

# Oil & gas industry



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Dear Reader, It is my great pleasure to introduce you to our new publication about attractive sectors of Ukraine, made in partnership with Deloitte.

We developed these brochures to make information about sectors of Ukraine accessible and easy to understand. The booklets provide analysis of economic attractiveness, as well as comparative characteristics and undiscovered opportunities.

Ukraine enjoys a long industrial tradition, robust transportation and technical infrastructure, rich natural resources, strong secondary and tertiary education, a broad network of research and development institutes, and a large pool of technically skilled labor. As a WTO member since 2008 and having signed International Agreements for the Avoidance of Double Taxation with 63 countries, Ukraine is a fair player in the business world, a transparent and predictable partner.

InvestUkraine offers individual support to investors and is here to assist potential investors with setting up production in Ukraine. We offer professional support in obtaining information and analysis, legal advice, site visits, site selection services, assistance in communication with local authorities, and an aftercare program.

I encourage you to consider Ukraine as a place for your future business and discover all the benefits of locating your company's operations in our country.

I look forward to welcoming you in Ukraine.

Sergiy Yevtushenko, Head InvestUkraine State Agency for Investment and National Projects of Ukraine



A favorable geographic position, vast consumer market, ample resources and high level of education – all these factors ensure great investment potential for the economy of Ukraine.

At present, Ukrainian market is at the development stage. There are many niches and opportunities for introducing new players and strengthening the positions of existing ones. However, most of Ukraine's industries lack investments, though international investors are highly interested in them. We believe that foreign investments will be very successful and promote economic growth if a favorable investment climate is created in Ukraine.

To assist you in determining the most promising areas to invest in and get an insight into Ukrainian market, Deloitte experts in cooperation with InvestUkraine have conducted this research.

We hope that this overview will be useful and interesting for all companies interested in investing in various industries of our country.

**Vladimir Vakht,** Managing Partner Deloitte



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#### **1. Executive summary**

Oil and gas industry plays significant role in securing national safety in energy sector and is considered strategic. Industry is regulated by the Ministry of Energy and Coal Industry of Ukraine. The major player on the market is National Joint-Stock Company Naftogaz of Ukraine – the leading enterprise of Ukraine's fuel and energy complex.

Ukraine has considerable oil and gas resource base that makes it possible to increase production volumes of hydrocarbons in the future. According to the State Service for Geology and Mineral Resources of Ukraine possible hydrocarbon resources in Ukraine are approximately 9.3 bn tons of equivalent fuel, including oil and gas condensate – 1.6 bn tons (17.6%) and gas – 7,254 billion m<sup>3</sup> (77.8%). At the same time proven reserves of hydrocarbons are at the level of 3.5 bn tons of equivalent fuel.

Ukraine has perspective fields of shale gas with estimated reserves of 1 billion m<sup>3</sup>. Total potential reserves of Ukrainian shelf are 1.5 bn tons of equivalent fuel (equivalent to 1.5 billion m<sup>3</sup> of gas), that account for 30% of all energy resources in the country. Also Ukraine plans to construct LNG terminal with help of foreign company that will give the possibility to buy gas at spot markets. The annual capacity of this terminal is planned to be 10 billion m<sup>3</sup>. Naftogaz of Ukraine and its subsidiaries extract more than 90% of total volumes of gas and oil extraction in Ukraine. Overall production of oil and gas condensate was 3.3 m tons in 2011 and gas extraction – 20.1 billion m<sup>3</sup>.

Transportation of oil in Ukraine performs Ukrtransnafta (subsidiary of Naftogaz of Ukraine). The input capacity of the pipelines is about 114 m tons of oil annually and output capacity is 56.3 m tons. Transportation of gas in Ukraine performs State Company Ukrtransgaz (subsidiary of Naftogaz of Ukraine). National gas transportation system has input capacity of 288 billion m<sup>3</sup> per annum and output capacity of 178.5 billionn m<sup>3</sup> per annum (including 142.5 billion m<sup>3</sup> – in Europe).

