

# The System Anatomy



The scope of activity of the PGNiG Group encompasses field exploration, gas imports, production and storage, as well as trade and distribution of natural gas.



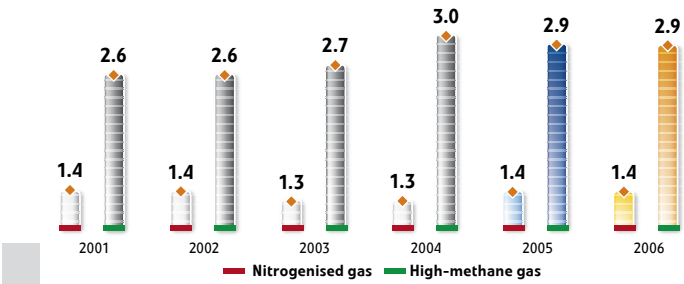


# Segment Exploration and Production

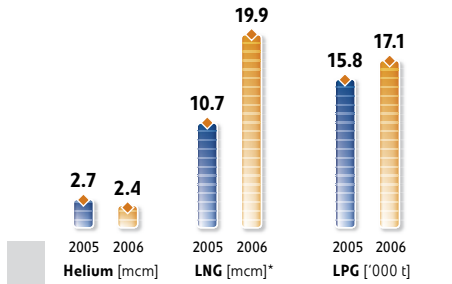
The Exploration and Production segment covers the entire process of oil and gas production starting from the geophysical surveys before the exploration phase until field operation and product preparation for marketing.



High-methane and nitrogenised gas production [bcm]  
\*Figures including production of the nitrogen removal plant in Odolanów.



Volume of helium, LNG and LPG production  
\* High-methane gas equivalent in normal conditions



## Oil and gas production

Production of natural gas and crude oil is one of the key drivers ensuring the competitive position of the PGNiG Group in the liberalised gas market. A part of gas volumes sold by the company are sourced at a lower cost than the price of gas imports. This, to some extent, protects the Group from the adverse effect of growing gas import prices driven by the raise of the oil product prices which are the basis for indexation of gas prices. During the last eleven years, the company's domestic gas production increased from the level of 3.6 billion cu. m in 1996 to 4.3 billion cu. m in 2006, i.e. by 19%.

In the year 2006, PGNiG produced 4.3 billion cu. m of natural gas, after translation to high-methane gas vol-

umes, which corresponds to the 2005 production level. Also in that year, the company produced 2.9 billion cu. m of high-methane gas and 1.4 billion cu. m of nitrogenised gas. The gas production volume (expressed as high-methane gas equivalent) in the Sanok Branch reached 1.9 billion cu. m, while the Branch in Zielona Góra produced 2.4 billion cu. m.

There are two branches of the Company engaged in the production of natural gas and crude oil across the country – based, respectively, in Zielona Góra and in Sanok.

The Branch in Zielona Góra extracts nitrogenised gas from 27 production plants (17 gas plants and 10 oil and

gas plants), and high-methane gas is produced by the Branch in Sanok in 47 production plants (25 gas plants and 22 oil and gas plants). The nitrogenised gas produced from the fields is subsequently processed into high-methane gas in the nitrogen removal plant in Odolanów. The technology is based on low-temperature (cryogenic) processes. In 2006, the plant processed 1.49 billion cu. m of gas and produced 0.9 billion cu. m of high-methane gas. Besides high-methane gas, the products obtained from the cryogenic processing of nitrogenised gas include liquefied natural gas (LNG), LPG, gaseous and liquid helium and liquid nitrogen.

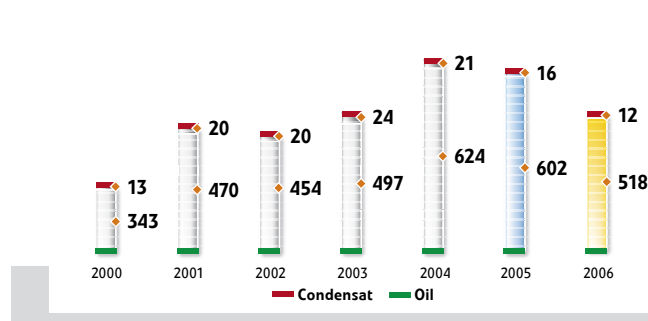
Natural gas  
production

4.3  
bcm

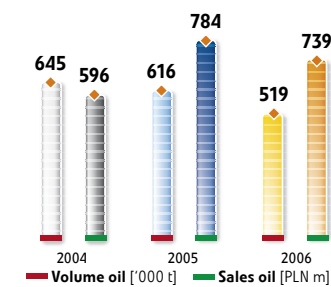
Crude oil  
production

530  
'000 t

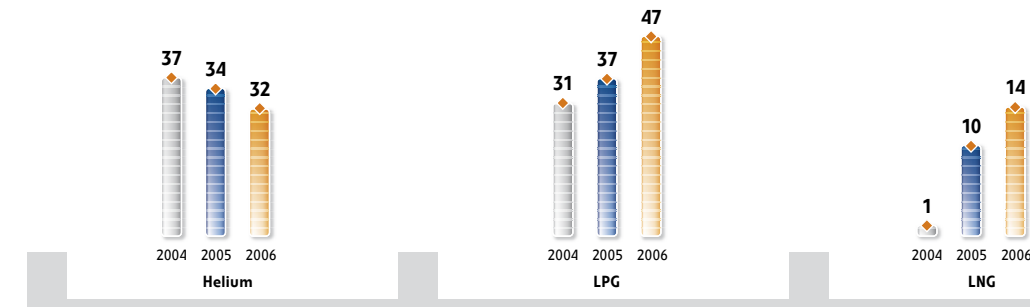
Crude oil and condensate production in 2000–2006 ['000 t]



