Operating Performance

01 Production activity

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Production activity

In 2018, DTEK Group produced 27.2 mln tonnes of coal (–1.9% YoY, compared to 2017) and 1,648.5 mln cubic meters of natural gas (–0.4% YoY), generated 34.8 bln kWh of electricity (–6.3% YoY) and distributed 43.7 bln kWh of electricity by grids (+1.2% YoY).

Key Performance Indicators of the DTEK Group

Indicators	unit	2017	2018	Change, (+/–)	Change, (%)
Coal production	ths tonnes	27,706.0	**27,185.9**	–520.1	–1.9
including:					
→ G, DG-grade (Ukraine)	ths tonnes	22,914.8	24,131.6	+1,216.8	+5.3
→ A, T-grade (Ukraine)*	ths tonnes	1,879.2	0.0	–1,879.2	–100
→ A-grade (Obukhovskaya Mine Office)**	ths tonnes	2,912.0	3,054.3	+142.3	+4.9
Concentrate release	ths tonnes	13,609.3	**12,355.5**	–1,253.8	–9.2
including:					
→ independent CCMs (Ukraine)	ths tonnes	1,424.9	1,361.8	–63.1	–4.4
→ Obukhovskaya Mine Office **	ths tonnes	1,774.9	1,936.8	+161.9	+9.1
Electricity generation (output)*	mln kWh	37,103.7	**34,753.6**	–2,350.1	–6.3
including:					
→ renewables	mln kWh	637.8	677.0	+39.2	+6.1
Electricity distribution*	mln kWh	43,155.1	**43,684.8**	+529.7	+1.2
Electricity exports	mln kWh	4,999.5	**5,825.6**	+826.1	+16.5
Coal exports***	ths tonnes	748.2	**486.3**	–261.9	–35.0
Coal imports	ths tonnes	2,571.7	**2,662.6**	+90.9	+3.5
Natural gas trading	mcm	1,952.0	**1,931.5**	–20.5	–1.1
Natural gas production	mcm	1,655.3	**1,648.5**	–6.8	–0.4
Gas condensate production	ths tonnes	54.8	**51.5**	–3.3	–6.0

* Since March 2017, indicators for assets located in the temporarily occupied territories of Donets`k and Luhans`k regions have not been consolidated into the reporting of DTEK Energy and DTEK Group due to loss of control.

** Since September 1, 2016, the operating performance of Obukhovskaya Mine Office has not been consolidated into the reporting of DTEK Energy due to the transfer of the company to the direct management of DTEK B.V. Strategic Holding. The transaction was carried out within the framework of the restructuring of the credit portfolio of DTEK Energy and is aimed at balancing the options for developing enterprises and servicing the loans.

*** Including trading operations outside of Ukraine.

DTEK Energy

Coal mining and processing

Total coal production by the company's mines in Ukraine amounted to 24.1 mln tonnes, which is 2.7%, or 662.4 ths tonnes, lower than in 2017.

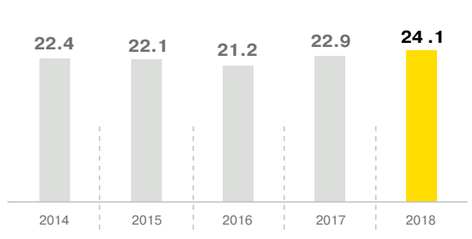
The main factors affecting the performance indicators:

- cessation of anthracite production. Since March 2017, Ukraine has completely stopped coal mining and electricity generation in the temporarily occupied territories;
- the company's enterprises are increasing G-grade coal production to minimize the use of anthracite for thermal generation. The performance of DTEK Pavlohradcoal has increased to 114.9 tonnes per person per month. This has ensured production of G-grade coal at a level of 24,131.5 ths tonnes, which is 5.3%, or 1,216.8 ths tonnes, higher than in 2017 and is the highest annual figure in the company's history. At the same time, the mining and geological conditions are becoming more complex, the accident rate of tunneling equipment and mining transport is growing due to the increased load.

