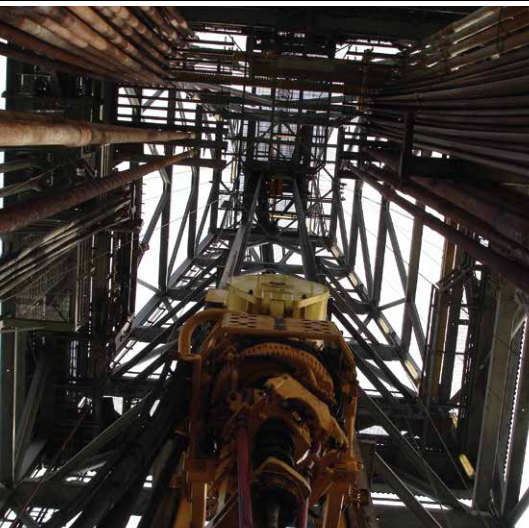




National
Investment
Council of Ukraine



Ukraine Gas Upstream

Opportunities down the road



Yuliya Kovaliv

Head of the Office
of the National Investment Council
of Ukraine

Ukrainian natural gas production peaked in the mid-1970s and declined as the Soviet Union shifted its energy extraction focus to Siberia. This neglect of upstream production continued even after Ukraine regained its independence. The time has come to regain Ukraine's position as a major European producer. Plentiful reserves are in place – all that is needed are technologies and investment.

The National Investment Council was established by the President of Ukraine to set a public-private dialog with key business leaders on investment promotion, boosting FDI and tackling key obstacles of Ukrainian regulatory environment.

The Office of the National Investment Council is a non-government organization which serves as a platform for public-private dialogue bringing together representatives of the business community, IFIs and Ukrainian officials.

The Office of the National Investment Council provides analytical coverage of the key sectors of Ukrainian economy, highlighting sectors potential for investments, key regulation and issues related to investing in these sectors.

We are focusing on practical steps needed to address investors' needs and concerns enhancing public private dialogue and promoting actions to strengthen the business climate in the country.

Our goal is to maintain a dialogue between foreign institutional and private investors, IFIs and government to promote Ukraine as an investment destination and to facilitate of development and implementation of legislation to improve business climate. This report details not only the country's potential for hydrocarbon production, but also the legislative foundations which make Ukraine a predictable place to do business.

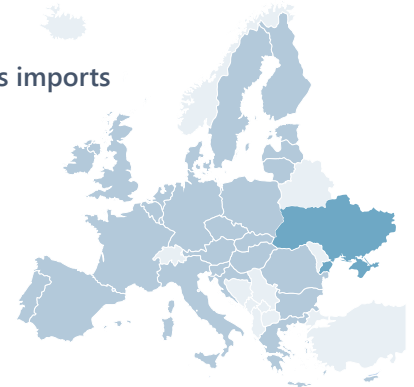
Ukraine's government aims to stimulate domestic natural gas extraction in order to ensure the country's energy independence. To achieve this ambitious goal, energy sector reform was started in 2014 and has been widely acknowledged as a great success. Complete import diversification, implementing the European Union's Third Energy Package and huge energy efficiency gains are changes that few believed Ukraine could achieve so rapidly. The next frontier is ramping up domestic production. The government plans to open access to geological information, set an attractive tax regime and reduce the entry barriers for new investors in the gas sector. Over the next four years, the industry requires around \$6 billion of investment and adoption of cutting-edge technologies. This is only possible through close cooperation with our international partners and clearly demonstrating that extraction opportunity and business environment reliability are to be found in Ukraine.

Sector Overview

Ukraine's position on the European gas market (2016)

- Nº1** by transit volume of Russian gas to the EU
- Nº3** in proven natural gas reserves
- Nº4** by gas production volume

- Nº7** by gas consumption
- Nº11** by gas imports



Source: PWC, BP 2017 report

In total, around 31% of Ukraine's primary energy is supplied by gas.

Ukraine has **significantly reduced its natural gas consumption** due to a dramatic decline in industrial output in 2014-2015, occupation of territories in Donetsk and Luhansk regions, the illegal annexation of Crimea. These facts were followed by the reforms in gas tariffs and other changes aimed at boosting energy efficiency in Ukraine.

Gas consumption dropped from 55 billion cubic meters (bcm) per year in 2012 to 32 bcm in 2017, but Ukraine still imports a third of its gas needs, spending \$2-3 billion a year.