Ukrainian government declared its plans to restructure Naftogaz of Ukraine. Newly established companies, successors of Naftogaz of Ukraine, will be working in separate spheres: oil and gas mining, transportation and trading.

There are 6 refineries in Ukraine that process oil and produce petroleum products. The majority of oil processing plants require significant investments to modernize its fixed assets. The average processing depth at Ukrainian refineries was 76% in 2011 as compared to 90-95% in many foreign countries abroad. Due to the lack of domestic oil there is reasonably high percent of imported petroleum (mainly from Russia) in total amount of supplied oil to Ukrainian refineries.



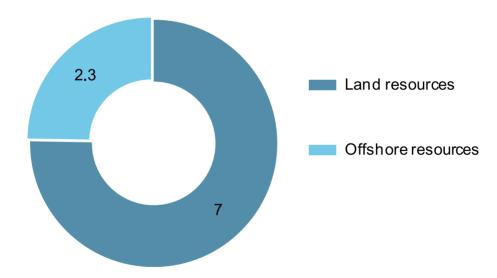
#### 2. Sector overview

#### 2.1. Oil and gas production

Ukraine has significant oil and gas resource base that makes it possible to increase production volumes of hydrocarbons in the future.

According to the State Service for Geology and Mineral Resources of Ukraine possible hydrocarbon resources in Ukraine (groups A, B, C1, C2, C3 and D) equal approximately 9.3 bn tons of equivalent fuel, including oil and gas condensate – 1.6 bn tons (17.6%) and gas – 7,254 billion m<sup>3</sup> (77.8%). At the same time proved reserves of hydrocarbons (groups A, B and C1) are at the level of 3.5 bn tons of equivalent fuel. Original oil resources are explored by 37%, gas – by 39% and the production rates (part of the accumulated hydrocarbon output in the possible resource base) are respectively 27.4% and 25.5%. Thus, 7 bn tons of equivalent fuel (75% of possible resources) is still in subsoil, including 5.8 bn tons of equivalent fuel classified as undiscovered. Significant part of hydrocarbon resources (27%) is concentrated at depths of 5-7 km.

#### Allocation of possible hydrocarbon resources in Ukraine, bn tons



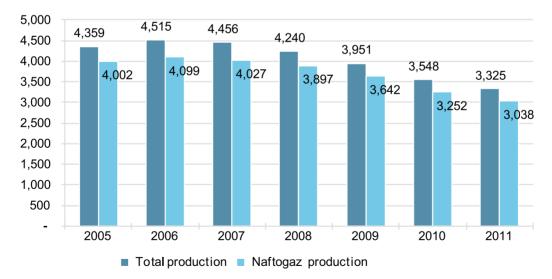
Source: State Service for Geology and Mineral Resources of Ukraine

Oil and gas reserves in Ukraine are located in the thick sediment in the Dnieper-Donetsk, the Black Sea, the Transcarpathian and Carpathian basins, as well as in the folded region of the Carpathians.



Oil and gas regions	Characteristics of the fields	
Carpathians region	It covers the territory of Carpathian and Transcarpathian regions. The most per- spective deposits are located in the territory of Ivano-Frankivs'k and L'viv regions. The largest oil fields are Dolynsky, Borislav; gas fields – Dashavske, Kavske, Rud- kovske and Bytkiv-Babchinske.	
Dnieper-Donetsk region	It is located in the eastern part of Ukraine, within the borders of Chernihiv, Sumy, Poltava, Dnipropetrovsk, Kharkiv, Donetsk and Luhansk regions. The depth of oil occurrence is up to 4,500 m, gas - 5,000-5,800 m. On the whole, there are 121 discovered fields (including 17 oil and 37 oil and gas fields). The largest fields are: Gnedishchenske, Mlyakovske, Kachanovske, Rybalske. There are also 67 gas and condensate fields (Shebelinske and Yefremovske).	
Black Sea-Crimean region	The field covers the territory of Mykolayiv, Odesa, Kherson regions and the north- ern part of Crimea. There are 60 developed deposits of oil and gas that are locat- ed on the shelves of the Black Sea and the Sea of Azov. Major fields are: Odesa and Bezymyanne ("unnamed") deposits with 35 billion m <sup>3</sup> of natural gas and the Subbotin oil field.	

