CASE Ukraine
Center for Social and Economic Research

Ukrainian Gas Sector Review

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Summary

Being a large consumer of natural gas Ukraine depends heavily on foreign supply. National gas company tries hard to increase domestic production, but outdated equipment and insufficient natural reserves leave little hope for success. The most promising projects in decreasing dependence involve energy saving and international cooperation in Black Sea shelf development.

While lacking natural reserves, Ukraine has extensive gas transportation and storage infrastructure. Despite of numerous intentions to diversify ways of gas supply to Europe the importance on Ukrainian pipes grows as they carry four fifth of Russian gas sold to Europe. Due to growing demand for gas from the side of the EU and absence of alternative pipelines with comparable capacity, Ukrainian territory is to remain the most important transit route in many years ahead.

Meanwhile politically motivated low gas prices for population threaten to bankrupt national gas giant and lead to aggravation of cross-subsidizing system. Industrial consumers suffer the most as they became a subject for monthly tariffs increase through a system of various target price increments.

Natural gas together with oil accounts for more than 60% of primary energy consumption in Ukraine, however, unlike in other countries, natural gas in Ukraine occupies the first place providing 40-45% of the total energy produced in the country. This fact leads to a higher demand for natural gas in comparison with European countries where gas share in primary energy consumption is close to 22% and conditions ultimate importance of this type of fuel for Ukraine.

Domestic Extraction and Consumption

Ukraine has a long-standing tradition of natural gas extraction. Domestic commercial drilling started in 1924 and reached its maximum in 1970th at the level of 68.7 bcm per year. Ukraine has three oil-and-gas bearing basins: Carpathian (Western), Dnipro-Donetsk (Eastern) and Black Sea and Crimean (Southern). At southern basin extraction is also carried out at continental shelf of Black and Azov seas. The Dnipro-Donetsk basin is a major producing region of Ukraine accounting for 90% of Ukrainian production from over 120 gas fields. Over 3,000 wells have been drilled in the basin to date.

Ukrainian gas industry is almost fully controlled by a National Joint Stock Company Naftogaz of Ukraine (NJSC Naftogaz) which is a vertically integrated company engaged in full cycle of operations in gas and oil field exploration and development, production and exploratory drilling, gas and oil transport and storage, supply of natural gas and LPG to consumers.

The company consists of three subsidiary companies (SC), five subsidiary enterprises (SE), two state joint stock companies (SJSC) and two open joint-stock companies (OJSC) (See picture 1).

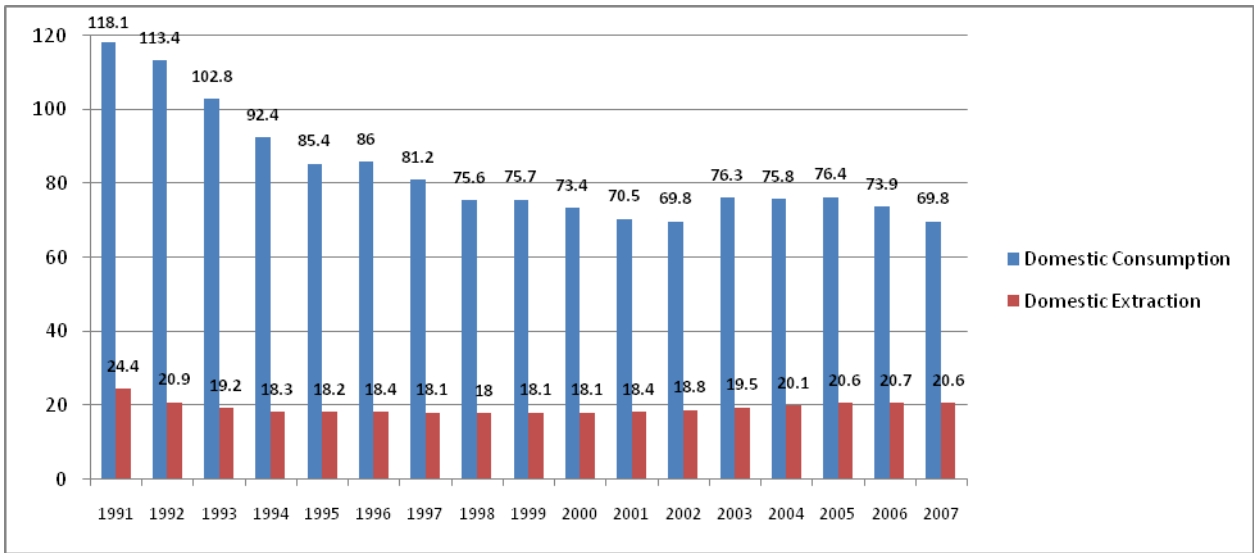
Picture 1. Natural gas market structure

Source: NJSC Naftogaz.