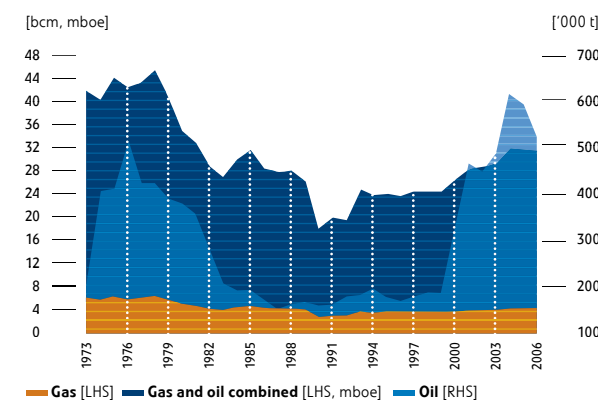
Crude oil sales volume in 2004–2006



Sales of LNG, LPG and helium in 2004–2006 [PLN m]



Natural gas and crude oil production in the years 1973–2006



Production of crude oil is carried out by the Branch in Zielona Góra, in five production plants (Góra, Grodzisk Wielkopolski, Gorzów Wielkopolski, Karlino, Ostrow Wielkopolski) in the territory of five voivodeships. The Branch operates 25 oil fields, including the largest oil field ever discovered in Poland, i.e. the BMB (Barnówko-Mostno-Buszewo) field, as well as smaller ones such as Kosarzyn, Zielin, Buk. The volume of oil production volume including condensate totalled 530 thousand tons in 2006 (against 619 thousand tons in 2005). The decline was due to a natural slowdown of the production dynamics as a result of the development of new fields and depletion of the existing ones. PGNiG intends to increase the annual oil production up to 1.1 million tons as of the year 2010.

### Sales of crude oil and natural gas directly from fields

Non-regulated sales of natural gas from the fields and the crude oil sales are also managed by the Exploration and Production segment. Currently, the company sells its crude oil production through two principal channels:

- pipeline sales to foreign customers under renewable yearly contracts – approx. 54% of total oil sales,
- sales volumes transported by trucks to domestic customers – approx 46%.

The pipeline sales (via the "Friendship" pipeline operated by PERN) is focused on the major customers of PGNiG: Shell International Trading and Shipping Company Limited and BP Oil International LTD. The bulk of domestic sales, in turn, goes to the companies of the PKN ORLEN Group with minor quantities distributed to local direct customers served by the production units. In 2006, the revenues from crude oil sales, as compared to the 2005 result,

decreased by 5.7% to PLN 739 million, despite much higher average oil sales price than in 2005. The lower revenues were mainly due to the reduction in sales volume (down to 518 thousand tons).

The non-regulated gas sales is realised through gas supply from PGNiG's fields. The gas is sold on market terms and the supply terms (including the price of gas) are negotiated individually with the customer depending on the specific parameters of each project. The gas sales outside of the system are not taken into account in the calculation of the tariffs approved by ERO.

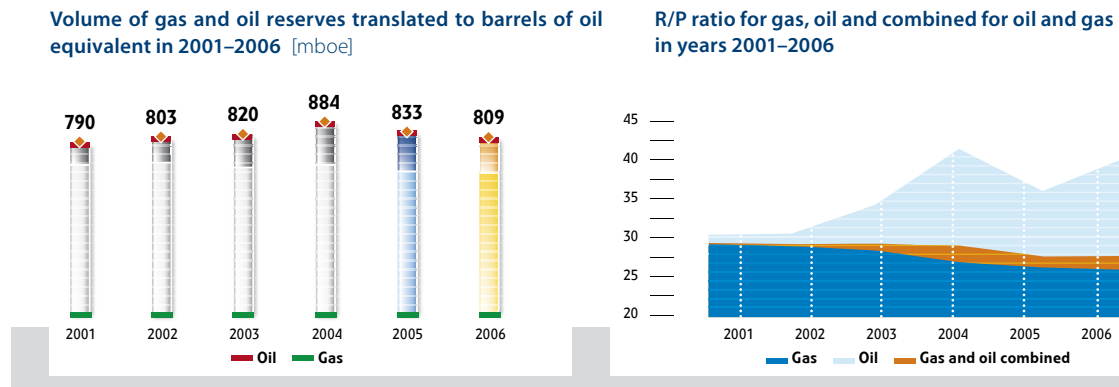
In 2006, PGNiG sold 566 million cu. m of gas directly from the fields (after translation of high-methane gas volumes), i.e. 3.7% more than in 2005. The bulk of this volume consisted of nitrogenised gas with the quality locally deviating from the system standards, which was purchased by a limited number of large

consumers (including the CHP Plant in Zielona Góra, CHP Plant in Gorzów Wielkopolski, Fertilizer Plant in Tarnow-Mościce and Arctic Paper Kostrzyn). The non-regulated sales of high-methane gas concentrate in the South-East region of Poland. Those interested in purchasing the gas are mostly small or medium-sized consumers, located in the vicinity of the production plants and having no access to the transmission or distribution networks.

The direct sales offer an opportunity for achieving sound economics in the development of the fields with gas quality deviating from the grid standards and attracting those customers for whom system supply would not be technically or economically viable.

### Sales of other products

In addition to selling natural gas sales directly from the fields and crude oil, PGNiG also markets other products such as helium, LNG and LPG. The sales value accounts for a small fraction of the total revenues of the PGNiG Group, yet they deliver a high operating margin. For example, the operating margin on helium sales in 2006 was 70%, and in case of LNG – 68%.



### Reserves

At the end of 2006, the natural gas reserves of PGNiG totalled 102.5 bcm (of which 98.5 bcm was approved by the Minister of Environment), whereas the crude oil reserves amounted to 21.4 million tons (approved in whole by the Minister of Environment). The total volume of reserves held by PGNiG, ex-

pressed as barrels of oil equivalent, totalled 809 million boe at the end of 2006.

With this high level of reserves, PGNiG was able to achieve a high reserves to production ratio. In 2006, it was pegged at 26.2, which means that with the current level of crude oil and natural gas

production (without taking into account any new discoveries) the reserves will last for the next 26 years. The ratio for natural gas alone in the years 2000–2006 slightly decreased – from 27.7 to 24.1, whereas for crude oil it increased by 38% to 40.5.

**Natural gas**  
Reserves  
to Production Ratio

**24.1**

**Crude oil**  
Reserves  
to Production Ratio

**40.5**

In connection with the planned growth of natural gas and crude oil production, PGNiG set out on a number of investment projects. In 2006, the major projects underway included:

### Investments

#### Development of Stobierna, Terliczka, Jasionka, Trzebowisko fields

The development of the natural gas fields of Stobierna, Terliczka, Jasionka, Trzebowisko is aimed at increasing the production of high-methane natural gas. Completion of the project is expected in 2008; total investment expenditures will reach PLN 69.8 million.