Throughput performance of run-of-mine coal processing reached 17,201.5 ths tonnes (–9.7%, or 1 853.5 ths tonnes YoY), of which independent CCMs provided 2,423.9 ths tonnes (–5.8%, or 149.6 ths tonnes YoY). Concentrate output by DTEK Energy concentration plants amounted to 9,056.8 ths tonnes, on independent CCMs — 1,361.8 ths tonnes.

DTEK Energy is increasing production of G-grade coal to ensure thermal generation conversion to domestic coal

Mining of G, DG-grade coal, mln tonnes



Electricity generation

34.1 bln kWh — annual output provided to the United Energy System of Ukraine in 2018 — which is 6.6%, or 2,389.3 bln kWh, lower than in 2017.

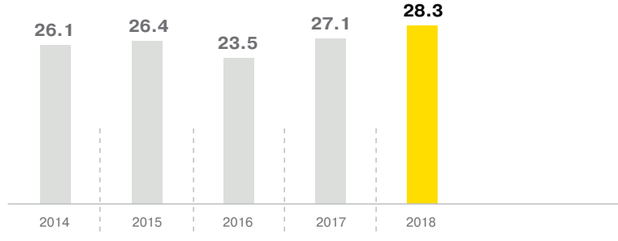
The main factors affecting the performance indicators:

- decrease in electricity generation by DTEK Skhidenergo and Kyivenergo by 20.5%, or 2,422.1 mln kWh, due to the termination of control over Zuyivs`ka TPP in March 2017 and the expiration of the management contract of Kyiv's CHPP-5 and CHPP-6 from July 31, 2018;
- decrease in electricity generation by DTEK Westenergy by 2.3%, or 339.5 mln kWh. DTEK Westenergy plants are designed to burn G-grade coal. In 2017, they carried increased load in order to compensate for decline in production by anthracite-powered units, production of which was discontinued in Ukraine. In 2018, the load was normalized due to re-engineering of power units from using anthracite to run on G-grade coal;
- increase in electricity generation by DTEK Dniproenergo and DTEK Myronivs'ka CHPP by 3.8%, or 373.4 mln kWh. Three power units of DTEK Prydniprovs'ka TPP and one boiler of DTEK Myronivs'ka CHPP were converted from anthracite to G-grade coal, which enabled load increase.

DTEK Energy is implementing a program to increase the use of G-grade coal in the energy sector to minimize the consumption of imported anthracite. In 2018, production of electricity on G-grade coal increased to 28.3 bln kWh, which is 4.4%, or 1,185 mln kWh, higher than last year's result. This allowed reducing the share of electricity generation of anthracite to 12% in the total production volume of the company.

Switching of power units from A-grade coal to G-grade coal contributes to an increase in electricity production

Electricity output to the UES from G-grade coal, bln kWh



Manufacturing statement of DTEK Energy for 2018

The company's priority is to increase production of G-grade coal in order to ensure the increase in electricity production at power units operating on this type of fuel. In 2018, 24.1 mln tonnes of G-grade coal were mined, which is the highest annual output in the company's history.

Run-of-mine coal production by enterprises, ths tonnes

DTEK Pavlohradcoal
(G, DG)
20,011.8

DTEK Dobropolyeugol including mine Bilozers'ka
(G, DG)
4,119.8

(G) — G-grade coal
(DG) — long-flame G-grade coal

Run-of-mine coal shipment to end users, ths tonnes

5,233.3	**DTEK Energy TPPs and CHPP**	**5,893.9**
660.6		
180.6	SCM enterprises	180.6
205.2	Other industrial consumers	702.7
497.5		

Run-of-mine coal shipment to concentration plants, ths tonnes

12,212.5	**DTEK Energy**	17,201.5
2,565.0		
2,106.8	Independent CCMs	
330.3		

Run-of-mine coal processing, ths tonnes

17,201.5

Coal concentrate production, ths tonnes

10,418.6

Shipment of concentrate, ths tonnes

DTEK Energy TPPs and CHPP	**9,691.3**
SCM enterprises	55.5
Other industrial consumers	702.7

Ukrainian coal was not exported

In 2018, 18.1 mln tonnes of coal (–0.8 mln tonnes YoY) and 162.5 mcm of natural gas were supplied to TPPs and CHPP of the company.

