
- d Other types of geological trap

The different storage methods used from one country to another depend largely on the geological formations available. For example, out of the 386 existing storage facilities in the United States 320 are situated in depleted gas or oil fields. In France, 12 storage installations are in aquifers and 3 in salt cavities. In Germany, 10 installations are located in depleted fields, 8 in aquifers, 13 in salt cavities and one in a disused mine. The different types of storage throughout the world. World total 554 storage facilities.

Large-capacity storage facilities are designed to adjust relatively constant supply to demand that varies widely during the year. By way of an illustration, withdrawals in January are seven times greater than those in August on the average in France. Underground storage offers two advantages:

- a Safety since the gas is buried deep in the subsoil, it is deprived of oxidising agents and so explosion risks are practically non-existent
- b Environment little area is occupied by the relevant wells and gas processing plants aboveground

The characteristics of the storage facility depend on the type of installation. A storage facility is characterised by two parameters:

- a The working storage capacity i.e. the maximum volume of gas that can be withdrawn during a season (the difference between the total capacity and the volume of cushion gas)
- b The maximum sendout capacity (or maximum withdrawal rate) i.e. the maximum volume that can be withdrawn during a given time (generally expressed in m³ per day or per hour)

These two parameters summarise the characteristics of a storage facility on the one hand its size and on the other the maximum and minimum pressure authorised during operation. It is crucial not to go below a specified pressure, non-compliance can cause the storage reservoir to collapse and destabilise the subsoil.

The ratio of these two figures serves to determine the number of days of reserve at the maximum daily withdrawal rate. In practice, the maximum daily production capacity is limited by the number of wells and the capacity of the surface equipment. The maximum withdrawal capacity in winter (or adjustment) is limited by the volume of gas stored in the beginning of winter and consequently depends on reservoir characteristics. Based on these criteria, two types of storage facility can be distinguished:

Those with a working capacity of 10 to 30 days of peak daily withdrawal. The installations built in salt cavities or abandoned mines are in this category and are designed to satisfy peak demand. The advantage is a productivity per well that is two to four times higher than that of conventional storage facilities.

Those with a working capacity of 60 to 120 days of peak daily withdrawal. Storage facilities in aquifers and depleted oil and gas fields belong to this class. They are suited to meet seasonal adjustment needs, because they can store a larger working volume than in salt or mined cavities (ratio of 10 to 1).

The different types of storage throughout the world. World total: 554 storage facilities.

Underground storage sites constitute the most effective means of balancing gas supply and demand combined with the other means available to the gas industry (interruptible contracts, supply flexibility). However, the industry has developed other methods, particularly storage in liquefied form in LNG receiving terminals and peak-shaving units.

3 DEPLETED OIL AND GAS FIELDS

Gas storage in depleted fields is the most widespread and least expensive method in the world. The technique consists in converting an old gas or oil field into a storage unit by injecting natural gas into it. Most storage is in depleted gas fields and a few depleted oil fields with associated gas are also employed for this purpose. The advantage of storage in depleted fields is that it requires none of the prospecting work that must be done for storage in aquifers or salt cavities. In addition, the wells are in place and their equipment can sometimes be used.

The first storage experiment was conducted in a gas field in Welland County, Ontario, Canada, in 1915. The first storage reservoir was built in 1916 in a depleted gas field at Zoar near Buffalo, New York State. It is considered to be the oldest one in service in the world. Today, there is a world total of 425 storage reservoirs located in depleted fields. The United States has 320 (chiefly Southeast of the Great Lakes), 290 of which formerly contained gas only, and the remaining 30 associated gas or oil. They amount to a total capacity of 178 109 m³. In Europe, 73 storage sites are located in depleted fields, including 32 in the New Independent States and 8 in Italy (mainly in the Po Plain region). The principle of this type of storage facility is simple, because the field formerly contained gas or oil. It therefore fulfils the permeability and porosity conditions required for storage. However, before the facility is developed, the depleted field must be studied to be sure that it can meet the production targets (high withdrawal rates over short periods) and that the impermeable formation above the storage zones or cap rock, is sufficiently gas tight. Only minimum risk is associated with vertical migration of the gas through the cap rock, which provides a satisfactory seal since the formation originally contained gas. During the gas injection phase, the initial pressure of the reservoir is not exceeded, thus eliminating any risk of damage to the cap rock. Secondary risks, such as gas leaks through abandoned wells, are analysed during the conversion assessment phase. A thorough study is conducted on all the geological problems and the field production data. Care is also taken to ensure that the wells are properly plugged. A number of parameters must also be determined before the study is finalised.