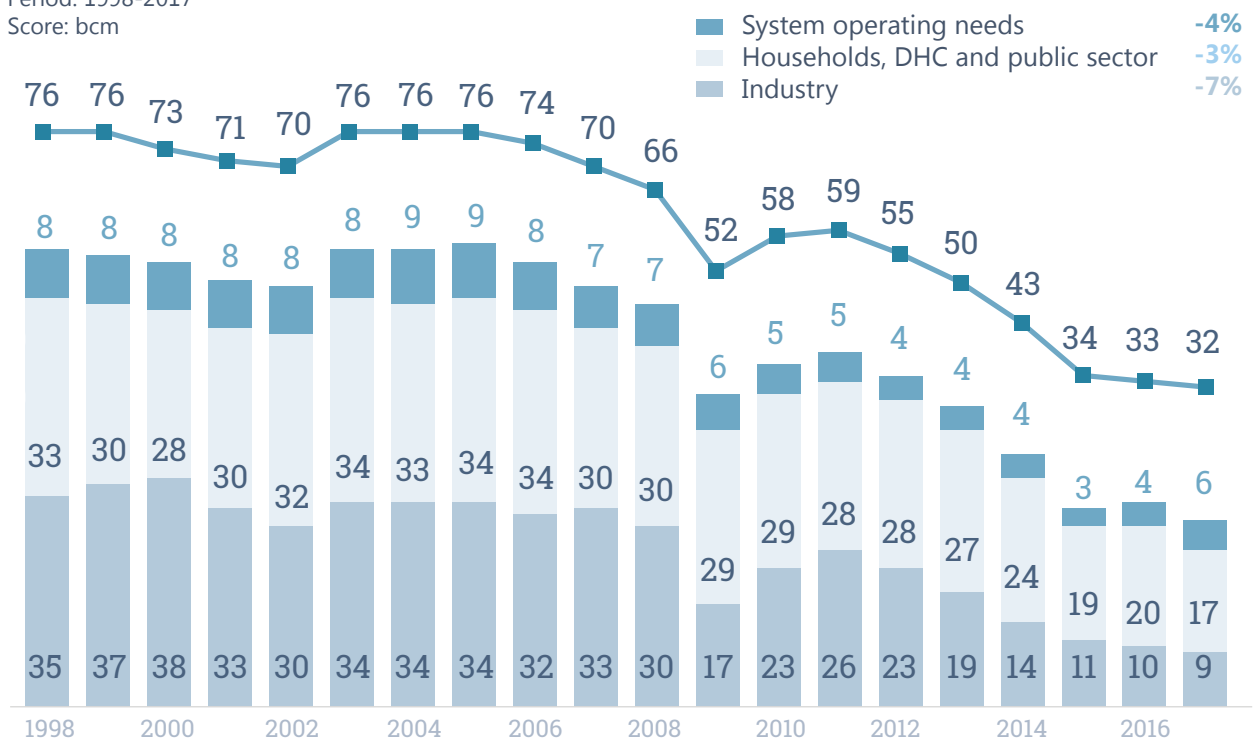


Ukraine's natural gas consumption in the mid-term perspective is unlikely to be significantly below 30 bcm per year, taking into account the recovering economy. While import diversification, which started in 2014, has helped strengthen energy security and rationalize pricing, the **Ukrainian government's goal of energy independence in the midterm future** will require an increase in domestic natural gas production by at least 7-10 bcm per year.

Ukraine's natural gas consumption

CAGR: -4%

Period: 1998-2017
Score: bcm



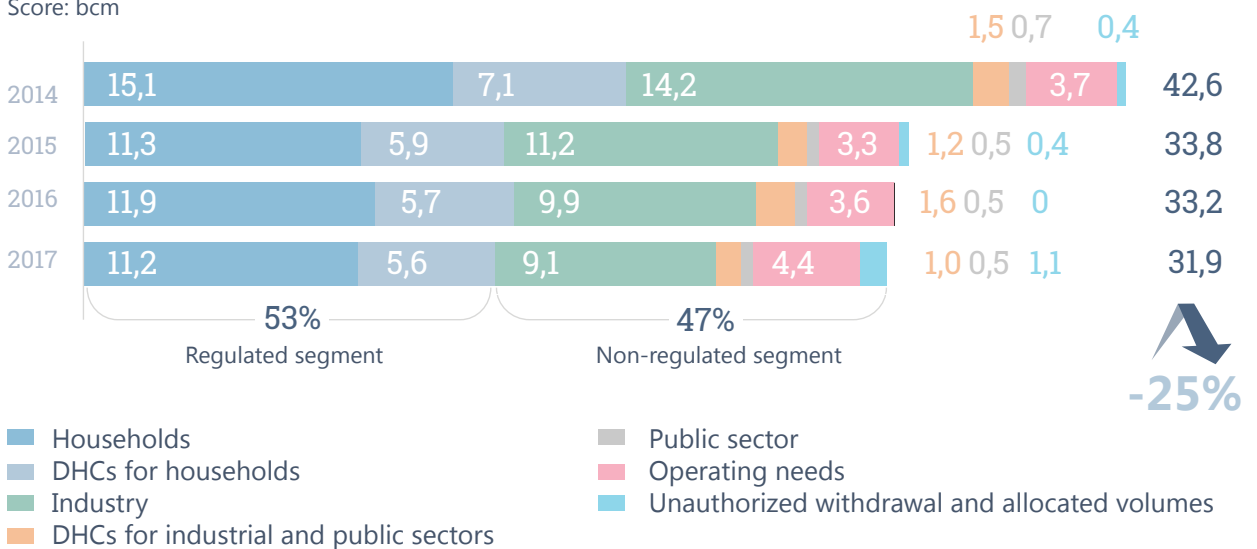
Source: Naftogaz of Ukraine

Approximately **53% of natural gas is consumed by households** directly or indirectly through district heat producers. The significant decline in consumption of this category (-20% over 2014-2016) was mostly driven by pricing reform that has brought prices to the market level of import parity. Since 2016, **gas prices have been linked to European gas hubs** and are supposed to be updated twice a year.

Industry reduced its natural gas consumption in line with the industrial output decline of 10% in 2015, while usage of gas for operational needs remained around the same volume.

Ukraine's natural gas consumption

Period: 2014-2017
Score: bcm



Source: Naftogaz of Ukraine, PWC

According to the new Law "On the Natural Gas Market", **gas prices for the industry are not regulated**. However, **prices on the residential market** (households and district heat producers) are regulated by the **public service obligations (PSOs)**.