Use of coal products from DTEK Energy's TPPs and CHPP, ths tonnes

	DTEK Energy	Other producers (Ukraine)	Imports
DTEK Myronivs'ka CHPP (G, DG)	263.9		
DTEK Kurakhovs'ka TPP (G, DG)	3,695.7		16.0
DTEK Luhans'ka TPP (A, T)			1,036.5
DTEK Prydniprovs'ka TPP (G, DG, A, T)	896.0	4.7	24.2
DTEK Zaporiz'ka TPP (G, DG)	2,834.7		11.6
DTEK Kryvoriz'ka TPP (T)	152.1	31.0	805.4
DTEK Dobrotvirs'ka TPP (G, DG)	966.6	252.8	18.9
DTEK Ladyzhyns'ka TPP (G, DG)	1,818.9		107.6
DTEK Burshtyns'ka TPP (G, DG)	4,951.5	9.2	217.2

(Coal grades used)

DTEK Energy
Other producers (Ukraine)
Imports

ICUR*, %

DTEK Myronivs'ka CHPP (G, DG)	37.1 %
DTEK Kurakhovs'ka TPP (G, DG)	48.4%
DTEK Luhans'ka TPP (A, T)	21.6%
DTEK Prydniprovs'ka TPP (G, DG, A, T)	17.7%
DTEK Zaporiz'ka TPP (G, DG)	58.2%
DTEK Kryvoriz'ka TPP (T)	13.7%
DTEK Dobrotvirs'ka TPP (G, DG)	56.1%
DTEK Ladyzhyns'ka TPP (G, DG)	30.0%
DTEK Burshtyns'ka TPP (G, DG)	47.3 %

The average ICUR in 2018 was 35.16%.

* The ICUR is specified without taking into account oil/gas units and those are in conservation.

Electricity generation and supply by DTEK Energy TPPs and CHPP, mln kWh

	Electricity generation	Electricity output
DTEK Myronivs'ka CHPP (G, DG)	374.0	312.8
DTEK Kurakhovs'ka TPP (G, DG)	6,496.2	5,798.6
DTEK Luhans'ka TPP (A, T)	2,303.2	2,002.1
DTEK Prydniprovs'ka TPP (G, DG, A, T)	1,771.7	1,521.8
DTEK Zaporiz'ka TPP (G, DG)	6,373.2	5,913.6
DTEK Kryvoriz'ka TPP (T)	2,482.5	2,244.1
DTEK Dobrotvirs'ka TPP (G, DG)	2,507.9	2,270.0
DTEK Ladyzhyns'ka TPP (G, DG)	3,947.7	3,613.8
DTEK Burshtyns'ka TPP (G, DG)	9,768.4	8,771.7

Electrical generation from G-grade coal increased by 4.4% YoY to 28.3 bln kWh. This made it possible to reduce the share of anthracite-based electricity generation to 12% of DTEk Energy's total production.

Electricity output by enterprises, mln kWh

312.8	**DTEK Myronivs'ka CHPP** (G, DG)
1,615.0	**Kyivenergo** (gas)
7,800.7	**DTEK Skhidenergo** (G, DG, A, T)
9,679.4	**DTEK Dniproenergo** (G, DG, A, T)
14,655.5	**DTEK Westenergy** (G, DG)

(G) — G-grade coal
(DG) — long-flame G-grade coal
(T) — lean coal
(A) — anthracite
— gas