- a The optimal depletion rate of the field before it is used as a storage facility,
- b The filling dynamics,
- c The problem of gases mixing,
- d Secondary recovery of the oil in place, if it is an oil field

Converting a producing field into a storage reservoir therefore requires thorough knowledge of its geological and physical characteristics, particularly the recovery ratios. There is no guarantee that the storage reservoir will have the same capacity as the initial field. This information is not always provided during the production phase of the field. Three-dimensional models and technological improvements have been developed that now give a good picture of the subsoil and enhance efficiency considerably. Gas storage in depleted fields. World total 425 reservoirs

4 AQUIFERS

An aquifer was used to store gas for the first time in 1946 in Kentucky (United States). In Europe, aquifers were first used to store city gas. The first European reservoir was the Engelbostel site near Hannover in Germany, in service until 1954 and converted to natural gas in 1973. Major developments in aquifer storage were initiated in France with the Beynes reservoir near Paris, in 1956. Research was conducted in the 1950's in Russia on aquifer formations. Gas storage in aquifers. World total 82 aquifers

The principle is to create an artificial gas field by injecting gas into the pore spaces of an aquifer formation. The adapted geological structure is like a natural gas field. The gas impregnates a porous reservoir rock and fills the microscopic pore spaces by displacing the water they contained before. Its pressure causes the water to move downward toward the edge of the mass of gas.

A number of conditions must be met for storage to be possible in the structure. The porous reservoir rock must be overlaid by a gas-tight anticline to prevent any leakage. Porosity and permeability must meet certain standards in order to maximise the amount of recoverable gas, especially at the end of the site's lifetime. The capacity of the reservoir is determined by its antichinal closure, i.e. the vertical distance between the top and the bottom of the dome-shaped structure.

The geometric characteristics help to predict the storage volume, provided the operating pressure and the effective porosity to gas are known. Storage in an aquifer only requires wells to be drilled, no excavating is needed. The most suitable types of rock are sands, clean sandstones and limestones, dolomites and chalk. Considerable geological prospecting is necessary in order to discover an appropriate site (thorough seismic surveying, many wells drilled). It should be noted that up to fifteen years can be required to bring an aquifer storage facility onstream, from starting up the prospecting to completing the filling.

195

After a fairly long filling period, alternating injection and withdrawal cycles are run in the reservoir. During the injection phase, gas is pumped into the reservoir. The pressure rises gradually and the water is displaced and compressed. Reservoirs in a virgin aquifer are operated at 1.45 to 1.5 times the hydrostatic pressure. During the withdrawal phase, the gas is recovered at the wellhead and sent off to the pipeline network (with or without compression). As withdrawal proceeds, the pressure drops, the water is decompressed and moves back until it again occupies the pores of the reservoir rock. When the stored gas is withdrawn, the height of the zone occupied by the gas decreases until a time when the supply of the desired rate becomes uncertain in normal operation, because the water is liable to invade the base of the wells. The quantity of gas in place in the reservoir at this time is the cushion gas. Cushion gas requirements are high, averaging 60 % of total gas in the reservoirs.

The pressures that the structure must withstand, approximately 70 bars, entail storage depths between 500 and 1500 m. Four types of wells are drilled on the site: operating wells, upper aquifer observation wells, water level monitoring wells and peripheral wells. It is important to be sure there is no leakage (the reservoir should not be filled up too much). It is also important to examine the effects on surrounding aquifers and to check reservoir tightness (no side exits).

Considerable amounts of gas can be stored in these reservoirs. The smallest one has a working capacity of 220 million m³ and the largest, located in Kasimov (Russia), 5.5 billion m³. However, withdrawal capacity is rather limited compared with their working volume. As a result, this type of storage will preferably serve to regulate seasonal demand and to constitute strategic reserves. The cushion gas is the biggest investment. It is needed to keep the pressure high enough for withdrawal and on the average occupies 50 % (or even up to 60 % sometimes) of the reservoir volume. The drawback of aquifer gas reservoirs compared with salt cavity storage is that the cushion gas can not be recovered. Gaz de France has been conducting tests to replace natural gas by inert gas (carbon dioxide, nitrogen) on the St Illiers, Germigny-sous-Coulomb and St Clair-sur-Epte sites. Twenty per cent of the cushion gas can be replaced, but there are numerous technical obstacles, such as keeping the inert gas and natural gas from mixing.

5 SALT CAVERNS

This type of facility has been used to store LPG for many years, but the technique is relatively recent for natural gas. It was first introduced in the United States in St Clair country, Michigan, in 1961. Today, there are 44 reservoirs of this type world-wide: half of them in the United States and the others are situated in Canada, Denmark, Germany, France, the United Kingdom and Armenia. Salt cavern storage is developing very quickly with 11 new facilities in the past three years and numerous projects in the United States. The principle is not to create an artificial gas field as described previously, but to excavate an underground cavity in a layer of halite, or rock salt, which is common in sedimentary basins. Since salt is soluble in water, the cavity is excavated by leaching.

This consists in dissolving the salt with fresh water and removing the brine, via a single well which then serves for gas injection and withdrawal. The well comprises three concentric lengths of pipe, one for each fluid (water, brine, gas). During the leaching operation, the water is injected via the well and becomes saturated in salt. The brine can be withdrawn due to the pressure of the injected water. When the cavity is being filled with gas, the remaining brine is removed by gas compression.