Naftogaz of Ukraine and its subsidiaries extract more than 90% of total volumes of gas and oil in Ukraine. Overall production of oil and gas for the period of 2005-2011 years is as follows:

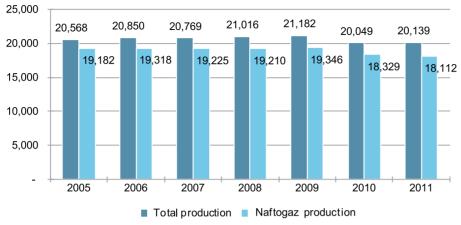


### Oil and gas condensate production in Ukraine, thsd tons

Source: Ministry of Energy and Coal Industry of Ukraine



# Gas production in Ukraine, million m<sup>3</sup>



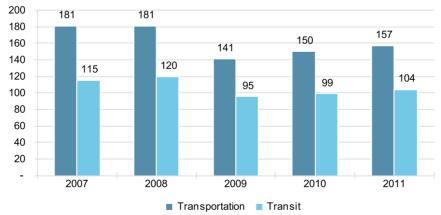
Source: Ministry of Energy and Coal Industry of Ukraine

#### 2.2. Oil and gas transport and storage systems

Transportation of oil in Ukraine performs Ukrtransnafta (subsidiary of Naftogaz of Ukraine). The national system of oil pipelines is the second largest in Europe and consists of 19 pipelines that pass through 19 regions in the north-eastern, central and western parts of Ukraine. The total length of the system is 4,767 km with operating 51 pumping stations. Storage capacity is more than 1 million m<sup>3</sup>. The input capacity of the pipe is about 114 m tons of oil annually and output capacity is 56.3 m tons. Ukraine's main pipelines provide oil supplies from Russia and Kazakhstan to refineries in Ukraine and transport oil to the countries of Central and Western Europe.

Oil and gas transportation volumes for the period 2007-2011 in Ukraine were:

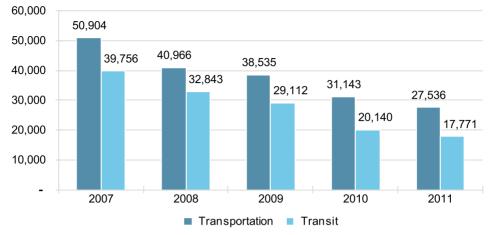
# Gas transportation, billion m<sup>3</sup>



Source: Ministry of Energy and Coal Industry of Ukraine



### **Oil transportaion, thsd tons**



Source: Ministry of Energy and Coal Industry of Ukraine

Ukrainian gas transportation system (GTS) belongs to the world's most powerful systems in terms of its transit capacity. Thus, the role of Ukraine as a transit country for the European region is crucial and is increased by Ukraine's favorable geographical location and its advanced network of gas pipelines capable of transporting energy from East to West.

The key objective of Ukraine as a gas transportation country is to ensure reliable operation of all system's components and fulfillment of contractual obligations in respect of both domestic supplies and transit.

Transportation of gas in Ukraine performs State Company Ukrtransgaz (subsidiary of Naftogaz of Ukraine). National gas transportation system includes:

- 39.8 thsd km of gas pipelines;
- 74 compressor stations, 112 compressor units equipped with 703 gas pumping units with a total capacity of 5,450 MW;
- Over 1,600 gas distribution stations;
- 13 underground gas storage facilities (GSFs) with a total active capacity of over 33.5 billion m<sup>3</sup> that makes them biggest in Europe;
- Gas-measuring units.