With gas consumption registered at 118.1 bcm in 1991, Ukraine was the world's third largest gas consumer, behind only the USA and Russia. After the collapse of the Soviet Union gas consumption decreased significantly; nevertheless Ukraine covers less than 30% of natural gas demand by domestic production (See diagram 1).

NJSC Naftogaz states increase in the volume of domestic natural gas extraction as a major priority. As it can be seen at the diagram there was some progress in achieving this goal. Starting from 2001 Ukrainian gas producing enterprises were increasing their production every year, thus reaching 13.8% growth in 7 years.

Diagram 1. Ukraine's gas consumption and extraction 1991-2007, bcm



Source: NJSC Naftogaz of Ukraine.

This result was conditioned by the existence of special policy of capacity expansion, increase in production drilling and surface arrangements as well as stimulation of production, extensive repairs of existing wells and putting into operation previously abandoned holes.

Together with new wells development Naftogaz intensifies gas extraction at the fields that have been developed for a long time. The company designed a special program of separator pump units' construction which is aimed at increase of gas output.

Currently the national company is focusing its efforts on creating conditions for gas extraction growth. Thus SC Ukrgasproduction plans to increase its extraction volume from the current 14.7 bcm per year up to 17.7 bcm in 2015. This increase is expected to be supported first of all by new wells opening and conversion of investigation holes into commercial production. It is also planned to increase significantly level of preliminary drilling in order to expand the volume of explored reserves.

However primary reserves of major Ukrainian gas fields are currently depleted. Absolute majority of gas fields with large and medium reserves have entered into the phase of falling extraction. Based on the volume of current reserves three quarters of Ukrainian gas fields qualified as small basins with reserves less than 5 bcm including one third with reserves less than 1 bcm. Nowadays around 80% of gas extraction in Ukraine is carried out under terms of falling extraction and pace of residual reserves recovery.

Moreover current state of domestic enterprises equipment does not meet modern requirements and needs modernization. Currently Ukraine does not possesses equipment that allows well-drilling deeper than 6000 meters. Still the most promising natural gas reserves situated precisely at the deep-seated pools of central Dnipro-Donecka basin (5500-6300 meters).

Significant natural gas reserves can be found at Black and Azov seas shelf. Potential resources there are estimated to be at least 1500 bcm, while the most optimistic assessments provide figure of 1800 bcm. Out of these resources only 4% have been extracted so far, while 67% of continent basins have been exhausted.

Currently the only Ukrainian enterprise that can carry out exploration works and commercial drilling at the sea is SJSC Chornomornaftogaz. Yet because of lack of experience and absence of necessary technology the enterprise is not ready to extract hydrocarbons at a depth more than 80 meters.

Ukraine has been trying to attract foreign investments for this purpose for several years now. The first real steps to develop the deep-water shelf by Ukrainian companies were made in 2005 when Chornomornaftogaz received a license to develop the medium-water oil-and-gas bearing structure Subbotino located at the depth of 50 to 100 meters. Chornomornaftogaz in its turn concluded an agreement with an American corporation Hunt Overseas Oil Inc. on exploration and development of prospective fields with total area of around 12 thousand square kilometers at the Southern part of the Kerch Strait. However, this project also failed due to the absence of a production sharing agreement.

The next attempt to develop the Black Sea shelf was made in December 2005. Then, a first tender on the geological exploration and extraction of hydrocarbons in the Prykerch part of the Ukrainian Black Sea shelf was won by a little known Vanco company, which 3 years after have not started even preliminary drilling, but instead appeared in the centre of international scandal.