These facilities are operated by compression/expansion, with the reservoir full when the accumulated gas has reached the maximum permissible pressure, and empty when the pressure reaches the minimum permissible level after withdrawal of the stored gas by expansion. The cushion gas therefore depends on the extreme operating pressures adopted. The storage sites consist of several cavities, with a capacity ranging from 100,000 to 500 000 m³ each. The storage capacity for a given cavity volume is proportional to the maximum operating pressure, which depends on the depth. As such, the deeper the cavity, the larger the volume of gas that can be stored. Generally speaking, the reservoir cavities are located between 900 and 1800 m depth. They serve to store relatively smaller quantities of gas than aquifers or depleted fields. Here again, prospecting is essential in choosing a site. The first steps are gravimetric and seismic surveys, then exploration wells are drilled to get a good understanding of the characteristics of the salt structure. After this, one operating well per cavity is drilled. However, there are a number of constraints before developing storage in salt cavities:

- a The cavity can be excavated by leaching only if the insoluble content is less than 25 %
- b An abundant supply of fresh or only slightly salty water must be available. 7 to 9 m³ of water are required to leach out 1 m³ of salt.
- c Some sort of disposal must be found for the brine: basin, river or sea. The ideal situation would be a nearby chemicals plant that could utilise the salt.
- d The mechanical stability of the subsoil must be preserved. This means that the pressure must never go below a specified threshold, which depends on the pressure prevailing in the cavity, i.e. on the depth. Additionally, the cavities must be located at a specified distance from one another.
- e Filling the cavity and withdrawing the gas cause wide variations in temperature and pressure.
- f Leaching is a long difficult operation. It takes place in five to eight phases and can last several years.

One of the problems encountered in this type of storage facility is the formation of hydrates, which is difficult to predict. The injected gas is relatively dry and gradually accumulates moisture. The humidity does not result exclusively from the brine left on the bottom, but also from the salt, which is not completely anhydrous. As a rule, hydrates are not formed once the well is flowing at a substantial rate. Hydrate problems only occur during experimental measurements and when withdrawal is initiated. Salt caverns are not merely a useful complement to the large reservoirs in porous rock. In fact, they offer several advantages:

- a High production rate,
- b High degree of availability,
- c Short filling period,
- d Safe operating conditions,
- e Low percentage of cushion gas,
- f Total recovery of cushion gas (when required)

Thus combining the two types of storage - in porous reservoirs, generally to constitute strategic reserves and balance seasonal variations, and in salt cavities, generally to cover peak demand - allows for high withdrawal rates even at the end of the withdrawal period

6 ABANDONED MINES

Very few storage facilities are located in abandoned mines. Two abandoned coal mines are in service, one in the United States (Leyden near Denver, Colorado) and one in Belgium (Anderlues). An abandoned potassium mine is employed in the East part of Germany (Bunggraf-Bernsdorf) to store natural gas. Abandoned coal mines offer several advantages

- a The existence of voids mining has left excavations, so cavities do not need to be dug out as in salt formations the real storage capacity is higher than that of the existing cavities, since gas is absorbed by coal. To install storage facility in an abandoned coal mine, it is first necessary to solve the stabilisation and tightness problems for mine shafts that were filled when mining operations were suspended.
- b The second problem to be solved is that of the gas injection and withdrawal system. Access to the storage reservoir is generally afforded by a shaft that remained accessible and served to withdraw mine gas. It is also necessary to take considerable problems into account, such as ventilating the mine to remove the gas that the deposit continues to release.
- c When the stored natural gas is withdrawn its quality is altered and its heating value is lower than when it was injected (reduced by as much as 6 % in the Anderlues storage facility). This is due to the fact that coal has a tendency to retain the heavy hydrocarbon fractions (pentane, propane, butane and ethane). Propane is injected into the gas on withdrawal to restore the original heating value. As the reservoir is drained, the heating value rises and ultimately exceeds that of the injected gas.

7 ROCKS CAVERNS

Storage is needed in areas where no porous or salt formations are available. This is why another concept, storage in rock caverns, is being developed. Caverns can be excavated in most rock types and therefore offer a broad spectrum of possible site locations. The

concept has been considered in several countries, usually in areas where there is a critical need for storage capacity

The technical design, volume, depth, location, access system as well as the economic feasibility of this type of storage are determined by a series of geological, hydrological and spatial factors. Careful consideration of these factors during cavern design is an essential prerequisite for technically safe and economic construction. The cavern's seal depends on these factors and the storage reservoir can be built according to various concepts, ranging from the unlined cavern to the fully lined cavern with an inner seal. The density of the gas is increased to reduce the amount of storage space it requires. There are two main ways of doing this: the gas can be pressurised and/or chilled. At present, research is being conducted on high-pressure storage in lined or unlined caverns.

Storage of chilled gas appears to hold considerable potential to lower costs and improve reliability. Long-to medium-term development work is, however, required. Cavern storage concepts have been discussed and developed for LPG and natural gas since the early 1970's. During the last twenty years the work has been intensified and comprises basic research, laboratory testing, pilot testing and conceptual engineering. In some countries, such as Finland, Sweden and Norway, high pressure cavern storage appears to be the least costly method of storing gas.