#### Development of Żołynia, Biszczka, Książopol fields

The development of Żołynia, Biszczka, Książopol fields is aimed at increasing the production of high-methane gas. Completion of the project is scheduled for 2008; total investment expenditures – PLN 76.3 million.

In 2006, development of the field of Biszczka-Książopol was completed and the field was put on stream. The investment expenditures totalled PLN 24.3 million, the production of high-methane gas from the field reached 17.3 million cu. m.

#### Lubiatów-Międzychód-Grotów (LMG) Project

The goal of the project is to develop the crude oil and natural gas fields of Lubiatów-Międzychód-Grotów and the necessary capabilities for transportation, storage and sales of crude oil, natural gas, sulphur and liquefied petroleum gas (LPG) from the LMG Oil and Gas Production Plant. The total value of the project is estimated at PLN 681.5 million; the completion of the entire project is scheduled for the end of 2009. On 14 November 2006, PGNiG announced a tender for the general project contractor for construction of the LMG Oil and Gas Production Plant; the bidding process is currently in progress.

The LMG project is key for the achievement of the target level of crude oil production, i.e. 1.1 million tons as of the year 2010. The reserves of the Lubiatów-Międzychód-Grotów field are estimated at 7.2 million tons of crude oil and 5 bcm of natural gas.

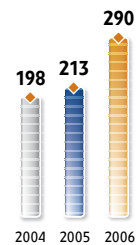
#### Grodzisk Wielkopolski Project

The purpose of the project is to market the gas from nitrogen-rich fields, following its prior processing to uniform composition to meet the specification of high-methane gas. The construction of a nitrogen removal plant near Grodzisk Wielkopolski will enable increased production of nitrogenised gas from the existing fields and the fields planned to be developed, and ensure balanced operation of the nitrogenised gas fields in the summer and winter seasons. The project consists in the development of the natural gas fields of Wielichowo, Ruchocice, Jablonna, Paproć-W, as well as upgrading of the KGZ Paproć production plant, construction of a gas pipeline from Przyłęk to KGZ Paproć production plant and a nitrogen removal plant. The value of the entire project is estimated at around PLN 330 million; the expected completion date – 2010.

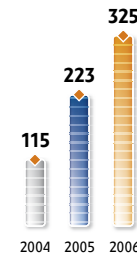
On 27 September 2006, PGNiG signed a contract with PBG S.A. for the construction of the Grodzisk nitrogen removal plant, i.e. an industrial installation for removal of nitrogen from nitrogenised gas. The new plant will offer the total capacity of around 35 thousand cu. m/hour. The contract value is approx. PLN 120 million.



The revenues of the PGNiG Group from exploration services in 2004–2006 [PLN m]



The revenues of the PGNiG Group from exploration, geophysical and geological services in years 2004–2006 [PLN m]



### Exploration and geophysical operations in Poland and abroad

The PGNiG Group carries out exploration efforts in Poland and abroad. They primarily consist in exploration for and development of geological structures containing hydrocarbon deposits in the form of natural gas and crude oil. The process of field exploration and appraisal comprises: processing of historic data, geological analyses, geophysical surveys and drilling tests. These activities are carried out either by PGNiG or the exploration subsidiaries of the PGNiG Group.

As a result of the efforts carried out in Poland, specifically within the Carpathians, the Carpathian Foredeep and the Polish Lowlands, the level of recoverable reserves increased by, respectively:

- 413 thousand tons of crude oil,
- 4.5 billion cu. m of natural gas (high-methane gas equivalent).

The drilling efforts of the exploration subsidiaries in 2006 were carried out both in Poland and abroad. Overall, they drilled 306.7 thousand meters. In Poland, 27 wells were drilled, of which 22 were successful (the success rate of 71%). The exploration abroad was focused primarily on the Kirthar block in Pakistan. PGNiG owns 70% interest in this block, with the remaining 30% held by Pakistan Petroleum Ltd.

In 2006, the exploration companies were actively pursuing acquisition of new foreign contracts. The results include a memorandum of understanding signed in January 2007 with the Indian Gujarat State Petroleum Company concerning potential cooperation in hydrocarbon exploration and production in India, Egypt, Yemen and other countries of the Middle and Far East. Preparations were also underway for the execution of the conditional agreement with Mobil Development Norway A/S and ExxonMobil Production Norway Inc. (ExxonMobil) for the acquisition of 15% interest in three licenses for Skarv and Snadd fields in the Norwegian Continental Shelf for the price of US\$ 360 million. The agreement was signed on 28 February 2007.

The acquisition of the three exploration and production licenses in Norway is the first major international transaction of this kind completed by PGNiG in the upstream segment. It fits in the strategy of the PGNiG Group aimed at increasing the volume of oil and gas fields owned by the company outside of Poland as a means of diversification of supply sources.