The network of GSF includes four parts – Western Ukrainian, Kyiv, Donetsk and Southern Ukrainian (13 underground GSFs in total). The maximum gas extraction from.



Ukraine's GTS has the following capacity:

- Input max 288 billion m<sup>3</sup> per annum;
- Output max 178.5 billion m<sup>3</sup> per annum (including 142.5 billion m<sup>3</sup> – to Europe).

However, Ukrainian GTS system requires modernization. According to the Mott McDonald's analysis Ukraine needs about USD 5 bn for this purpose.

# 2.3. Oil processing

There are 6 refineries in Ukraine that process oil and produce petroleum products. They are Ukrtatnafta (Kremenchug Oil Refinery), LINIK (Lisichansk Oil Refinery), NPK Galychyna (Drohobych Refinery), Lukoil (Odesa Oil Refinery), Naftokhimik Prykarpattya (Nadvirnyanskiy Refinery), Khersonskiy NPZ (Kherson Oil Refinery).

In 2011 only 4 out of 6 refineries processed oil (Ode-

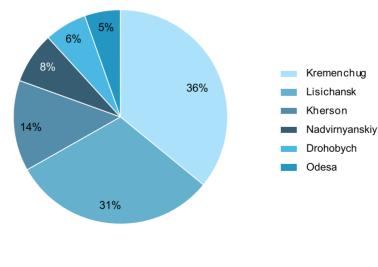
The installed initial oil processing capacity by refineries is:

# Installed annual capacity, %

Source: portal Nefterynok

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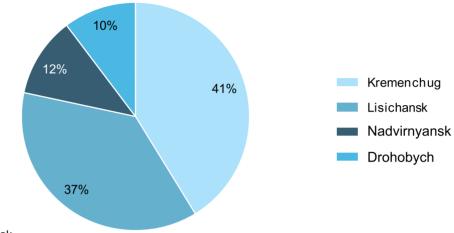
vestukraine.con



In 2009 Ukraine signed with European Union declaration according to which EU agreed to provide USD 2.5 bn credit for GTS modernization, provided the reforming of the Naftogaz of Ukraine and its subsidiaries in accordance with EU legislation will take place (mainly it applied to separation of mining, transportation and trading activities). At the moment Ukraine actively forms legislative basis for the future GTS modernization.

International financial institutes such as World Bank, European Bank for Reconstruction and Development and European Investment Bank could also provide financing for GTS modernization in Ukraine.

sa and Kherson oil refineries stopped working due to unprofitability of operating activity and reconstruction process respectively). The average processing depth of Ukrainian refineries was 76% in 2011 as compared to 90-95% abroad. Due to this and because of increased oil prices and high volumes of imported oil, operational activity of Ukrainian processing plants became less profitable and required significant investments in modernization of fixed assets. But technically possible capacities of operating refineries differ significantly from previous figures (if taking into account the balance of the secondary processes):

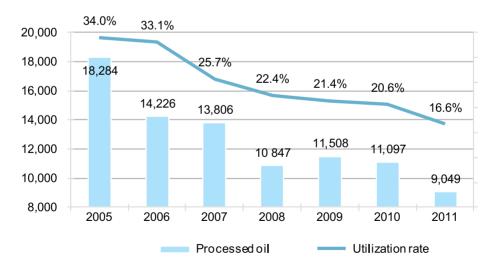


# Technically possible capacity of operating refineries, %

Source: portal Nefterynok

The volumes of processed oil and utilization rates of refineries installed capacity during 2005-2011 were as follows:

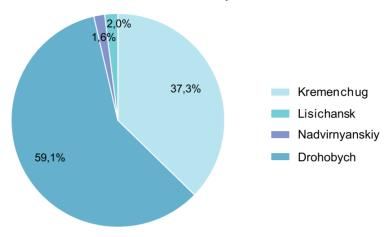
# Processed oil (thsd tons) and utilization rates (%) in Ukraine



Source: Ministry of Energy and Coal Industry of Ukraine



# Oil processing by Ukrainian refineries in 2011, %



Source: portal Nefterynok

Due to the lack of domestic oil there is reasonably high percent of imported petroleum (mainly from Russia) in total amount of supplied oil to Ukrainian refineries. But this percentage fell slowly during 2006-2011.