As it can be seen from the table 1, natural gas extraction in first five months of 2008 increased insignificantly and mostly owing to increased production by independent gas producing enterprises. The most activity directed to gas extraction increase among Naftogaz subsidiaries was demonstrated by Chornomornaftogaz. In April the company finished drilling a new well with a daily production of 55000 cubic meters and in May reopened a well which was closed from 1976 with projected daily production of 146000 cubic meters. However it was not enough to compensate for falling production at other wells. Other subsidiaries were also struggling to counteract to natural loss of production volumes.

Table 1. Domestic natural gas extraction, 2006-2008, mln cubic meters

	2006	2007	January-May, 2008	
			mln cubic meters	Yoy change, %
Total, including:	19,743.7	19,532.2	8,739.8	+0,1%
subsidiaries of NJSC Naftogaz of Ukraine :	18,367.3	18,294.5	8,045.8	-0.7%
SC Ukrgasproduction	14,667.9	14 ,685.3	6,246.3	+0.6%
OJSC Ukrnafta	2,422.5	2 ,349.2	1,305.1	-4.2%
SJSC Chornomornaftogaz	1,276.9	1 ,260.0	494.4	-6.5%
Other companies:	1,373.2	1,237.7	694	+9.6%
"Nadra Ukrainy"	495.8	335.546	160.7	+3.9%

Source: Ministry of Fuel and Energy of Ukraine.

Despite of serious attempts to increase domestic gas production Naftogaz cannot be expected to be fully successful in lowering foreign natural gas dependence in this way as land basins are mostly exhausted and off-shore projects are currently on-hold. We expect gradual decrease in consumption volumes conditioned by gas price increase with consequent introduction of energy saving technology and increase in domestic extraction only after comparatively small off-shore extraction projects with participation of foreign investors.

Transit and storage facilities

Thanks to its geographical position, Ukraine plays a key role in the transit of natural gas from Russia and Central Asia as an intermediary connecting Russia, the world's largest natural gas producer, with growing European markets. More than 80% of Russian gas destined for European consumers travels through Ukrainian pipelines. As a result, Ukraine plays an extremely important role in ensuring the security of gas supplies in Europe.

In the past, Russia partially supplied Ukraine by offering natural gas as payment in-kind for transiting Russia's gas onwards to Europe, and partially through annual sales contracts. In the past few years, Turkmenistan has become Ukraine's largest source of natural gas imports through long-term contracts.

Ukraine's aging natural gas infrastructure is a concern both to European consumers and Russian producers. Some of the pipes in the Ukrainian network have been in operation for 20-30 years, and repairs are rarely carried out because of a lack of available funds. In addition to pipeline disrepair, capacity utilization is a problem.

As of 01.01.2008 Ukraine operated 38,200 km of pipelines, 71 compressor stations (110 compressor shops) providing a total capacity of 5,405 MW, and 13 underground gas storage facilities. Currently Ukraine has large reserves of transmission capacities, the input capacity of the system is 288 billion, and the output stands at 178.5 bcm a year, including 142.5 bcm to Western Europe (See picture 2).

Picture 2. Natural gas transit routes through Ukraine

Source: www.gasunion.org.ua.

Volume of the gas that enters Ukrainian territory and is passed to foreign consumers is metered by gas-measuring units (GMU) installed at the border; they also control physicochemical properties of the gas.

Volume of gas transit through Ukraine grew rapidly during the first five months of 2008 (see table 2). SC Ukrtransgaz increased the transit by 26% up to the record-breaking 55.7 bcm, which is the highest figure for the whole history of Ukrainian gas transmission system existence.

In comparison with the corresponding period in 2007 volume of transit was raised by 11.5 bcm, which was conditioned by increased import gas consumption in Europe and the corresponding growth of gas export by Russian Gazprom.

Table 2. Gas transmission through Ukrainian territory, bcm

	January-May 2007	January-May 2008	Yoy change
Transmitted to Europe, including :	**44.2**	**55.7**	**+26%**
GMU Uzhgorod (To Western Europe)	27.1	36.4	+34%
GMU Tekovo (To Romania)	0.9	1.1	+22%
GMU Beregove (To Hungary and Balkan countries)	4.3	5.7	+33%
GMU Drozdovychi (To Poland)	1.7	2.1	+24%
GMU Orlovka (To Turkey and Balkan countries)	10.2	10.4	+2%
Transmitted by SC Ukrtransgaz to Ukrainian consumers	**28.2**	**29.5**	**+5%**

Source: Ministry of Fuel and Energy of Ukraine.