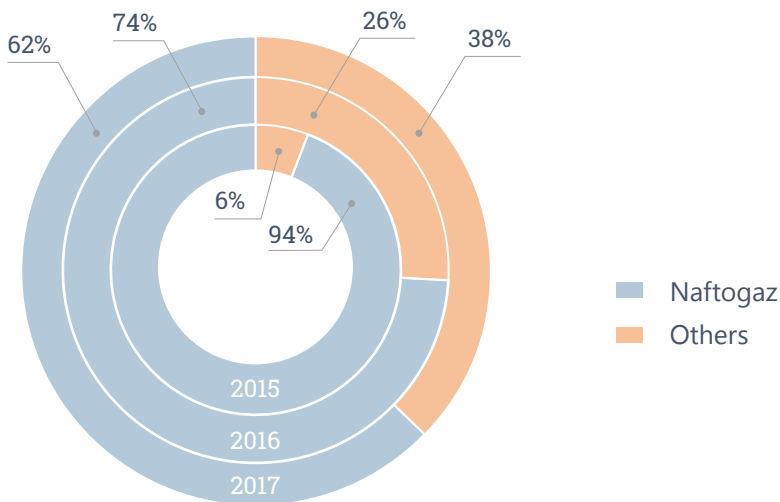


Over 70% of gas consumption is provided by local production, mainly by the state-owned UkrGasVydobuvannya (Naftogaz Group).

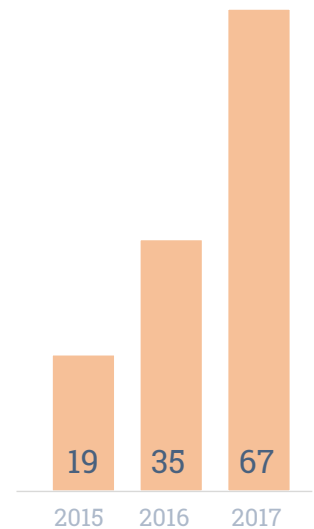
However, imported gas still plays a significant role in Ukraine's gas supply (30%).

The number of companies importing gas to Ukraine nearly doubled from 35 in 2016 to almost 70 in 2017. The share of Naftogaz in the import structure is declining, which means that the market is becoming more attractive for international suppliers.

Key suppliers of imported natural gas to Ukraine



Number of importers



Source: Naftogaz of Ukraine, Ministry of Energy and Coal industry of Ukraine

International suppliers and imports and imports in 2017, bcm

To Naftogaz		To other traders	
RWE	2,0	ERU Trading	1,0
AXPO	1,7	Promenergoresurs	0,6
DufEnergy	1,0	Socar	0,5
ENGIE	1,0	Trafigura	0,4
UNIPER	0,9	Skela Tercium	0,2
MET Gas and Energy	0,5	Energy trade group	0,2
TrailStone	0,4	ENGIE	0,2
Shell Energy	0,2	Metida	0,2
CEZ	0,2	System actives	0,2
Naftogaz Trading Europe	0,2	Ukrigas	0,1
ENI	0,1	Ukrnaftoburinnya	0,1

Source: Naftogaz of Ukraine, Ministry of Energy and Coal of Ukraine

Ukraine's government aims to stimulate domestic natural gas extraction to reduce dependence on energy imports, attract investment in the energy sector and ensure the country's energy independence.

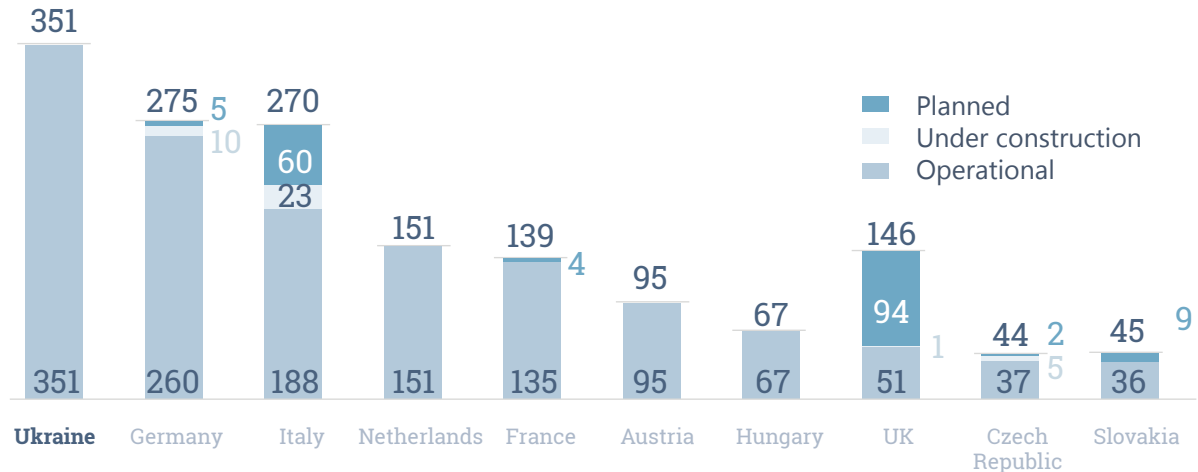
The Government has ambitious plans to increase combined domestic natural gas output by both private producers and state-owned UkrGasVydobuvannya (Naftogaz Group) to 27 bcm in 2020.

Over the next three years, the industry requires around \$6 billion of investment and adoption of high-end technologies.

Technical working gas volume of underground gas storage facilities per country

(TWh, as of April 2016)

Including Hlibovske underground gas storage of PJSC Chornomornaftogaz (Crimea)



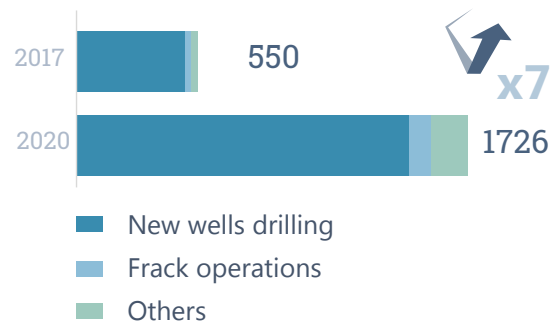
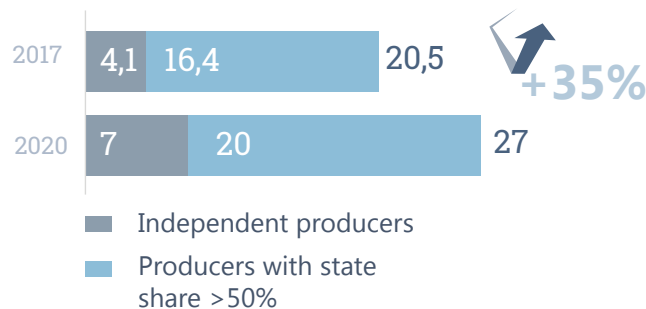
Source: Gas Infrastructure Europe

Ukraine's gas market benefits from having the biggest gas storage capacities in Europe.