Storage of gas in unlined rock caverns is to a large extent based on known technology and experience gained from LPG cavern storage and air cushions in Norwegian hydropower plants. Rock caverns are excavated at great depth, 800- 1000 m. An ambient rock temperature of + 20°C may be required in order to avoid hydrate formation. This in turn will influence the depth requirement. A hydrodynamic seal is secured with the rock mass and groundwater acting as gas-tight barriers. The groundwater pressure all around the reservoir has to be higher than the maximum gas storage pressure. A gas-tight seal is achieved because all the fractures in the rock surrounding the cavern are filled with water that always has a higher pressure than the stored gas.

The cost of such concept has usually been so high, that they have not reached the construction decision stage. The only facility of this type currently under construction is in Příbram, Czech Republic. The other projects are in New York, U S , Dannemora, Sweden and Mantsala, Finland.

7.1 Lined rock caverns

Lined storage reservoirs have traditionally been regarded as very expensive due to the high cost of lining. Development in recent years has, however, enabled a significant increase in the allowable pressure. The idea is to construct a storage cavern in rock and to store natural gas in it under a very high pressure. Caverns, in the form of vertical cylinders, are excavated at a depth of about 150 m to cavern top. The diameter and height are 40-45 m and 80-100 m respectively, which gives a volume of 100,000-150,000 m³. Storage pressures up to 22.5 MPa are possible, yielding a storage capacity of 25-40 million m³ in each cavern.

The rock itself is not gas-tight so the cavern has to be sealed with an inside lining. The only function of the lining is to act as a gas-tight seal. The rock mass supports the lining and accommodates the pressure, thus acting as the "pressure vessel". To provide the necessary support, the rock cavern has to be 100- 150 m deep.

The rock surrounding the caverns is drained to keep the rock and cavern wall free of groundwater inflow and to collect any leaking gas. The stored gas will never be in contact with water and therefore the gas does not require any special treatment before distribution.

In recent years, the Swedish energy company Sydkraft has played a vital role in developing the concept. With good test results on the Grangesberg pilot, the company is now investigating the possibility of building a demonstration plant on a semicommercial scale. The objective of the plant is mainly to eliminate the remaining technical risks involved and to prove the economic advantages.

The following advantages can be listed, compared to conventional storage reservoirs:

- a The size of the facility may to a large extent be varied. A facility may be constructed and expanded in phases. Each storage module may have a working gas volume of up to 30 million m³.
- b The storage facility can be located close to gas customers and existing gas distribution networks, as it is not restricted to certain geological formations.
- c The stored gas can readily be controlled.
- d The stored gas is never in direct contact with groundwater and/or rock or soil. This means that the gas is not contaminated during storage and that it is not necessary to separate the water and particles before distribution.
- e The reservoir is structurally stable and requires minimal cushion gas.
- f The maximum withdrawal rate is high, limited only by pipe dimensions and temperature restrictions.
- g As the caverns are situated at shallow depths, this will reduce the costs of rock investigations and access tunnels.

The concept is suitable for many countries: Europe, North America, the Middle East and Asia.

Gas Storage Capacity Eastern Europe

Country	Name	Type	Working Capacity (mcm)	Peak Output (mcm/day)
Bulgaria	Chiren	Depleted Gas Field	200	2 2
Czech Republic	Dolní	Depleted Gas Field	700	8
	Dunajovice	Depleted Gas Field	430	5 6
	Hrusky	Aquifer	83	1
	Lobodice	Depleted Gas Field	373	4
	Stramberk	Depleted Gas Field	30	0 5
	Zukov	NA	NA	NA
Hungary	Hojduszoboszlo	Depleted Gas Field	810	20 2
	Pusztaderics	Depleted Gas Field	100	2 9
	Pusztaszolos	Depleted Gas Field	150	3 4
Poland	Brzezniça	Depleted Gas Field	70	0 78
	Husow	Depleted Gas Field	325	2 88
	Swarzow	Depleted Gas Field	90	1 08
Romania	Bucharest	Depleted Gas Field	700	4 65
Slovakia	Lab	Depleted Gas Field	1846	24