Since 1996 the in-line inspection of trunk gas pipelines has been conducted with 'intelligent' pigs. 2,600 km of mains were inspected with pigging technology in 2006. It allowed to complete inspection of all transit pipelines. The modern Eastern-European Inter-state Regional Metrological Center (second phase) for natural gas metrology, constructed with EU assistance, was commissioned in 2005.

In Ukraine also operates a network of distribution gas pipelines, which is 196 thousand km long. It allows delivering natural gas for national industrial enterprises, communal heat power plants, budget institutions and 12.6 mln private houses and apartments.

Separate comment needs to be given to the South Stream pipeline project which was announced in mid-2007 and is planned to link Russia directly with its greatest European client, Germany via Bulgaria and Greece. In Ukraine South Stream has been seen as diverting some gas transit, instead of providing a new source of gas for Europe. However if it is ever built the offshore pipeline will carry maximum 31 bcm of gas annually – the volume the EU import is very likely to grow for in the nearest years, thus keeping Russian need for Ukrainian gas transit facilities stable.

In addition to pipelines network Ukraine possesses considerable capacities for natural gas storage. SC Ukrtransgaz operates 12 underground gas-holders of total active capacity of 30.8 bcm which is the largest storage capacity in Europe. Besides, the majority of them located at transit pipelines near the western border of Ukraine. Today these gas-holders assure uninterrupted supply of Russian gas to Europe, and render services in gas storage for Poland, Slovakia, Russia and Hungary. Maximum recovery volume with full-load of the holders reaches 0.25 bcm per day, which may cover any peek increase in demand.

However, so far the capacities of Ukrainian gas-holders are not used in full measure. Ukraine sometimes receives foreign requests for renting a small part of these facilities, but a relevant intergovernmental agreement has never been signed. Among possible partners The Hungarian Power Companies Ltd and Polish Gornictwo Naftowe i Gazownictwo S.A. can be mentioned as they expressed their interest before.

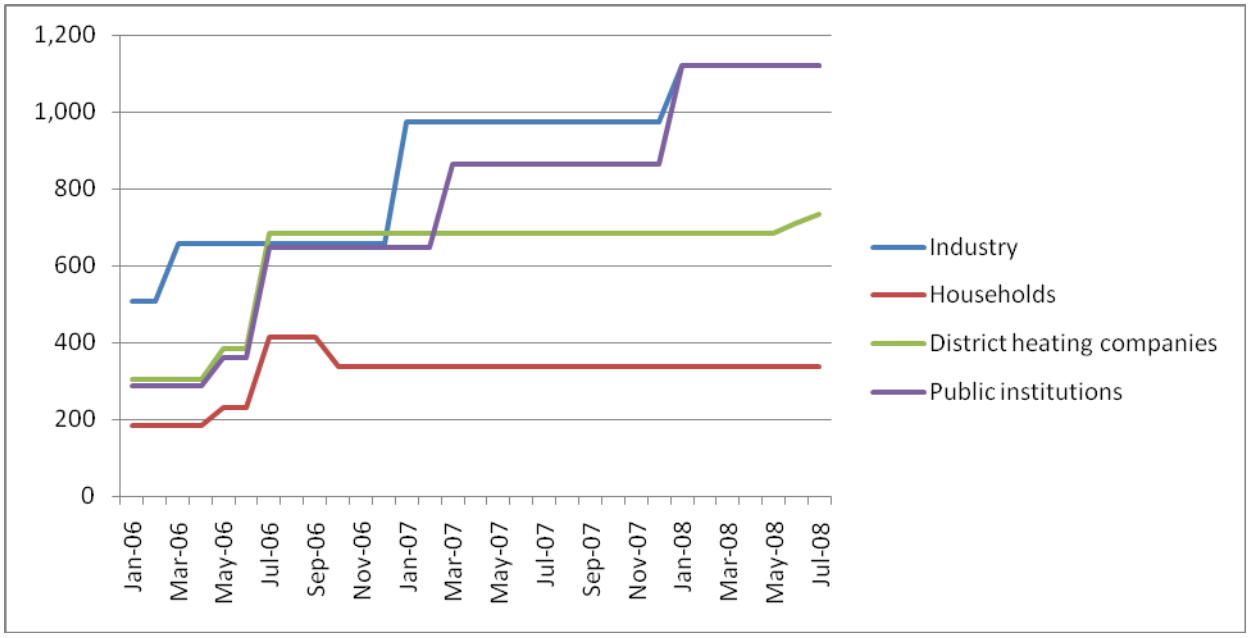
While the EU is expected to increase its import of natural gas resources, Ukraine will reap the benefit of its geographical position and previously built infrastructure. Major issues in the future will be pipeline disrepair and gas storage capacity utilization.