#### 15,000 78% 77% 14,000 75% 74% 13,000 12,000 12,618 70% 14,272 11.000 10,000 65% 9,944 9,683 9,000 9,426 8,000 8,453 7,000 6,000 2006 2007 2008 2009 2010 2011 ----- Share of imported oil Supplied oil

# Supplied oil to Ukrainian refiniries, thsd tons

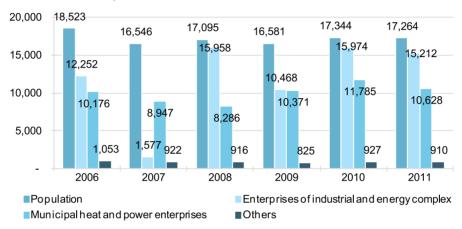
Source: Ministry of Energy and Coal Industry of Ukraine



# 2.4. Oil and gas consumption in Ukraine

The major gas consumer in Ukraine is its population. It consumed 39% of gas in 2011. There is a slight reduction in share of consumption comparing with 2006 when respective stake of population was 44%. At the same time share of industrial consumption increased from 29% in 2006 to 35% in 2011.

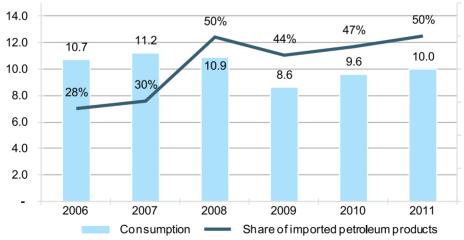
Petroleum products consumption in Ukraine continued its positive dynamics in 2011 and reached 10 m tons.



# Gas consumption in Ukraine, million m<sup>3</sup>

Source: Ministry of Energy and Coal Industry of Ukraine

#### Petroleum products consumption in Ukraine, m tons



Source: State Statistic Service of Ukraine



#### **3. Trends and developments**

One of the main goals of the National Energy Strategy till 2030 for Ukraine is to become less energy dependent. To achieve this Ukraine attempts to increase volumes of domestic oil and gas extraction using its significant resource base.

# Shale gas

According to USA experts, Ukraine has shale gas reserves at the level of 1.176 billion m<sup>3</sup>. The largest deposits of shale gas in Ukraine are located in the Carpathians. In L'viv region were found five major fields where open-cut mining could be used, in Ivano-Frankivs'k were discovered six deposits, in the Transcarpathian region – two, Chernivtsi region has one perspective gas field.

However, today major deposits are Yuzivsky area (7,886 km<sup>2</sup>) located in the Donetsk and Kharkiv region, and Olesky area (6,324 km<sup>2</sup>) located in Ivano-Frankivs'k and L'viv regions. Reserves of Yuzivsky area are estimated to be in range of 4 till 10 billion m<sup>3</sup> of gas. Olesky area has gas reserves of smaller amounts. The State Service for Geology and Mineral Resources of Ukraine expects them to be 2.5 billion m<sup>3</sup>.

The head of the State Service for Geology and Mineral Resources of Ukraine said that in order to start exploration of these perspective areas Olesky deposit needs USD 150-200 m to be invested in 1.5-2 years, Yuzivsky – USD 250-300 m. In case expected amount of reserves is correct, Yuzivsky area should produce 8-10 billion m<sup>3</sup> of gas annually, Olesky area – 2-3 billion m<sup>3</sup> of gas. To start producing gas in such volumes it would take no less than 5-7 years.