According to the figures approved by the Norwegian Petroleum Directorate

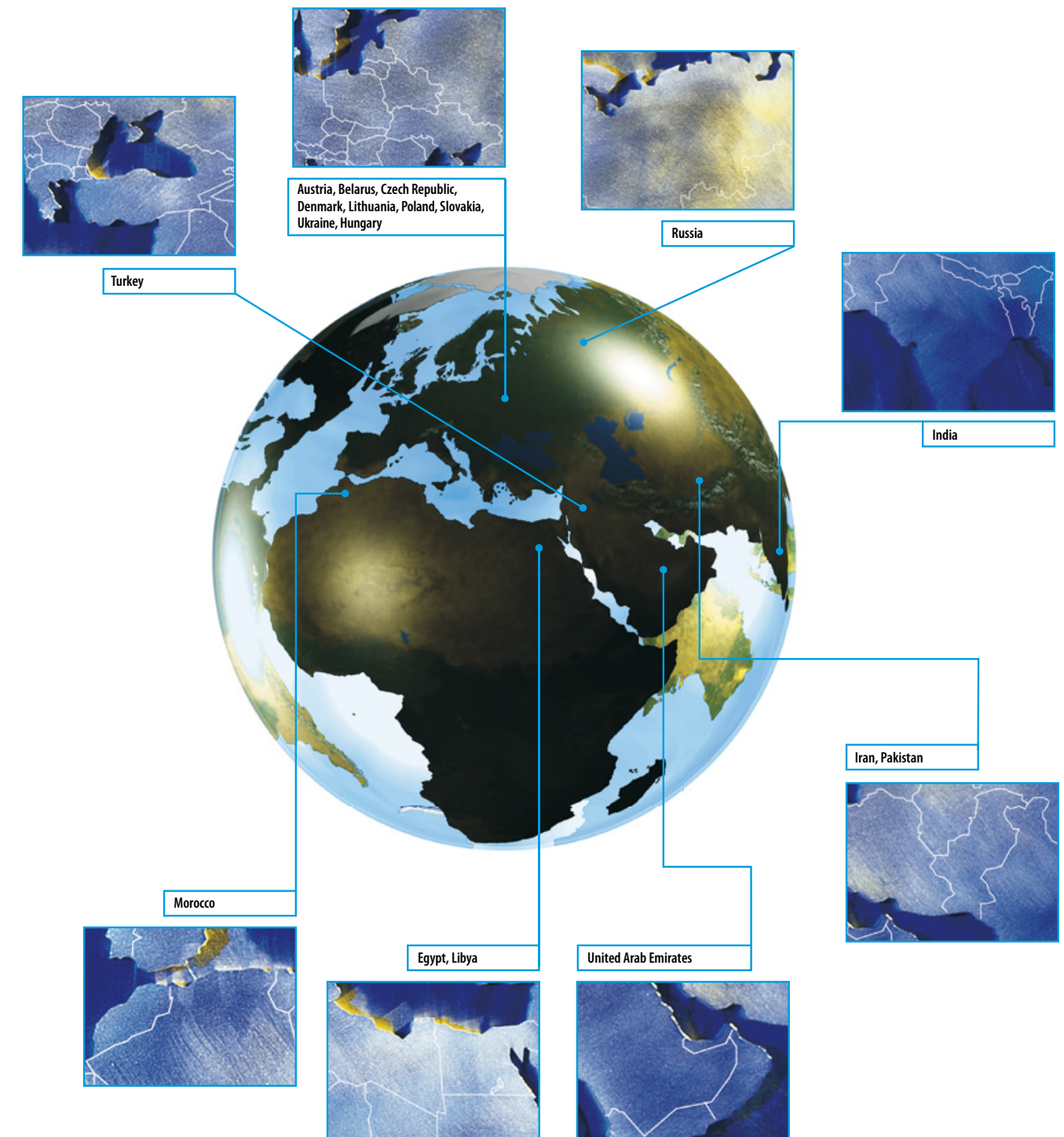
(2006 Fact Book), the total volume of reserves in all the fields in which PGNiG is to acquire interests from ExxonMobil, is estimated at around

- 35.8 billion m<sup>3</sup> of natural gas,
- 18.3 million m<sup>3</sup> of crude oil and condensate (around 15 million tons),
- 5.8 million tons of NGL (Natural Gas Liquids).

The fields are under direct operatorship of British Petroleum, the remaining partners being Shell, Statoil and Norsk Hydro.

In addition to the exploration, the companies of the PGNiG Group are engaged in geophysical activities. They provide services related to acquisition, processing and interpretation of seismic data, as well as well logging. In 2006, the geophysical companies were operating in Poland (in the Carpathians, the Carpathian Foredeep and the Polish Lowlands) and abroad. Overall, they completed around 4.8 thousand km of 2D seismic and around 6 thousand km<sup>2</sup> of 3D seismics. They were also bidding for new contracts abroad, which resulted in the contract signed by Geofizyka Kraków Sp. z o.o. with the Norwegian company Hydro for performance of seismic surveys in Libya. The work began in January 2007.

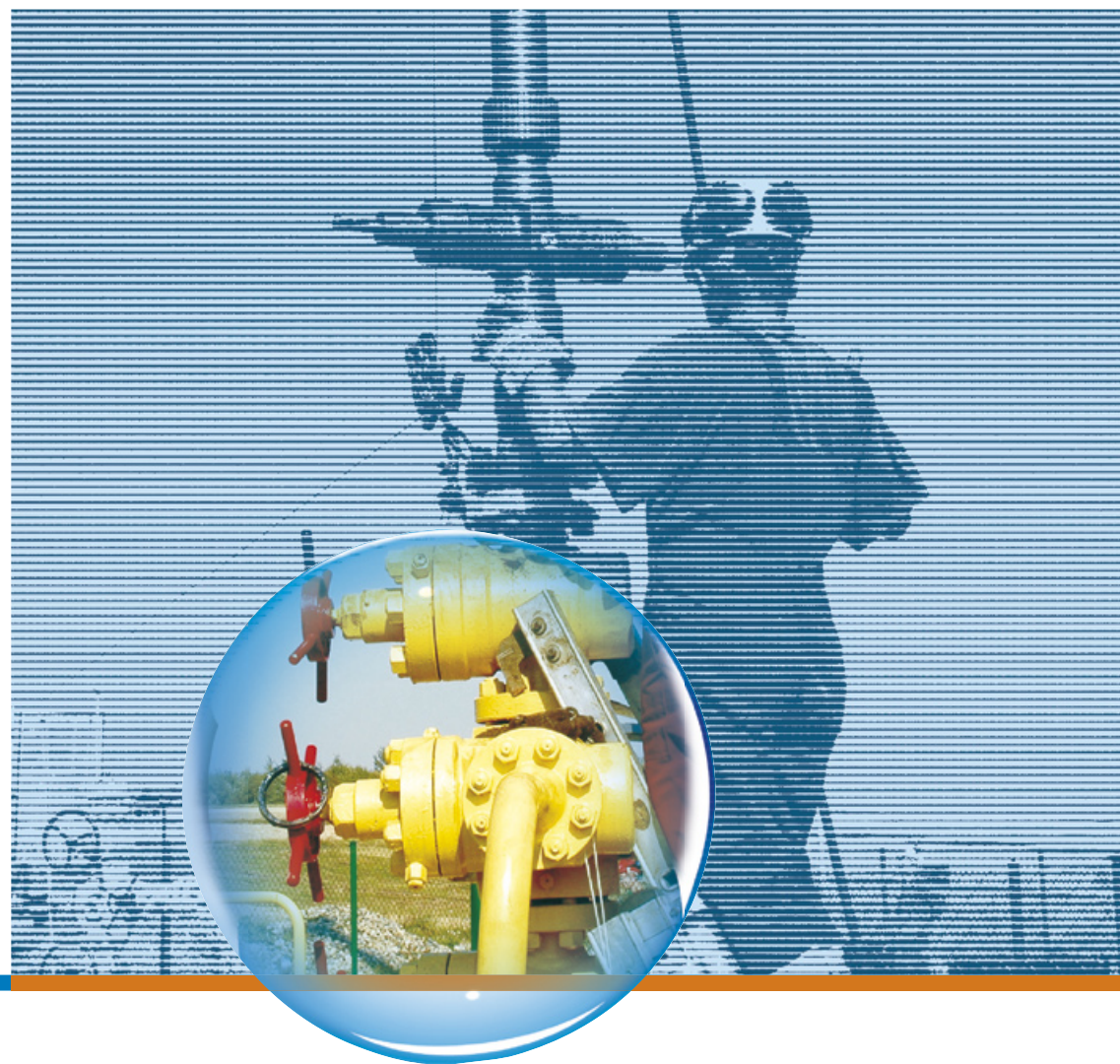
### Presence of the PGNiG Group companies worldwide Map of the world with marked locations