Capacity of Ukrainian underground gas storages is the largest in Europe and is approximately equivalent to nearly a third of the EU-28 capacity.

Natural gas production in Ukraine in Ukraine, bcm

Amount of necessary CapEx, \$ million



Source: Association of Gas Producers of Ukraine

Since the start of the gas market reform, European gas traders have been entering the Ukrainian market and launching their subsidiaries in Ukraine.



(France)



(The Netherlands)



(Switzerland)



(Poland)



(Switzerland)



(Australia)



(Switzerland)

Gas Sector Reform

Gas sector reform is **one of the most important reforms** Ukraine has implemented since 2014, applying European Union regulations such as the “Third Energy Package”.

New gas market regulation



During 2015, Ukraine introduced a number of important changes to gas market regulation. One of the main achievements of this process was the adoption of the Law “On the Natural Gas Market”. The document laid the foundation for the **harmonization of the gas market** in Ukraine with the EU Third Energy Package.

Free access to all gas transmission system capacities



The basic requirement of the EU Third Energy Package is the principle of free third-party access to infrastructure, which requires **provision to all gas suppliers of non-discriminatory access** to gas transmission and distribution networks.

Transition to Regulatory Asset Base (RAB) tariff policy for gas transmission



- Following the transposition of EU energy regulations, Ukraine **switched to regulated tariffs** for gas transmission on an entry/exit basis. Previously, tariffs for gas transit in Ukraine were established by agreements between commercial companies. As of 1 January 2016, all gas transmission rates are set by the regulator.
- Calculating tariffs based on RAB is a generally accepted methodology that is used to establish justified tariffs for services of natural monopolies in the countries of the Energy Community. This methodology was adopted in Ukraine in September 2015 and implemented in January 2016.

Bringing domestic gas prices to import parity levels



- On 1 October 2015, Ukraine has **completely abolished price regulation for industrial consumers**. Since then the market price of gas has been determined by the balance of supply and demand, and correlates with the price of imported gas.
- In addition, in 2014-2016, the Ukrainian government took a number of unprecedented steps to bring **domestic gas prices for households to import parity levels**. Because of price regulation, in 2014 more than half of the gas consumed in Ukraine was sold at prices that were 5-7 times lower than prices for other consumers.

Reform of Naftogaz corporate governance



An important component of gas sector reform is corporate governance reform of the state-owned energy company Naftogaz, which is currently a major player in most market segments. The gas sector reform plan approved by the Cabinet of Ministers in March 2015 requires the corporate governance system of Naftogaz to be reformed and brought into line with OECD guidelines for state-owned enterprises. This transformation began in 2015 and is **expected to be finalized in 2018**.

Upstream sector deregulation

In March 2018 new Law No. 2314-VIII on the deregulation of the gas and oil sectors has been approved. The Law was drafted together with business representatives and it took effect on 1 April 2018 after being signed by the President.

The Law had been highly anticipated by the local market players and foreign investors for several years and its enactment could not have been achieved without the market's input. The industry expects that simplification of the regulatory procedures shall foster a more rapid development of the oil and gas sector and boost production of hydrocarbons within the country.

In particular, the Law provides for the following deregulation:

Cancellation of numerous permitting procedures:

- oil and gas licence holders shall no longer be required to obtain a number of permits and approvals, including:
 - mining allotment (a permit setting three-dimensional borders of the production field in addition to the field parameters established by the production licence (a special permit) itself);
 - numerous construction approvals from the local authorities (by virtue of the exclusion of oil and gas wells from the legal definition of "construction facilities");
 - extensive state approvals for pilot production or commercial production of hydrocarbons (in particular, such works may be carried out directly on the basis of the protocol submitted to the State Service for Geology and Mineral Resources);
 - other permits and approvals for commencement of commercial production activities (for example, state review of the plan for commencement of commercial production and plan for field infrastructure development shall no longer be required);
 - state approvals for transfer of the company's geological information to third parties;
 - approval of the State Service of Ukraine for Geodesy, Cartography and Cadastre for relocation of the fertile soil layer and land re-cultivation.
- environmental impact assessment (the "EIA") shall be required only for production activities (i.e. a special permit for exploration works may be obtained without the EIA);

Simplification of land allocation procedures:

- a specific type of easement is introduced for construction of oil and gas extraction facilities and pipeline infrastructure, which would generally allow location of such facilities at the relevant land plots without the need for changing their designated purpose;
- use of land plots (for example, for construction of oil and gas wells in non-urban areas) will not require a detailed zoning plan to be obtained, except in cases expressly provided for by the Law (for example, where land is located within a natural reserve or has a historical value or recreational purpose, etc.);
- procedures for allocation and use of land plots for the purpose of pilot and commercial production of hydrocarbons shall be significantly simplified;

Evaluation of oil and gas reserves:

- once exploration is completed, evaluation of oil and gas reserves may be performed by any authorised institutions, not only by the State Commission on Reserves of the Mineral Resources, as was the case before;