COMPARATIVE ANALYSIS OF DISTRICT AND GAS HEATING

		Project district heating* CHP-1	Project district heating* CHP 2	Total heat delivery	Gas heating High efficiency High O&MC	Gas heating Lower efficiency Total O&MC	Gas heating Lower efficiency Low O&MC	Gas heating Lowest efficiency Low O&MC
Heat generation	th Gcal	762	1770	2532	<u>2152</u>	<u>2152</u>	<u>2152</u>	<u>2152</u>
Efficiency	%	90	84	85	<u>90</u>	<u>80</u>	80	70
Gas consumption	mil cm	107	267	374	301	339	339	387
Heavy fuel oil consumption	tones	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Natural gas price	lei/th cm	454	454	454	454	454	454	454
Heavy fuel oil price	lei/tonne	480	480	480	480	480	480	480
Costs of gas	mil lei	48 5	121	170	137	154	154	176
Costs of heavy fuel oil	mil lei	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Total fuel costs	mil lei	48	121	170	137	154	154	176
O&M costs	mil lei	14 4	22 9	37 4	37 4	37 4	18 7	18 7
TOTAL OPERATIONAL COSTS	mil lei	63	144	207	174	191	172	194
Per unit heat costs	lei/Gcal	82 5	81 4	81 7	80 9	88 8	80 1	90 3
Percentage heat losses	%	0 15	0 15	0 15	0 0	0 0	0 0	0 0
Heat losses in the pipes	th Gcal	114	265	380	0 0	0 0	0 0	0 0
HEAT DELIVERED	th Gcal	648	1504	2152	2152	2152	2152	2152
Costs of delivered heat	lei/Gcal	97 1	95 8	96 2	80 9	88 8	80 1	90 3
O&M of heat transmission and distribution pipes	lei/Gcal	30	30 0	30 0	0 0	0 0	0 0	0 0
Heat tariff	lei/Gcal	127	126	126	81	89	80	90

*) Note CHP-1 includes boiler house Sculenı and CHP-2 includes Eastern boiler house

202

Dynamics of fuel and energy costs and comparison of different cooking options

Tab 1

Type of fuel or form of energy	Unit	1994	1995	1996	1997 tce	Cooking 3 persons/month kgce	Costs for cooking Lei/month
Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	388	538	79.8	43
Natural gas for population	lei/1000cm	282	282	282	400	23.9	10
Natural gas for other consumers	lei/1000cm	465	346	346	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2082	1887	1997	1272		
Electricity	lei/kWh				0.18	13.4	20
<i>Assumptions for Tab 1</i>							
Electricity tariff for cooking constitutes 75% of full tariff							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves 50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=65%							

Tab 2

Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	387.5	538	79.8	43
Natural gas for population	lei/1000cm	282	282	282	400	23.9	10
Natural gas for other consumers	lei/1000cm	465	346	346	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2082	1887	1997	1272		
Electricity	lei/kWh				0.18	12.4	18
<i>Assumptions for Tab 2</i>							
Electricity tariff for cooking constitutes 75% of full tariff							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves=50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=70%							

Tab 3

Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	387.5	538	79.8	43
Natural gas for population	lei/1000cm	281.5	281.5	281.5	400	23.9	10
Natural gas for other consumers	lei/1000cm	465.1	346.2	346.2	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2081.5	1886.5	1997	1272		
Electricity	lei/kWh				0.24	13.4	26
<i>Assumptions for Tab 3</i>							
Full electricity tariff for cooking							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves=50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=65%							

Tab 4

Coal for power production	lei/tonne	96	154	194	269		
Coal for population	lei/tonne	248	410	387.5	538	79.8	43
Natural gas for population	lei/1000cm	281.5	281.5	281.5	400	23.9	10
Natural gas for other consumers	lei/1000cm	465.1	346.2	346.2	400		
Liquefied petroleum gas for population	lei/tonne	1561	1740	1740	1108	23.9	27
Liquefied petroleum gas for other customers	lei/tonne	2081.5	1886.5	1997	1272		
Electricity	lei/kWh				0.24	12.4	24
<i>Assumptions for Tab 4</i>							
Full electricity tariff for cooking							
Norm of natural gas used for cooking constitutes 7 cm/person/month							
Efficiency of natural and liquefied gas stoves=50%							
Efficiency of coal cookers=15%							
Efficiency of electric stove=70%							

DEFINITION OF REGIONS

Regional Definitions used for Purpose Comparisons

Commonwealth of Independent States

North America

USA (excluding Puerto Rico), Canada and Mexico

South and Central America

Caribbean (including Puerto Rico), Central and South America

Western Europe

European members of OECD (apart from Czech Republic, Hungary and Poland), plus Cyprus, Gibraltar and Malta

Central Europe

Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Former Yugoslav Republic of Macedonia, Poland, Romania, Slovakia, Slovenia, Yugoslavia

Europe

Western Europe and Central Europe

Middle East

Arabian Peninsula, Iran, Iraq, Israel, Jordan, Lebanon, Syria

North Africa

Territories on the north coast of Africa from Egypt to Western Sahara

West Africa

Territories on the West Coast of Africa from Mauritania to Angola, including Cape Verde Islands

East and Southern Africa

Territories on the East Coast of Africa from Sudan to Republic of South Africa Also Namibia, Malawi, Zambia, Zimbabwe, Uganda, Madagascar

Asia Pacific

Brunei, Cambodia, China, China Hong Kong SAR*, Indonesia, Japan, Laos, Malaysia, Mongolia, North Korea, Philippines, Singapore, South Asia (Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan and Sri Lanka), South Korea, Taiwan, Thailand, Vietnam, Australia, New Zealand, Papua New Guinea and the South West Pacific Islands