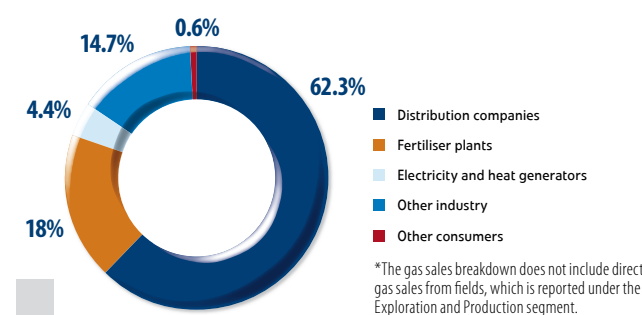


# Segment Trade and Storage

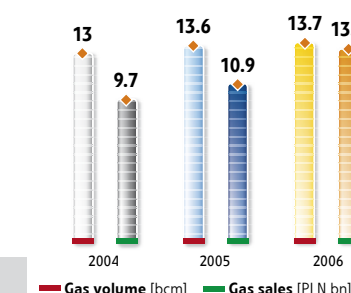
The Trade and Storage segment covers the imports realised by the company, revenues from the transmission assets lease agreement, tariff-based gas sales and storage activity. In 2006, the operating profit in this segment totalled PLN 259 million, with the underlying assets at the level of PLN 10.9 billion.



Breakdown of PGNiG customers in 2006



Volume of natural gas sales translated to high-methane gas equivalent in the years 2004–2006



## Gas sales

In the year 2006, the operating profitability of the segment assets (operating profit/total assets) was 2.4% and clearly lagged behind the profitability in the Exploration and Production segment (12.6%). The performance of the segment largely depends on the gas tariff levels, which are approved by the Chairman of the Energy Regulatory Office.

Gas distribution companies are the primary gas consumer accounting for the aggregated purchase volume at around 8.1 billion cu. m of gas (high-methane gas equivalent) in 2006. Fertiliser plants are the second largest gas consumer with 18% share in the total volume of gas sold by PGNiG in 2006.

The revenues from gas sales in 2006 totalled PLN 13.3 billion and high-methane gas accounted for over 91% of the total gas sales revenue. The volume of gas sales reached 13.7 bcm and was slightly higher than in the year 2005.

## Gas transmission

The gas transmission network in Poland consists of two principal elements:

- high-methane gas networks,
- nitrogenised gas networks.

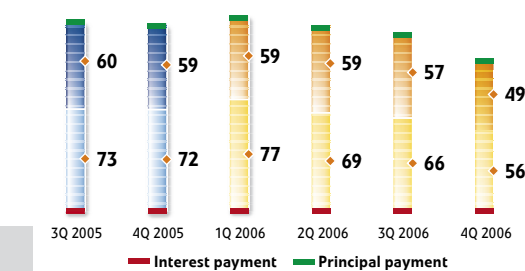
The high-methane gas transmission system enables the transport of imported gas, gas from the fields located in southern Poland, as well as high-methane gas produced in the nitrogen removal plant in Odolanów from nitrogenised gas originating from the fields in the West of Poland. The nitrogenised gas system covers the western part of Poland and is supplied from domestic fields located in the Polish Lowlands.

PGNiG has a long-term agreement with the Transmission System Operator OGP GAZ-SYSTEM SA in respect of lease of transmission assets. Pursuant to this agreement the ownership of the transmission assets will be progressively transferred onto the TSO. At the same time, PGNiG is required

to gradually transfer certain elements of the transmission system to OGP GAZ-SYSTEM SA. In the years 2005–2006 OGP GAZ-SYSTEM SA acquired transmission assets for the total value of PLN 1.18 billion by way of contribution in kind by the State Treasury