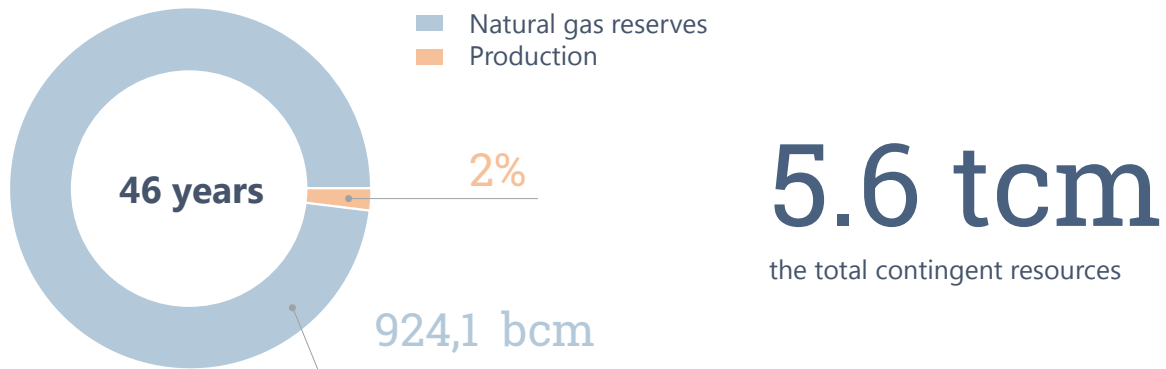
Other regulatory improvements:

- registration of exploration and geological survey works shall be non-mandatory;
- cancellation of fees for extension or reissuance of special permits for subsoil use; special permits for subsoil use may be suspended only subject to state geological control (inspection) and works must be stopped only within 20 days following such suspension.

Source: CMS Cameron McKenna Nabarro Olswang

Gas Production

Despite the country's more than 100-year history of oil and gas production, Ukraine remains rich in conventional gas reserves and possesses vast untapped unconventional potential. The R/P ratio is close to **46 years**, 2P reserves are equivalent to 20 years of current production - **924,1 bcm** - and total contingent resources of **5.6 tcm** illustrate that there are very substantial remaining resources. This suggests that Ukraine has the geological potential not only to achieve energy self-sufficiency, but also itself to become a major gas supplier to Europe.



Source: Concept of Ukrainian gas sector development

In Ukraine, only **2% of natural gas reserves** are extracted every year, versus at least **6%** as in other countries.

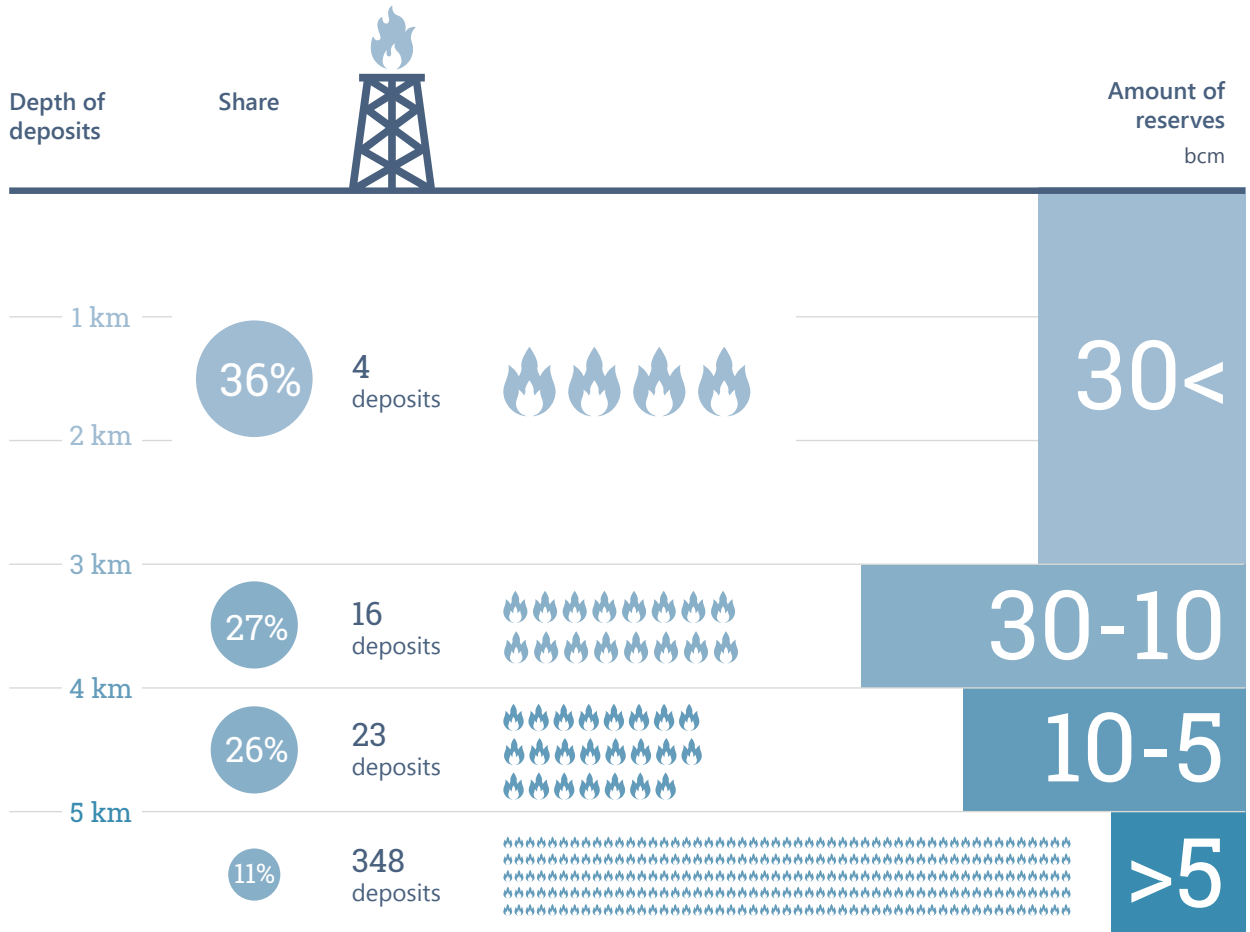
Amount of natural gas production and gas reserves by countries