Production capacity of DTEK Energy TPPs and CHPP as of January 1, 2019

Power unit No.	Installed capacity, MW	Date of in-service/ last overhaul repair or reconstruction	Running time, hours	Overhaul repair/reconstruction
DTEK Kurakhovs'ka TPP				
3	200	1972/2018	299,259	plans are in consideration
4	210	1973/2018	272,538	plans are in consideration
5	222	1973/2015	252,951	reconstruction was completed in 2009; increase in installed capacity by 12 MW major repair is planned for 2020
6	225	1973/2013	253,007	reconstruction was completed in 2013; increase in installed capacity by 15 MW major repair is planned for 2019
7	225	1974/2016	263,830	reconstruction was completed in 2010; increase in installed capacity by 15 MW
8	225	1974/2017	262,128	reconstruction was completed in 2012; increase in installed capacity by 15 MW
9	225	1975/2015	258,997	reconstruction was completed in 2015; increase in installed capacity by 15 MW major repair is planned for 2021
Total	**1,532**			
DTEK Luhans'ka TPP				
9	200	1962/2017	332,977	plans are in consideration
10	210	1962/2018	323,536	reconstruction was completed in 2012; increase in installed capacity by 35 MW
11	200	1963/2004	318,289	plans are in consideration
13	210	1967/2014	305,065	reconstruction was completed in 2014; increase in installed capacity by 35 MW major repair is planned for 2020
14	200	1968/2018	291,814	plans are in consideration
15	200	1969/2018	305,313	plans are in consideration
Total	**1,220**			
DTEK Zaporiz'ka TPP				
1	325	1972/2012	295,788	reconstruction was completed in 2012; increase in installed capacity by 25 MW major repair is planned for 2019
2	300	1972/2018	286,676	reconstruction is planned for 2024—2025;
3	325	1972/2014	291,489	reconstruction was completed in 2014; increase in installed capacity by 25 MW major repair is planned for 2021
4	300	1973/2016	271,541	major repair is planned for 2019; reconstruction is planned for 2022—2023;
5	800	1975/1995	148,998	unit fired by fuel oil and gas. Plans are in consideration
7	800	1977/1992	133,190	unit fired by fuel oil and gas. Plans are in consideration
Total	**2,850**			

Power unit No.	Installed capacity, MW	Date of in-service/ last overhaul repair or reconstruction	Running time, hours	Overhaul repair/reconstruction
DTEK Kryvoriz'ka TPP				
1	315	1963/2017	300,839	reconstruction was completed in 2017; increase in installed capacity by 33 MW. In 2019, it is planned to change the specified fuel — to switch from anthracite to combustion of G-grade coal
2	300	1964/1998	313,593	plans are in consideration
3	300	1965/2013	275,160	reconstruction was completed in 2013; increase in installed capacity by 18 MW In 2020, it is planned to change the specified fuel — to switch from anthracite to combustion of G-grade coal
4	300	1966/2005	253,224	In 2021, it is planned to change the specified fuel — to switch from anthracite to combustion of G-grade coal
5	282	1967/1994	303,698	plans are in consideration
8	282	1969/1996	266,333	plans are in consideration
10	300	1972/2017	209,304	plans are in consideration
Total	**2,079**			
DTEK Prydniprovs'ka TPP				
7	150	1958/2013	343,098	In 2017, the specified fuel was changed — switched from anthracite to combustion of G-grade coal
8	150	1958/2014	368,189	In 2017, the specified fuel was changed — switched from anthracite to combustion of G-grade coal
9	150	1959/2012	333,930	reconstruction was completed in 2012 without increasing installed capacity. In 2018, the specified fuel was changed — switched from anthracite to combustion of G-grade coal
10	150	1960/2006	331,458	In 2019, the specified fuel will be changed — switched from anthracite to combustion of G-grade coal
11	310	1962/2016	266,443	In 2020, it is planned to change the specified fuel — to switch from anthracite to combustion of G-grade coal
Total	**910**			
DTEK Dobrotvirs'ka TPP				
5	100	1960/2018	351,299	plans are in consideration
6	100	1961/2015	346,143	plans are in consideration
7	150	1963/2011	359,998	major repair is planned for 2019
8	160	1964/2014	333,235	reconstruction was completed in 2014; increase in installed capacity by 10 MW major repair is planned for 2020
Total	**510**			