Naftogaz of Ukraine expects that Ukraine could start commercial production of shale gas in 2015. And by 2020 annual volumes of this gas extraction could reach 4-5 m<sup>3</sup>.

# Oil and gas offshore deposits

According to the State Service for Geology and Mineral Resources of Ukraine, the most perspective parts of the shelf area are Pallas, which has estimated reserves at the level of 250-485 billion m<sup>3</sup> of natural gas, Scythian land - 35 billion m<sup>3</sup> of gas and 25-60 m tons of oil, the structure of Nakhimov – 29 billion m<sup>3</sup> of gas, the structure of Kornilov – 35 billion m<sup>3</sup> of gas and the structure of Ahiba – 6.7 m tons of equivalent fuel.

Total potential reserves of Ukrainian shelf are 1.5 bn tons of equivalent fuel (equivalent to 1.5 trillion  $m^3$  of gas), that accounts for 30% of all energy resources in Ukraine.

The only enterprise in Ukraine, which independently performs exploration and development of oil and gas deposits in the area of the Black and Azov Seas is the Chernomorneftegaz, subsidiary of Naftogaz of Ukraine.

Many of the world's biggest oil and gas companies are interested in Ukrainian hydrocarbon resource base. According to the State Service for Geology and Mineral Resources of Ukraine Chevron, Eni and ExxonMobil are probable candidates for development of perspective Olesky area where significant reserves of shale gas are located. Shell, ExxonMobil, Eni, and Chevron are willing to develop another perspective gas field – Yuzivsky area. The tender for development of these fields will be held in 2012.

Chernomorneftegaz signed agreement with Lukoil on joint activities for development and extraction of hydrocarbons in Odesa, Bezymyanne and Subbotinskyy deposits on the shelf of the Black Sea. Also there are active negotiations with Gazprom concerning development of the Pallas area that is also





located on the shelf. It is expected that agreement between Chernomorneftegaz and Gazprom will be signed in the near future.

Ukrgazdobycha and Shell signed agreement on joint activities for Shebelinka, West Shebelinka, Pavlovsk-Svetlovsky, Melehovsky, Gersevanovsky and New Mechebilovsky (they are all located in the Dnieper-Donetsk basin) areas.

Also Ukraine signed preliminary agreement for exploration and development of unconventional hydrocarbons in Ukraine with ExxonMobil in western part of Ukraine and the Dnieper-Donetsk basin.

Among other international companies that are interested in Ukrainian hydrocarbon resources are Halliburton, Total, Eni, RWE Dea.

#### **LNG** terminals

To be less dependent on Russia's gas supplies, Ukraine decided to construct terminal for liquefied natural gas. With this terminal Ukraine could purchase gas from other producers at spot prices that are now significantly lower than the price of contractual gas from Russia.

The Spanish company Socoin won the tender for building LNG terminal in Ukraine. The company recently has developed feasibility study of building such a terminal that will be located in the area between the Black Sea and the oil terminal Yuzhnyy. Construction costs of the LNG terminal are estimated to be about USD 1 bn with total capacity of 10 billion m<sup>3</sup> per year.

To implement this ambitious project private investors will be attracted (the state's share will be only 25%). Future supplies could be made from the United States, Algeria or Qatar.

#### 4. Leading players

#### 4.1. National companies

Oil and gas industry players in Ukraine could be divided into two separate groups: subsidiaries of Naftogaz of Ukraine and other private companies.

#### **Naftogaz of Ukraine**

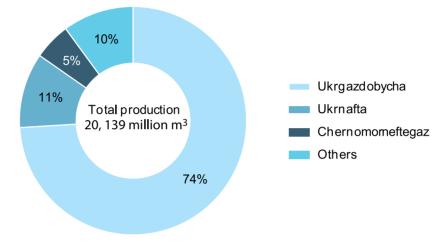
The National Joint Stock Company Naftogaz of Ukraine is the leading enterprise in Ukraine's energy complex and one of the biggest Ukrainian companies. Naftogaz of Ukraine produces one eighth of the gross domestic product of Ukraine and provides one tenth of the State budget revenues. Naftogaz of Ukraine is a vertically integrated oil and gas company engaged in full cycle of operations in gas and oil field exploration and development, production and exploratory drilling, gas and oil transportation and storage, supply of natural gas and LPG to consumers. Over 90% of the oil and gas in Ukraine is produced by Naftogaz of Ukraine enterprises that provide full cycle of upstream and downstream operations in oil and gas industry.