***Special Administrative Region**

Australasia

Australia, New Zealand

Country groupings are made purely for statistical purposes and are not intended to imply any judgement about political or economic standings

OECD members

Europe Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom
Other member countries Australia, Canada, Japan, Mexico, New Zealand, South Korea, USA

OPEC members

Middle East Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates (Abu Dhabi, Dubai, Ras-al-Khaimah and Sharjah)
North Africa Algeria, Libya
West Africa Nigeria
Asia Pacific Indonesia
South America Venezuela

(Since Ecuador and Gabon have withdrawn from OPEC, they are excluded from all OPEC totals)

European Union members

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK

EMEs (Emerging Market Economies)

South & Central America, Central Europe, Former Soviet Union, Africa, Middle East and Non-OECD Asia Pacific In this Review, the term 'Other EMEs' excludes Central Europe and Former Soviet Union

Other terms

Tonnes = Metric tons

Percentages

Calculated before rounding of actuals All annual changes and shares of totals are on a weight basis except on the oil refinery capacities, oil refinery throughputs, oil trade movements and oil inter-area movements tables

Rounding differences

Because of rounding, some totals - including the 1997 share of total - might not agree exactly with the sum of their component parts

Premium gasoline

Up to the end of 1985, 0.4g lead per litre gasoline was the standard
From 1986, low-lead (0.15g lead per litre) product has been the main
marker

US processing gains

Gains in volume occur in the refining of crude oil into products. For the
USA, which accounts for most of the world's processing gains, it is
conventional to deduct these gains from volumetric consumption levels
to reflect more accurately the effective demand on crude oil resources

DEFINITION OF TERMS USED IN NON-TRADITIONAL FINANCING

AMERICAN DEPOSITORY RECEIPTS (ADR) are registered securities, with the U S Securities and Exchange Commission (SEC), sold and listed on Stock Exchanges in the U S , representing ownership in a foreign company ADR's evidencing ADS's are issuable pursuant to a "Deposit Agreement" between the foreign company (company), a financial institution (e g Citibank N A in New York) , as depository, and the holders from time to time as ADR's issued hereunder

AMERICAN DEPOSITORY SHARES (ADS) each ADS represents (x) N shares issued by a Chinese company, deposited in accordance with the Deposit Agreement with the Depository

ASIAN DEVELOPMENT BANK (ADB) is a multilateral bank lending to developing countries in Asia

BALANCE SHEET FINANCING allows corporations to initiate new projects with financing that is obtained based on their credit standing in the capital markets Financing is based on the balance sheet risks of the company as a whole rather than the project

CERTIFICATES OF DEPOSIT (CD'S) are securities issued and guaranteed by banks and financial institutions, usually short term in nature

CONCESSION AGREEMENT is a "contractual document" between the Project Company and the Host government entity with authority to commit the government to the concessions and incentives

CONVERTIBLE BOND combines a bond and an option to convert to the equity of a bond issuer at a pre-determined date for shares on pre-arranged terms

COUNTRY EXPOSURE CAPACITY is the limit set by commercial banks based on the country exposure (lending limit) they are willing to assume for a particular country or region

DEBT SERVICE Periodic payment of principal and interest on loans, bonds, or fixed/floating-rate notes

DEVALUATION a government action to reduce the purchasing power or value of local currency against convertible currencies

DISTRIBUTION COMPANIES – DISCO (OBTAIN FROM FRANK)

EASEMENTS a right given to an individual or group to make limited use of another's real property

EXPROPRIATION a forced transfer of ownership from a private owner to a government entity

Federal Regulatory Commission – US The Federal Energy Regulatory Commission (FERC/Commission) is an independent agency that oversees America's natural gas industry, electric utilities, nonfederal hydroelectric projects, and oil pipeline transportation system. The Commission's primary responsibility is to ensure that consumers have an adequate supply of natural gas, electricity and oil at reasonable rates.

FERC was created through the Department of Energy Organization Act on October 1, 1977. At that time, the Commission's predecessor, the Federal Power Commission (FPC), was abolished, and the new agency (FERC) inherited most of the FPC's responsibilities.

The Commission is composed of five members who are appointed by the President, with the advice and consent of the Senate. Commissioners serve five-year terms, and have an equal vote on regulatory matters. No more than three members may belong to the same political party. One member is designated by the President to serve as Chair, and FERC's administrative head.

FINANCIAL CLOSING occurs when all conditions of lenders and investors have been met, and financial disbursements can take place.

FIDUCIARY TRUST is an irrevocable entity established by a project company, to which is transferred certain rights and assets granted under a concession agreement. The Trust is managed by a financial institution, and may issue notes and bonds on the international markets, usually under Rule 144A. A method used to securitize operating projects, to allow expansion and or allow project companies investors and/or lenders to recapture their investment.

FINANCEABLE means the project can attract enough project financing, going in, to assure project completion.

FOREIGN DIRECT INVESTMENT (FDI) means the foreign investment made directly into Foreign Invested Enterprises (FIEs) for Chinese production, manufacturing, tourism and infrastructure projects.