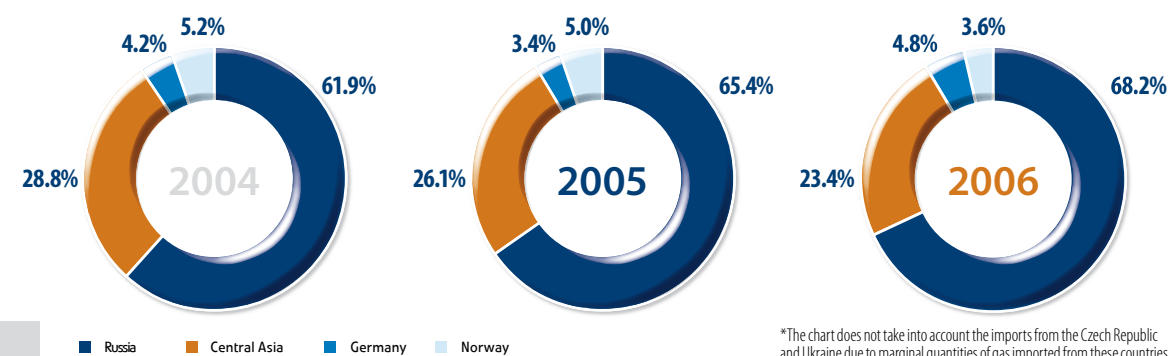
of the non-cash dividend payable to the State Treasury in respect of the profits generated by PGNiG. The term of the lease agreement ends in 2022, it is subject to an interest rate based on the 3M WIBOR rate plus a margin. The proceeds from the lease agreement in 2006 totalled PLN 494 million, of which the principal was PLN 225 million and the interest was PLN 269 million. At 31 December 2006, the value of the transmission assets covered by the lease agreement and owned by PGNiG totalled PLN 3.3 billion.

The interest and principal instalment under the lease agreement by quarter [PLN m]



Poland plays an important role in the gas transit from Russia to the European markets. PGNiG holds a 48% stake in SGT EuRoPol GAZ SA, the company owning the Polish section of Yamal gas pipeline, which is used to deliver gas to Germany and other countries in Western Europe. At the same time, PGNiG receives gas from the pipeline at two exit points in the territory of Poland – in Włocławek and Lwówek Wielkopolski.

Sources of gas supply in 2004–2006



### Imports

PGNiG is the largest Polish importer of gas from Russia, under a long-term imports contract, and from the countries of Central Asia (Kazakhstan, Uzbekistan, Turkmenistan), Norway and Germany, under medium-term contracts. In 2006, the gas imports volume reached 10 billion m<sup>3</sup> the bulk of which originated from Russia.

In 2006, PGNiG imported gas under the following contracts:

- long-term contract for supply of Russian gas of 25 September 1996 with OOO Gazexport (as of 1 November 2006, the company's name changed to OOO "Gazprom Eksport"), valid until the year 2022 (on 17 November 2006, Amendment No. 26 to the contract for supply of Russian gas was signed, which modified the formula for calculation of the purchase price),
- contract for gas imports of 17 August 2006 with VNG Verbundnetz Gas AG, valid until 1 October 2016,
- gas sales contract of 15 September 2004 with VNG Verbundnetz GAS AG/E.ON Ruhrgas AG, valid until 30 September 2008,
- contract for imports of Norwegian gas of 5 May 1999 with Statoil ASA, Norsk Hydro Produksjon AS and Total E&P Norge AS, valid until 30 September 2006,
- contract for gas imports from Central Asia of 10 August 2005 with RosUkrEnergo AG, valid until 31 December 2006 (on 7 November 2006, a natural gas sales contract was signed between PGNiG and RosUkrEnergo AG; the contract will be in force until 1 January 2010 with a potential extension of the supply term for additional two years).

Imports in 2005

**9.7**  
bcm

Imports in 2006

**10.0**  
bcm


### Liquefied natural gas (LNG)

Over the recent years, liquefied natural gas (LNG) has become increasingly important in Europe and worldwide as the source of natural gas supply. LNG imports to Poland are one of the options for diversification of the gas supply sources and a means of satisfying the growing demand. This involves a need for the construction of an LNG terminal together with adequate technical infrastructure, including storage and network facilities, to enable the imports of gas in the liquefied form by sea.

In 2006, PGNiG carried out a feasibility study and defined the technical and economic assumptions for the imports of liquefied natural gas to Poland. One of the key elements consisted in validating the profitability of an LNG terminal construction on the Polish shore with the first LNG deliveries scheduled for 2011. In December 2006, PGNiG took a

decision on the location of a regasification terminal in Świnoujście.

The initial handling capacity of the terminal will be 2.5 bcm of gas per annum with potential for expansion up to 5 or even 7.5 bcm. LNG will be transported by methane carriers with capacity of around 140 thousand m<sup>3</sup> of liquefied gas (i.e. around 84 million m<sup>3</sup> of natural gas).

The construction of the LNG terminal on the coast is one of the strategic investment projects undertaken by PGNiG. It will enable deliveries of natural gas to Poland from diverse sources and thereby enhance the security of gas supply to the customers of the PGNiG Group.

PGNiG is developing the LNG terminal project in Świnoujście in line with the adopted time schedule. At the moment, the design and implementation phase is

underway. In parallel, the company is talking to potential suppliers of liquefied natural gas to Poland. The investment execution phase will begin in 2008 and the completion is scheduled for the end of 2010.

In 2006, a special purpose vehicle under the name of Polskie LNG Sp. z o.o. (PLNG) was established as a wholly-owned subsidiary of PGNiG. PLNG will be responsible for the construction and operation of the terminal. In the initial phase, the company will be charged with, among other things, obtaining the necessary approvals and permits for the construction of the LNG terminal and the execution of technical and economic documentation related to FEED (Front End Engineering Design). Subsequently, the company will select the general project contractor for the construction of the LNG receiving terminal.



Storage facilities of PGNiG and their target capacity

Name	Type of investment	Working capacity [bcm]	Target capacity [bcm]	Planned completion year
Wierchowice	expansion	0.50	1.20	2011
Husów		0.40	0.40	–
Mogilno	expansion	0.37	0.44	2012
Strachocina	expansion	0.15	0.30	2009
Swarzów		0.09	0.09	–
Brzeźnica		0.07	0.07	–
Bonikowo	construction		0.20	2009
Kosakowo	construction		0.045	2012
Daszewo	construction		0.03	2009
<b>Total</b>		<b>1.58</b>	<b>2.8</b>	

Storage

Gas storage guarantees the supply for the consumers and its primary role is to balance the gas system and to ensure the security of supply during the periods of peak demand. The storage facilities accommodate the surplus gas volumes from the system during the summer season and provide supplementary volumes to the system in winter. Currently, the company has seven gas storage facilities and operates six of them, with the total working capacity of 1.6 bcm, which represents 13.4% of the yearly gas consumption by the customers of PGNiG. On a daily basis, this corresponds to 49 days of average consumption.