Tariffs

Gas tariffs for all consumer groups, as well as fees for transmission, distribution and storage are set by National Electricity Regulation Commission (NERC) according to methodology, elaborated in 1999.

There is a clear differentiation in gas price depending on a consumer group. Industry and public institutions pay almost three times more than households (see Diagram 2). The disparity in tariffs is meant to be a social protection step for households and is based on a complicated system of cross-subsidies, when industry pays for other consumers.

Diagram 2. Gas Prices for Different Consumer Groups*, Jan 2006-Jun 2008, UAH per 1000 cubic meters



Source: SC Gas of Ukraine.

* - gas price for households, district heating companies and public institutions includes VAT, transportation and supply fee; gas price for industry includes only VAT.

It needs to be emphasised that starting from January 2007 the price for industry was supplemented by a target increment of 2%, which was aimed to compensate losses of Naftogaz originating from gas sale to households. In 2008 this increment was increased three times (in January, April and June) and as of end of June 2008 it reaches 12% for industry and public organization and 6% for selected chemical industry enterprises. Moreover starting from May 2008 one more component was introduced in the formula of gas price calculation for industrial consumers – that one of 87.43 UAH (without VAT) is aimed to compensate costs for gas selling. All together, different increments increase significantly the final price for industries (See table 3).

Table 3. Minimal gas price structure for industrial consumers

	January		April		May		June	
	Chemical Industry	Other Industries	Chemical Industry	Other Industries.	Chemical Industry	Other Industries.	Chemical Industry	Other Industries
Initial gas price, UAH	934.7	934.7	934.7	934.7	934.7	934.7	934.7	934.7
Target increment, %	0.01%	4%	4%	8%	4%	8%	6%	12%
Target increment, UAH	0.09	37.39	37.39	74.78	37.39	74.78	56.08	112.16
Transportation cost, UAH	96.3	96.3	96.3	96.3	96.3	96.3	96.3	96.3
Naftogaz selling charge, UAH	0	0	0	0	87.43	87.43	87.43	87.43
VAT, UAH	206.22	213.68	213.68	221.16	231.1	238.64	234.902	246.118
Final price, UAH	1237.31	1282.07	1282.07	1326.93	1386.98	1431.85	1409.41	1476.71

Source: Ministry of Fuel and Energy of Ukraine, SC Gas of Ukraine.

Such often price increases are conditioned by the necessity of financial performance measures improvement of Naftogaz, which was on the border of bankruptcy in the beginning of 2008. The national gas company badly needs financial support to continue subsidizing gas for households and communal enterprises. Despite of Naftogaz' request and Governmental recommendations to increase tariffs for population NERC has not taken this decision as it has to be approved by trade unions. Thus Naftogaz had little choice, but to increase amount of cross-subsidies and as the result worsen competitive advantages of Ukrainian industry.

While Naftogaz remains in a difficult financial state, the Government prefers aggravation of cross-subsidizing to socially unpopular increase in tariffs for population. We expect tariffs to go up a little already in 2008 and grow faster straight after the presidential elections in 2009.

Abbreviations

bcm – billion cubic meters

CJSC – closed joint-stock company

GMU - gas-measuring units

JV – joint venture

NERC – National Electricity Regulation Commission

NJSC – national joint-stock company

OJSC – open joint-stock company

SC – subsidiary company

USF – underground storage facilities