Production capacity of DTEK Energy TPPs and CHPP as of January 1, 2019

Power unit No.	Installed capacity, MW	Date of in-service/ last overhaul repair or reconstruction	Running time, hours	Overhaul repair/reconstruction
DTEK Burshtyns'ka TPP				
1	195	1968/2017	307,061	plans are in consideration
2	185	1965/2014	293,698	plans are in consideration
3	185	1966/2013	306,203	major repair is planned for 2019
4	195	1966/2018	327,996	plans are in consideration
5	215	1967/2013	318,732	reconstruction of I stage was completed in 2013, II stage — in 2016; increase in installed capacity by 20 MW
6	195	1967/2015	322,125	major repair was completed in 2015; increase in installed power by 10 MW
7	206	1968/2012	304,557	reconstruction was completed in 2012; increase in installed capacity by 21 MW major repair is planned for 2021
8	195	1968/2009	317,354	plans are in consideration
9	195	1968/2016	300,751	plans are in consideration
10	210	1969/2018	311,064	reconstruction was completed in 2018; increase in installed capacity by 15 MW
11	195	1969/2011	283,009	plans are in consideration
12	195	1969/2018	272,465	plans are in consideration
Total	**2,366**			
DTEK Ladyzhyns'ka TPP				
1	300	1970/2018	259,957	plans are in consideration
2	300	1971/2009	258,425	major repair is planned for 2020
3	300	1971/2011	248,183	major repair is planned for 2021
4	300	1971/2001	245,332	plans are in consideration
5	300	1971/2003	223,785	mothballed
6	300	1971/2004	230,276	plans are in consideration
Total	**1,800**			
DTEK Myronivs'ka CHPP				
TG No.2	100	1953/2004	285,814	under repair
TG No.3	60	1954/1998	335,195	mothballed
TG No.5	115	2004/2013	80,574	in 2017, the specified fuel of boiler No.10 was changed — switched from anthracite to combustion of G-grade coal; in 2018, the specified fuel of boiler No.9 was changed — switched from anthracite to combustion of G-grade coal major repair is planned for 2019
Total	**275**			

Commercial activities

Coal shipments in foreign and domestic markets

The company exports coal only from the Obukhovskaya Mine Office. In 2018, 486.3 ths tonnes of coal products made shipments to foreign markets — by 35.0%, or 261.9 ths tonnes, which is lower than the previous year. According to the contracts, the products were supplied to markets in Europe, South Africa, Canada and India. The decrease is due to a significant increase in send to the Ukrainian market due to the cessation of anthracite mining. In general, shipments reached 1,514.7 ths tonnes, which is 26.2%, or 314.0 ths tonnes, more than in 2017.

In addition, the company imported coal products from the United States and South Africa — total imports amounted to 2,662.6 ths tonnes. At the same time, the volume of purchases for the needs of DTEK Energy TPPs decreased by 2.7% compared to the previous year, to 2,221.4 ths tonnes of coal.

With regard to trading operations, 2,085.0 ths tonnes of coal was supplied to industrial consumers in Ukraine, which is practically equal to the level of 2017.