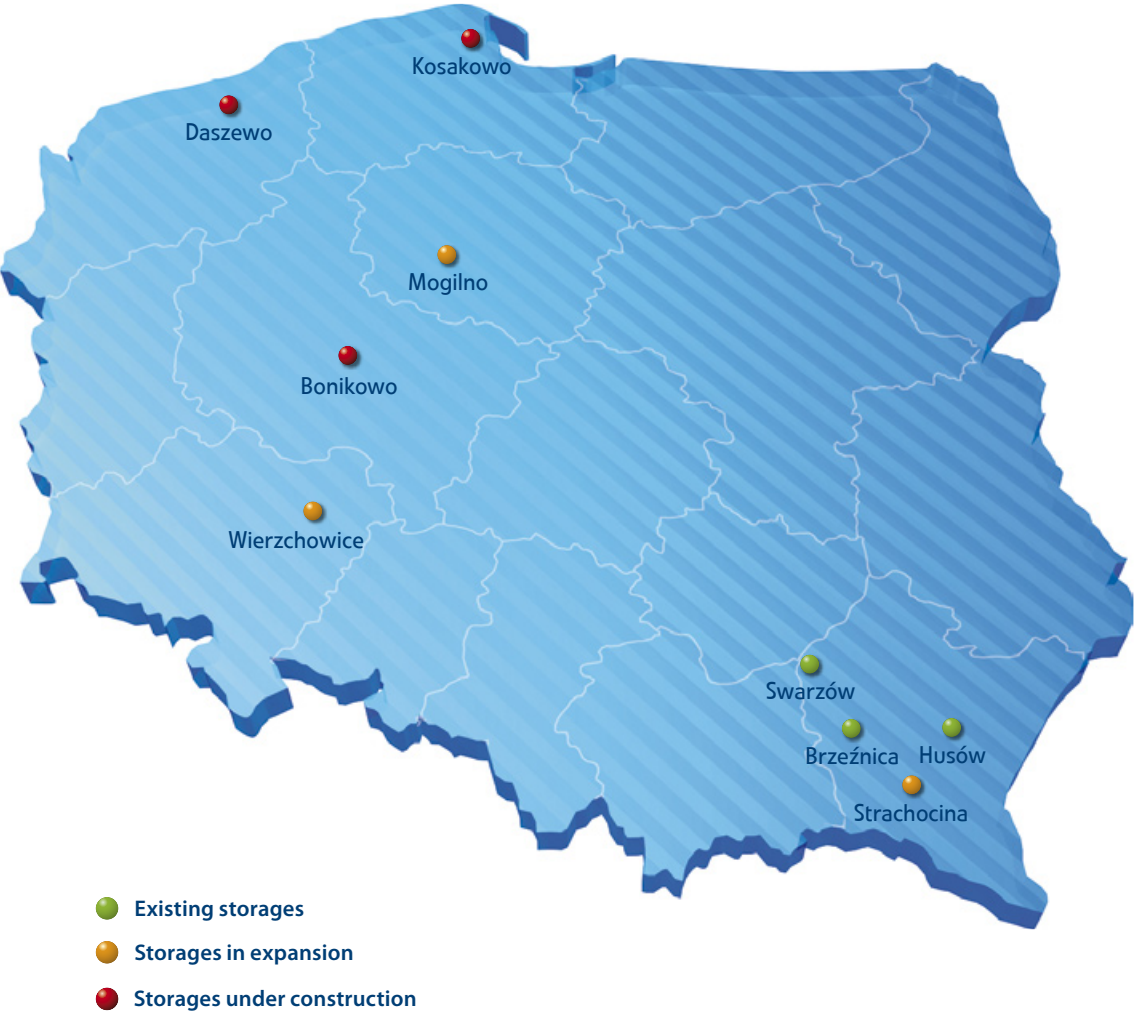
The development and expansion of storage capacity is a key element of the

business activity of the PGNiG Group. Not only does it lead to improved security of supply but also strengthens the competitive position of the company in a liberalised gas market. By the year 2012, the company plans to increase the existing storage capacity by 1.2 billion cu. m, i.e. up to the level of 2.8 billion cu. m. As one of the elements aimed at achieving this goal, capacity expansion is underway at the only gas storage facility in Poland located in salt caverns, in Mogilno. In the salt deposit “Mogilno II”, on the site occupied by the existing storage facilities, two new caverns will be developed through the leaching process in order to store gas. The salt leaching and first gas injection are technically complex and time-consuming processes. After completion of

the two caverns, the working capacity of the storage facility in Mogilno will increase by approximately 100 million m<sup>3</sup> (under normal conditions). The project completion is scheduled for 2012. On 17 October 2006, PGNiG signed a contract with Investgas SA for construction of two new caverns in the Mogilno Gas Storage Facility.

The existing storage facilities of PGNiG are designed for storage of high-methane gas. The company plans to develop two underground storage facilities for nitrogenised gas – in Daszewo and Bonikowo. This will enable optimisation of the natural gas supply in the nitrogenised gas system while meeting the increased demand for nitrogenised gas in these regions.

Existing and planned gas storage facilities of PGNiG



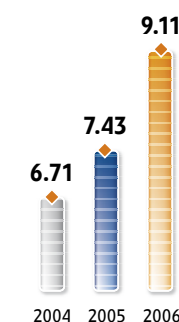


## Segment Distribution

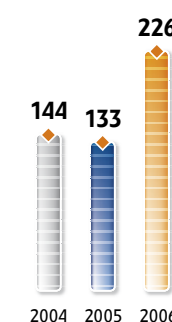
The gas distribution companies are engaged in gas trade and providing sales support for small and medium customers, as well as the operation, maintenance and expansion of the distribution grid. The distribution networks (low, medium, higher and high pressure, both owned and operated by the companies) consist of around 105 thousand km of gas pipelines. The PGNiG Group is continuously expanding its network to meet the growing domestic demand for natural gas.