FOREIGN INVESTED ENTERPRISES (FIEs) represent companies formed under the Cooperative Joint Venture, Equity Joint Venture, and Wholly Owned Enterprise Laws and Regulations and the Procedure for Establishment of Investment Companies by Foreign Investors. Also known as a Sino-Foreign joint venture.

FRANCHISE The grant of certain rights to an individual group, partnership, or corporation, sometimes called a concession.

HARD CURRENCY all major convertible currencies, such as the U.S. dollar, the British pound, the German mark, the Japanese yen, the Swiss frank, the Italian lira, the Dutch guilder.

HOME COUNTRY The country in which the foreign sponsor/developer is registered.

HOST COUNTRY the country in which the infrastructure project is taking place

INDEXED TARIFF An adjusted tariff, based on a variable such as fuel price, interest rates, (local and foreign), exchange rates, and/or inflation

IMPLEMENTATION AGREEMENT project-specific agreements that provide government assurances and guarantees to foreign project developers required for successful project development and allocation of risk

INVESTMENT GRADE SECURITIES are bonds or notes awarded a credit rating of BBB- by S&P, or Baa3 by Moodys

INVESTORS individuals, groups, or companies that invest cash or "sweat" equity in an infrastructure development or Project Company

LENDERS commercial banks or other lending institutions that provide loans for investors or directly to a "project" company for the purpose of developing, building and operating an Infrastructure project

LIMITED-RECOURSE FINANCING a lending arrangement under which repayment of the loan and recourse in the event of default relies mainly on the project's cash flow

MOODYS INVESTORS SERVICE/STANDARD & POORS CORP (S&P) are privately owned and independent credit rating agencies. The agencies are paid by corporations, utilities and governments to look at their books and issue a rating. As a general rule, the higher the credit rating the lower the interest the credits need to pay to creditors. Non-sovereign debt usually has a lower rating than sovereign debt.

TABLE A-1

COMPARISON OF CREDIT RATINGS

S&P	MOODYS	S&P	MOODYS
INVESTMENT GRADE		SPECULATIVE GRADE	
AAA	Aaa	BB+	Ba1
AA+	Aa1	BB	Ba2
AA	Aa2	BB-	Ba3
AA-	Aa3	B+	B1
A+	A1	B	B2
A	A2	B-	B3
A-	A3	CCC+	Caa1
BBB+	Baa1	CCC	Caa2
BBB	Baa2	CCC-	Caa3
BBB-	Baa3	CC+	Ca1

S&P	MOODYS	S&P	MOODYS
		CC	Ca2
		CC-	Ca3
		C+	C1
		C	C2
		C-	C3

NET FIXED ASSETS represents the Net Worth of the company, used by the Ministry of Electric Power (MEP), in the calculation of the rate of return, allowed, on equity, for FIE's operating in the power sector in China

NET DEBT FLOW Means loan disbursements from the international lender, minus interest and principal repayments by the developing country borrowers

NET PRINCIPAL FLOWS Means the loan disbursements coming in minus loan principal repayments going out

NON-RECOURSE FINANCING Recourse for debt repayment, default, or both belongs exclusively to the project company

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT(OECD)

"PACKAGED" PROJECT is a project which have been sufficiently defined technically, the proposed terms and conditions of the Concession Agreement and the legal infrastructure exists, and has project approval by the appropriate Host government agencies to allow proceeding with a smooth and rapid negotiation with Investors and Lenders

THE NATIONAL BANK OF MOLDOVA (NBM) - an autonomous public legal entity reporting to the Parliament of Moldova NBM has the capacity to (1) enter into contracts and issue obligations, (2) acquire and dispose of property to further its objective, (3) initiate legal proceedings and be the subject of legal proceedings The main objective of NBM is to achieve and maintain the stability of the national currency, the leu

PERFORMANCE BONDS guarantees purchased by "Project Company", issued by commercial banks or insurance companies for an entity to guarantee full and successful implementation of the contract according to pre-specified performance guidelines

MOLDOVA COMPANY LAW is the law that allows and regulates the formation of wholly owned Moldovan companies to become limited-liability companies

PROJECT COMPANY the special-purpose entity that assumes legal and financial responsibility for construction and operation of the project, i e , the Concession holder Recourse is limited to the project company

PROJECT RISK the total risk, including commercial, political, and force majeure risks

"PROJECT VIABILITY" refers to the projects ability to survive on its own, commercially and financially, and without outside support "QUALIFIED INSTITUTIONAL BUYERS" (QIB) investors qualified because of net worth and sophistication to purchase notes and bonds issued under Rule 144A of the Regulation S under the US Securities Act

RISK PROFILE The level of risk due to political, economic, or financial uncertainty to which an investor is exposed This determines the rate of return that an investor requires in order to tolerate exposure to the level of adversity in any country

RISK UNBUNDLING means the separation of the total project risks into manageable pieces, which are assignable to appropriate entities that have a means of controlling the risk