	Natural Gas Production		Natural Gas Reserves		Reserves extraction per year	R/P ratio
	bcm	%	bcm	%	%	years
USA	763		10400		7	14
Canada	163		2000		8	12
Mexico	53		350		15	7
Argentina	35		300		12	9
Columbia	11		150		7	14
Russia	573		32300		2	56
Norway	117		1900		6	16
Netherlands	43		700		6	15
Great Britain	39,7		250		16	6
Romania	10,3		155		7	14
Italy	6,2		50		12	9
Poland	4,1		120		3	27
Ukraine	20		924		2	46

Source: Concept of the development of Ukraine's gas production industry by 2020

Plentiful resources, extensive gas transportation infrastructure and low intensity of natural gas extraction indicate a huge opportunity to increase natural gas production in Ukraine to cover local demand and support future gas exports to European markets.

Natural Gas Deposits Characteristics



As of 1st of January 2016, 396 oil and gas deposits were included into the State Registry of Mineral Reserves in Ukraine.

According to the genetic type, they include:

- 120** gas condensate deposits
- 102** gas deposits
- 99** oil and gas condensate deposits
- 57** oil deposits
- 15** oil/gas and gas/oil deposits
- 3** gas and oil condensate deposits

Source: Concept of the development of Ukraine's gas production industry by 2020

Geographic location of Ukraine's Oil and Gas Deposits

The deposits are located in three oil and gas regions



Source: Extractive Industries Transparency Initiative

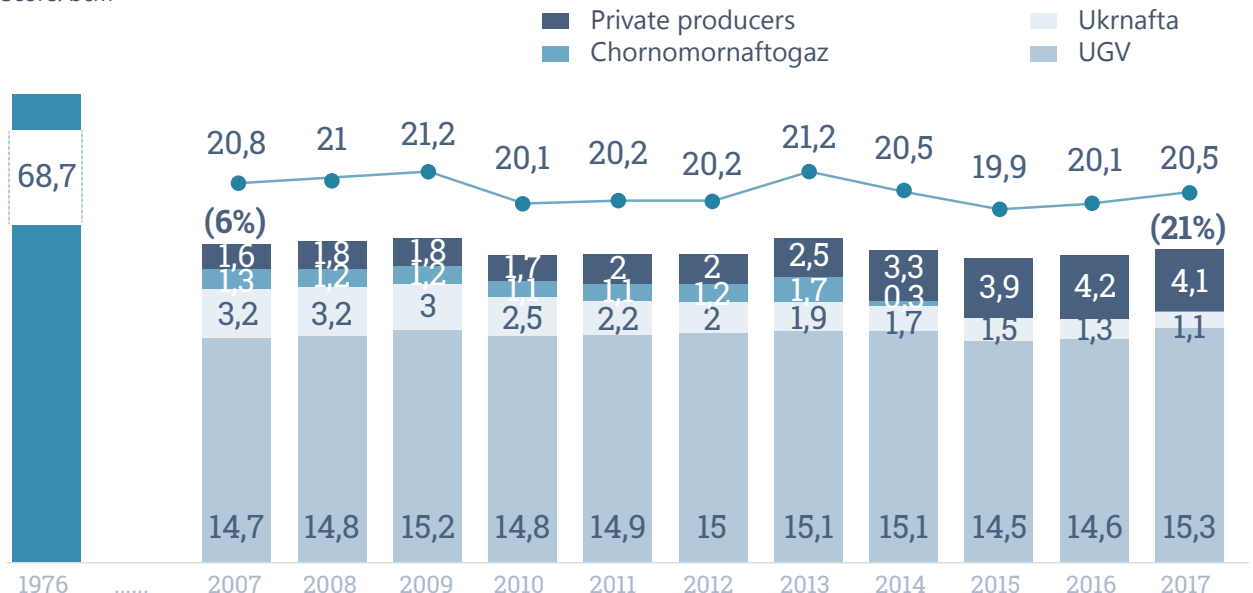
In the last two decades, natural gas in Ukraine has been produced in fairly consistent volumes, but in 2013-2017, these amounts started to decrease. According to the statistics of the Ministry of Energy and Coal, in 2017 natural gas production amounted to 20.5 bcm, which was 3.3% less than in 2013 (21.2 billion cubic meters).