Sales of the Distribution segment [PLN bn]



Operating profit in the Distribution segment [PLN m]



Gas sales  
volume  
**8.10**  
bcm

Number of  
customers  
**6.4**  
m

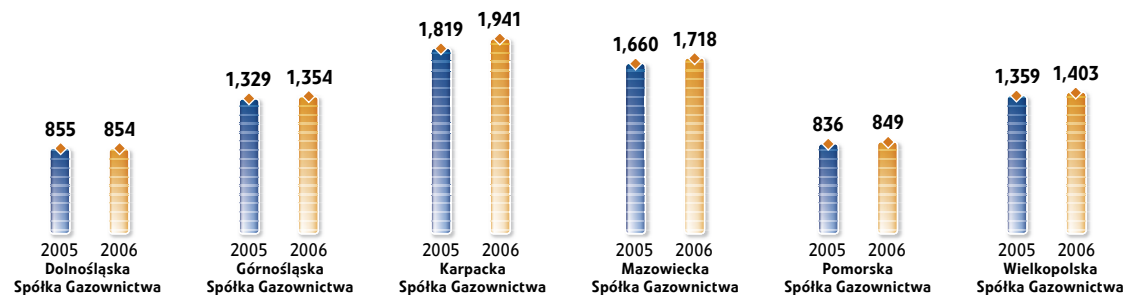
A number of different factors have a bearing on the activities and operations of the gas distribution companies, including demographics (population, standard of living, level of industrialisation), use of other fuels (e.g. coal), type of gas sold (high-methane or nitrogenised gas) and the cost levels of individual companies.

At the end of 2006, the gas distribution companies served 6.4 million customers. The gas customers are divided into three segments:

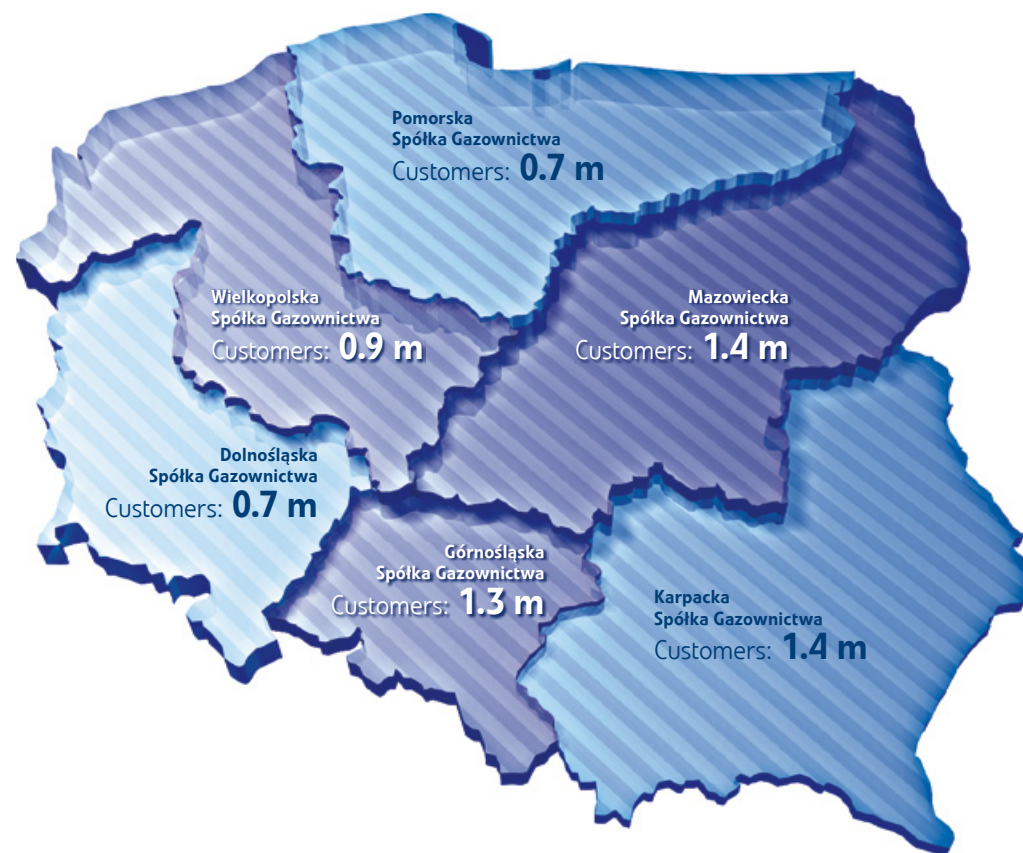
- corporate customers, including strategic ones (gas consumption over 15 million m<sup>3</sup>/year) and key customers (gas consumption ranging between 2–15 million m<sup>3</sup>/year).
- individual customers (sales below 3 million m<sup>3</sup>/year),
- business customers (sales up to 2 million m<sup>3</sup>/year).

The gas distribution companies are the main consumer of the gas volumes sold by PGNiG, which are subsequently distributed to the end customers – both commercial and domestic. In 2006, the volume of gas sold to the distribution companies totalled 8.1 bcm, which represents a growth by 3.3 % with respect to the year 2005.

Gas sales to gas distribution companies in 2005–2006 [mcm]



Geographic coverage of the gas distribution companies and number of customers served (as at 31 December 2006)



### Unbundling of distribution from trade activity

In 2006, PGNiG and the gas distribution companies were working to align their organisational structure with the requirements of the European Gas Directive (2003/55/EC), which provides for the legal unbundling of gas distribution from commercial activities and separation of distribution system operators (DSOs) by 1 July 2007.

The Management of PGNiG adopted a model for unbundling of the trade and distribution functions, assuming that:

- all wholesale and retail activities will be integrated within PGNiG,
- distribution activity will remain with the distribution system operators to be established on the basis of the existing gas distribution companies. The transformation of gas distribution companies into distribution system operators will be effected on the basis of the network assets held by the companies, which currently constitute around 95% of the asset base of the gas distribution companies.

In implementation of the Plan for the unbundling of the trading activity and gas distribution in the PGNiG, trading branches were spun off from the gas distribution companies in 2006. In addition, gas trading companies were set up and all shares in them were acquired by PGNiG.

As a result of tariff price increases and a new tariff design methodology for distribution, which takes into account the justifiable costs of gas distribution, as well as a return on the capital engaged, the 2006 operating profit in the distribution segment reached PLN 226 million, which represents an increase by 70% with respect to the result for the year 2005.