RULE 144A provides a method for foreign corporations, to access US and other international capital markets, through the issuance of Notes and Bonds as securities, without meeting the registration requirements for the same detailed financial information required for a public offering sale to the general public Notes and Bonds are sold offshore in reliance on Regulation S under the US Securities Act Rule 144A allows the sale of restricted investment grade securities (Notes and Bonds) to "Qualified Institutional Buyers" (QIB), without registration with the US Securities and Exchange Commission Typical QIB's are insurance companies, pension funds, and mutual funds The securities are quite often traded on the Luxembourg Stock exchange, held as Global notes Three years after issue, 144A securities can be freely traded in the US Market

SECURITY PACKAGE (SP) is established through the various contractual arrangements and comprises the key agreements, contracts, and government undertakings Lenders look to the SP to provide security for the loans, and in the event of a breach of any of the agreements they may seek the right to take over the company and install their own managers within the framework of the agreements Typically the SP may include the Implementation Agreement, Joint Venture Contract, Shareholders Agreement, Concession Agreement, Tariff Agreement, Land Conveyance Agreement, Ownership structure and agreements, Construction Contract, Operations and Maintenance Agreement

SOVEREIGN GUARANTEE government guarantee (e.g. of the obligation of the Concession or Implementation Agreement)

STATE CORPORATIONS – PREPARE LIST

STATE TREASURY BONDS are securities, also known as Treasuries, issued by the NBOM, and carry sovereign government guarantee ?

SWEAT EQUITY is equity contributed by a contractor or developer for services provided in lieu of cash

TURNKEY CONTRACT also referred to as a "Turnkey Fixed Price " (TKFP), is a contract given by the project company to a prime contractor who will be responsible for the design and implementation of the project from start to finish, and who will provide a completed, operational project on a stipulated date, on a lump-sum basis

US SECURITIES AND EXCHANGE COMMISSION an agency of the U S government responsible for the regulation and control of securities

Pipeline Conventions

Transporter Provides natural gas transportation service,

Shipper Firm requesting firm transportation service from Transporter,

Transportation Services Includes storage, exchange, backhaul, displacement, or other methods of transportation

Market Center Means an area where gas purchases and sales occur at the intersection of different pipelines

CONVERSION FACTORS

Tab 1 Gross heat content (for Moldova)

Natural gas	kCal/cm	7994
	kCal/cf	226
	MBTU/cm	31728
	MBTU/cf	898
Heavy fuel oil	kCal/kg	9590
	BTU/kg	38060
Gasoline	kCal/kg	10430
	BTU/kg	41394
Diesel Fuel Oil	kCal/kg	10010
	BTU/kg	39727
Coal	kCal/kg	5250
	BTU/kg	20836
Liquefied Petroleum Gas	kCal/kg	10990
	BTU/kg	43616
<i>Note 1 cm=35 3147 cf (cf-cubic feet)</i>		

Tab 2 General conversion factors for energy

From \ To	(multiply by)	TJ	Gcal	Mtce	Mtoe	MBtu	GWh
TJ		1	0 2388	3 41E 05	0 00002388	947 9	0 2778
Gcal		4E-3	1	1 429E-07	9 9998E-08	3 969	0 0012
Mtce		29E+3	7E+06	1	0 7	28E+6	8141
Mtoe		42E+3	10E+6	598	1	39 7E+6	12E+3
MBTU		1 055E-03	2 5E 01	3 6E-08	2 5E-08	1	2 931E-04
GWh		3 6	860	0 000123	8 598E-05	3412	1

213

WORLDWIDE PRICES OF ENERGY SOURCES FOR HOUSEHOLDS

COUNTRY	Natural gas price		LPG price	Electricity price
	\$/1000 cm	\$/MBTU	\$/kg	\$/kWh
Republic of Moldova	80	2 5	0 24	0 051
Australia	315	8 4		0 083
Austria	439	11 7		na
Belgium	428	11 4		0 191
Canada	154	4 3		na
Czech Republic	119	3 3		0 039
Denmark	723	18 6		0 215
Finland	170	4 6		0 109
France	453	11 9		0 164
Germany	349	11 1		0 18
Greece				0 115
Hungary	117	3 4		0 06
Ireland	426	11 9		na
Italy	608	16 8		0 178
Japan	1269	32 6		0 23
South Korea				0 103
Luxemburg	312	8 0		0 142
Mexico			0 30	0 048
Netherlands	289	9 2		0 148
New Zealand	384	10 5		0 088
Norway				0 081
Poland	165	5 9		0 067
Portugal				0 176
Spain	623	15 5		0 191
Sweden				0 11
Switzerland	487	12 7		0 16
Turkey	192	5 3		0 087
United Kingdom	305	8 2		0 125
United States	221	6 1	0 42	0 084
Brazil			0 55	0 146
Chinese Taipei				0 091
India				na
Russia				na
Slovak Republic	61	2 0		0 031
South Africa				0 045
Venezuela	10 66	0 3	0 13	0 017
Thailand				0 086