Share of private producers in total production

Source: Naftogaz of Ukraine, Ministry of Energy and and Coal Industry of Ukraine

Period: 1976, 2007-2017

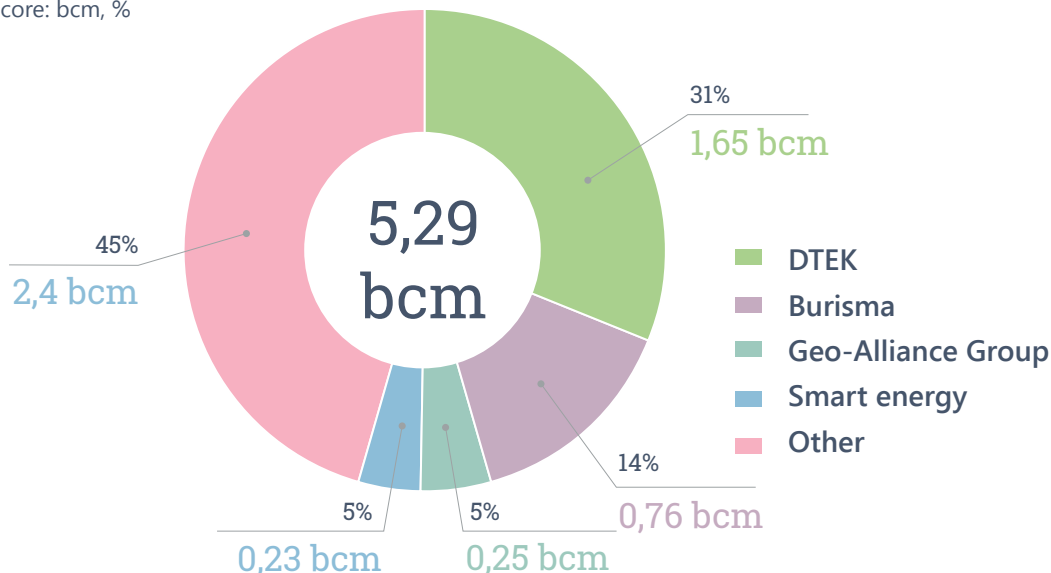
Score: bcm



Nevertheless, a positive trend of increasing the share of private natural gas producers as well as a total increase in gas production in 2015-2017 can be observed. That means the industry is becoming more open for local and international private investors, which can boost production volumes.

Natural gas production by private companies

Period: 2017
Score: bcm, %

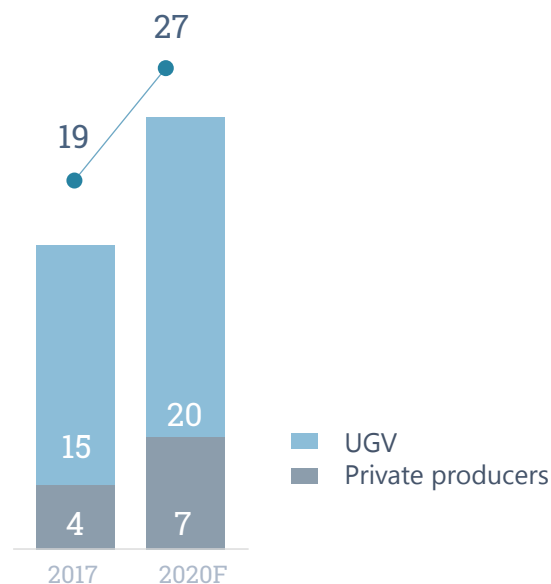


Source: Naftogaz of Ukraine, Ministry of Energy and Coal of Ukraine

The upstream business is confident that a 35-40% raise in natural gas production by 2020 is achievable only if the investment attractiveness of the industry is increased. To increase production, upstream companies will need to **scale up private investments** – mainly in drilling new wells and **bringing high-end technologies** to drastically boost the efficiency of brownfields' redevelopment via massive wells' interventions as well as discovering greenfield deposits.

Ukraine's natural gas domestic production

Excluding Ukrnafta's production – 1,1 bcm in 2017
Period: 2017, 2020F
Score: bcm



Source: Association of Gas Producers of Ukraine, Concept of the development of Ukraine's gas production industry by 2020

Over the next four years, the industry requires around \$6 billion of investment and high-end technologies.

Key Regulation of Upstream Sector investments and operations

Today, there are several ways of investing in E&P in Ukraine:

- **PSA:** through signing a production sharing agreement ("PSA") with the Ukrainian Government. PSAs are signed with the winners of tenders held by the Ukrainian Government or as a result of the conversion of existing subsoil licenses. .
- **Concession Agreement:** through obtaining oil and gas exploration and/or production rights directly from the State Service for Geology and Subsoil of Ukraine. Such rights are normally granted via auctions.
- **JAA:** through entering a joint activity agreement with an entity which already holds oil and gas exploration and/or production rights.
- **Equity Acquisition:** through equity acquisition in a company that already owns oil and gas exploration and/or production rights.



License-Based:

The investor normally applies for the granting of a new license directly from the State Geological Service. The process of getting a new license is regulated through the auction procedure, set by the State Geological Service of Ukraine. The initiation of the auction could be set both by the private company, that applies to the SGS, or the SGS on its own initiative. Usually it requires to set up a local subsidiary to run E&P in Ukraine.

Key advantages of license-based option:

- Control over the activities of the company
- No Antimonopoly Committee Approval required.



PSA option

The subsoil right for an investor arises from a contract with the Ukrainian Government. PSA contracts are signed with the winner of a tender announced by the Ukrainian Government.

Key advantages of PSA option:

- Duration. PSAs may be executed for a term of up to 50 years
- Regulation stability. The relevant law provides provisions designed to protect investors under production sharing agreements from adverse changes to the law. The legal stabilization provision does not restrict investors from taking advantage of any beneficial legislative changes
- Protecting investors' rights. PSA agreements are subject to international arbitration institutions in case of a dispute.
- Government Assistance. The PSA Law determines that all of these regulatory authorizations (permits, licenses, approvals) will be provided to the investor. Therefore, under a PSA, an investor can expect reasonable assistance from the State in obtaining such licenses, permits and other approvals, which may in fact be crucial for the successful implementation of a project.
- No Antimonopoly Committee Approval Required



JAA Option

The JAA option provides a possibility to jointly develop natural gas reserves with a company holding an existing oil and gas exploration and/or production license. Under the JAA cooperation model, partners share any profits obtained as a result of joint activity pursuant to an agreed proposition.

It is important to note that the JAA model of cooperation according to current legislation is required to pay 70% of royalties, which makes it economically ineffective.