Ukrainian government declared its plans to restructure Naftogaz of Ukraine. Newly established companies, successors of Naftogaz of Ukraine, will be working in separate spheres: oil and gas mining, transportation and trading.



It is considered that restructuring of Naftogaz of Ukraine will increase investment attractiveness of Ukrainian oil and gas industry through its decentralization. Among the leaders by volumes of gas production there are 3 companies – subsidiaries of Naftogaz of Ukraine: Ukrgazdobycha, State Chornomornaftogas, Ukrnafta (Naftogaz owns 50% +1 share).

## Gas production in 2011, million m<sup>3</sup>

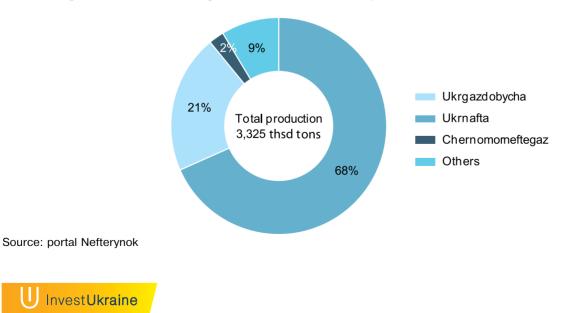


Source: portal Nefterynok

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Leaders in oil and gas condensate extraction are also subsidiaries of Naftogaz of Ukraine.

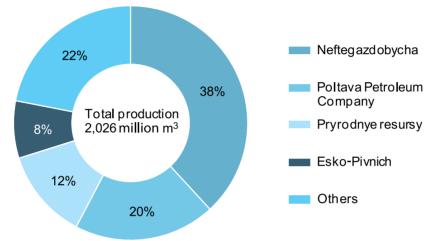
### Oil and gas condensate production in 2011, thsd tons



# 4.2. Companies with foreign capital

One of the biggest non-state oil and gas companies in Ukraine with foreign investments is Poltava Petroleum Company. Among its shareholders is British enterprise – Oil&Gas.

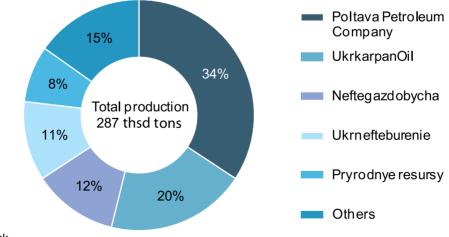
The shares of Poltava Petroleum Company of oil and gas markets are as follows:



# Gas production by private companies in 2011, %

Source: portal Nefterynok

# Oil and gas condensate production by private companies in 2011, %



Source: portal Nefterynok



# 5. Legislation

Verkhovna Rada of Ukraine determines state policy in oil and gas industry and is legislative regulator. Cabinet of Ministers of Ukraine and other authorized executive bodies implement state policy in the oil and gas industry and manage it.

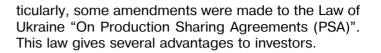
Special permission must be obtained from the State Service for Geology and Mineral Resources of Ukraine for the following activities:

- Usage of oil and gas mineral resources;
- · Search and exploration of oil and gas;
- Construction and exploitation of underground storage units for oil and gas.

There are several types of special permissions that may be obtained:

- Geological exploration of oil and gas mineral resources, including research and industrial development of fields;
- Geological exploration of oil and gas mineral resources, including research and industrial exploration, followed by extraction of minerals (industrial development of fields);
- Oil and gas extraction (industrial development of fields);
- Construction and exploitation of underground facilities that are not associated with extraction of minerals, including underground storage of oil or gas, and facilities for disposal of oil and gas industry waste products and related waters.