Fiscal policy

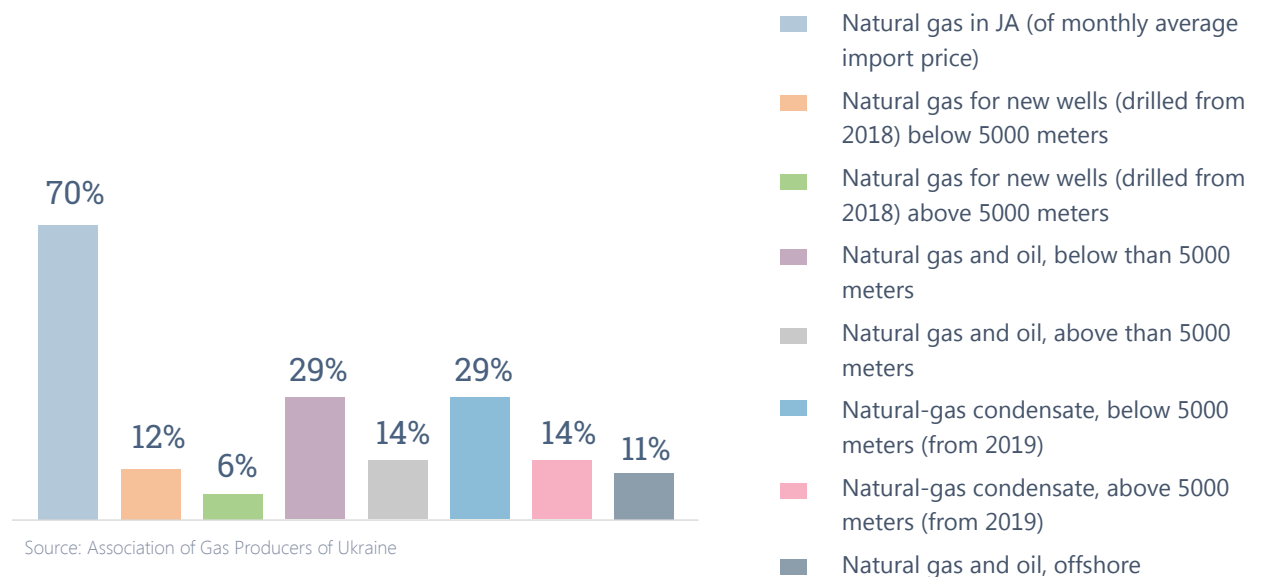
In December 2017, the Ukrainian parliament reduced a number of royalty rates for gas, oil and condensate. The changes concern onshore gas wells drilled from 1 January 2018, all condensate production from 1 January 2019, and production sharing agreements (PSAs). In addition, a stabilization clause will protect gas royalty rates from changes until 1 January 2023. This gas royalty reduction will help improve the competitiveness of Ukrainian fiscal terms with neighbouring countries. The previous 29% gas royalty rate was among the highest in Europe. Following the change, the new gas royalty rates more than 50% lower than in 2013 according to Wood Makenzie report. After years of fiscal instability in Ukraine, producers welcome 5-year stabilization clause for new gas wells.

There is a diversification of 8 different royalties based on:

- Type of hydrocarbon
- Depth and extraction complexity
- Type of cooperation

Royalties for production of natural gas, oil and natural-gas concentrate

Royalties of 2% and 1,25% respectively are applied to Production Sharing Agreements.



Deregulation measures recently taken by Parliament

In March 2018 a Law was adopted by Parliament that significantly simplifies regulation procedures and permits for the upstream sector by

- cancellation of 15 permitting procedure
- simplification of land tracts' allotment
- harmonization with EU regulation of natural resources payments

Further Sector Reforms

To attract the private investments and ensure modern technology transfer in the industry, the Government of Ukraine approved the Roadmap for further reform of upstream sector. In 2016 The action plan was approved by the Government to implement the Concept of the development of Ukraine's gas production industry by 2020. The plan is a road map which offers clearer incentives for investments in the sector both in short and long terms and implements best global practice to stimulate capital flow to the industry.

Based on the discussion with key business associations, industry players, IFIs, Government institutions and experts further steps are to be done in order to attract investments to the sector and to increase oil and gas production in the country.



Opening access to geological information

Current status

Industry feels a lack of public access to the massive geological data, possessed by the state and private entities. Such lack of access does not allow new potential investors to select the areas and nominate the new blocks for auctions on their own. As the result, no new auctions for oil and gas licenses have been conducted for over 1,5 years. This restrains the carrying out of the new exploration activities, slowing down the reserves replacement as well as the future production.

Key upcoming improvements

Government plans to amend legislation to **open access to the digital geoscience data**. As a result – **new licensing rounds can be unlocked** and more potential investors will be willing to start exploration and production in the country by freely obtaining needed geological data.



Increasing capacity of Government institutions in charge of sector regulation

Current status

Currently different Government agencies are involved in the process of licensing auctions and PSA tenders as well as issuing permits. With the poor quality of execution as well as duplicating certain functions between various governmental agencies there is unfocused approach to the oil and gas resources development and unitization.

Key upcoming improvements

Development and introduction of “one window” approach for oil and gas production activities that include preparation and launching licensing auctions, monitoring and controlling execution of working plans, monitoring resource base, managing the geological data, coordinating the allocation of tracts of land and obtaining the environmental impact assessment.

The duplication of functions between government agencies has to be eliminated.



Introduction of transparent licensing and PSA auctions

Current status

Current legislation, which was improved in early 2016 and further in 2017, still provides possibilities to obtain new licenses without auctions.

For the last 4 years the number of actions for the new licenses was significantly small. Among all 21 issued licenses only few were obtained through transparent and open auctions.

Key upcoming improvements

Government is expected to eliminate remaining issues with auction procedures, cutting possibilities to obtain them without competition, canceling various government bodies pre-approvals etc.

It is expected that the new licensing auctions and PSA tenders will be held through competitive procedures allowing international players to participate. Reputable advisors need to be attracted to support the preparation and promotion of auctions and PSA tenders.

They will implicate the international capital and the qualified experience, both combined with the modern technologies. The mix of these factors will create the necessary conditions for the Ukrainian gas revolution, which will provide for Ukraine's energy independence and enhance energy security of Europe.



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For any questions or comments please contact office@nicouncil.org.ua

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