It should be noted that in 2011 some changes in legislation concerning oil and gas industry took place. Par-



No limits are set on the field size that is given for developing. Whereas the Law of Ukraine "On Oil and Gas" sets 500 km<sup>2</sup> limitation on field size located on land and 1,000 km<sup>2</sup> – located offshore.

The PSA allows to obtain license – for exploration, followed by industrial development, on up to 50 years with possible prolongation.

The participants of the oil and gas industry shall be taxed under the general rules with some peculiarities. Ukrainian legislation allows exploration activities to be conducted under either a Production Sharing Agreement (PSA), or a Joint Venture Agreement (JVA). The main distinction between the two methods is that under the PSA, corporate income tax (CIT) is calculated with reference to production volume, whereas under the JVA, CIT is levied on net profits.

PSA is one of the most effective mechanisms of public-private cooperation in the field of mineral resources exploration. The special regime of taxation applies to the investors being a party to the PSA which consists in substitution of national and local taxes, fees and duties by distribution of manufactured products (with the exception of VAT, CIT, PIT, uniform social security contribution in respect of employees, charges and duties for state services and the fee for use of subsoil for the purposes of exploration).

The legislative framework for JVA is provided by the Civil Code of Ukraine. Under JVA agreement the partners undertake to act jointly without the establishment of a legal entity in order to achieve a certain legitimate goal. The joint activity can be carried out based on the consolidation of partners' capital (simple partnership)



or without such consolidation. The profit gained from JVA is distributed between the partners proportionally to their contributions to JVA. For the purposes of taxation the JVA is regarded as a separate taxpayer and shall be registered with the tax authorities. No special regime is applicable to JVA which is taxable under the general rules.

Additionally, Ukrainian tax legislation establishes special duties for performing activities in oil and gas industry:

#### 6. Establishments and institutions

The main regulator of oil and gas industry in Ukraine is The Ministry of Energy and Coal Industry of Ukraine. The Ministry develops and implements state policy in energy sector of Ukraine.

The Ministry also:

- · Provides legal regulation in energy sector;
- Determines priorities of development in fuel and energy sector;
- Monitors the oil and gas market, as well as the market of alternative sources of energy;
- Performs control over purposeful, economic and effective use of allocated budgetary funds for fuel and energy complex enterprises;
- Develops recommendations on improvement of pricing mechanism in fuel and energy complex;
- Forms the projected balance of energy resources in Ukraine;

- Duty for subsoil use;
- Rent duty for extraction of oil, gas and gas condensate in Ukraine;
- Rent duty for transportation of oil and oil products by main pipelines and product pipelines, transit transportation of gas and ammonia by pipelines through Ukraine.

- Approves development programs in energy sector of Ukraine and controls their implementation;
- Conducts measures, within the framework of its authority, on adaptation of Ukrainian legislation to EU legislation on fuel and energy complex issues.

The other profile agency in energy sector of Ukraine is the Parliament Committee of Ukraine on Fuel and Energy Complex, Nuclear Policy and Nuclear Safety.

The Committee on Fuel and Energy Sector, Nuclear Policy, and Nuclear Safety under the Verkhovna Rada of Ukraine is composed of 20 deputies and is in charge of formation and implementation of nuclear policy as well as Ukrainian energy laws drafting.

The Committee prepares and submits to the Verkhovna Rada of Ukraine draft laws, other energy sector-related issues for its consideration, suggestions and approval. Within its jurisdiction, the Committee is entitled to perform the parliamentary control.



### 7. List of references:

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# Notes



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11 V. Zhytomyrska St., 03032, Kyiv, Ukraine Tel: +380 44 270 63 05 +380 44 270 63 17 Email: info@investukraine.com Web: www.investukraine.com