Imports and supplies of natural gas to the domestic market

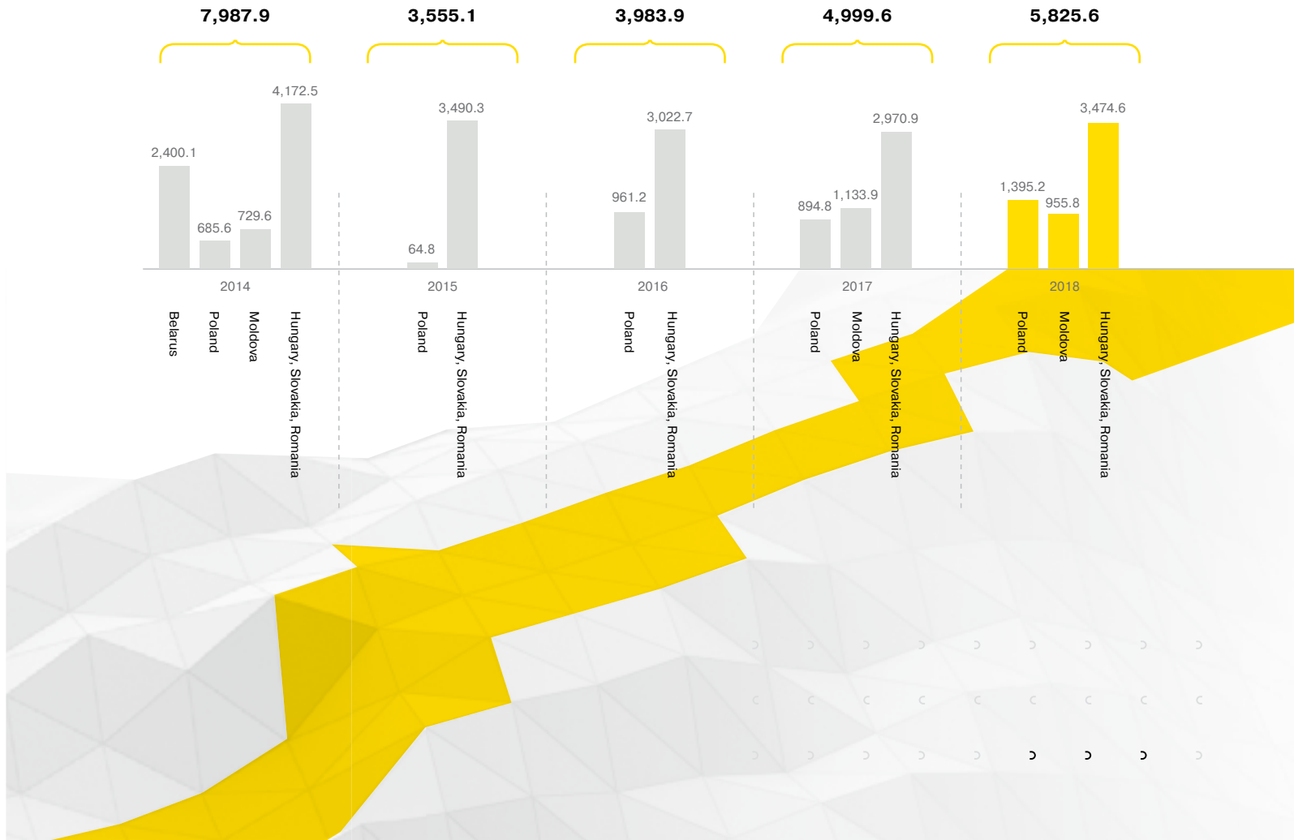
The volume of sales of natural gas in the domestic market of Ukraine amounted to 1 931.5 mln cubic meters. Preservation of the volume of trading operations at the level of the previous year was due to the increase in sales of natural gas to enterprises in the metallurgical sector, which offset the decline in demand from enterprises in the energy sector.

Electricity supply to foreign markets

The company supplied 5,825.6 bln kWh under the foreign economic contracts, which is 16.5% more than in 2017. Electricity was exported to Hungary, Poland and Moldova.

DTEK Energy is focused on European electricity markets

Electricity supplies for exports, mln kWh



DTEK Grids

Electricity distribution and grid operation

43.7 bln kWh — the volume of electricity distribution in 2018, which is 1.2%, or 529.7 mln kWh, higher than the previous year.

The main factors affecting the performance indicators:

- increase in the volume of electricity distribution by DTEK Kyiv Grids and DTEK Dnipro Grids by 3.4%, or 1,081.1 mln kWh, due to greater demand from the population and small businesses;
- decrease in distribution of electricity by DTEK Donetsk Grids, DTEK Power Grid and DTEK Energougol ENE by 4.7%, or 551.4 mln kWh, due to lower demand from industrial enterprises and suppliers under non-regulated tariff. Since March 2017, the networks located in the non-controlled territories of the Donets`k region have not been managed.

In 2018, the company's enterprises reduced the amount of actual electricity losses to 5.46% (the figure for 2017 is 5.44%). The breakdown looks as follows: DTEK Energougol ENE was 0.61% (in 2017 — 0.58%), DTEK Power Grid was 0.84% (in 2017 — 0.74%), DTEK Dnipro Grids was 4.67% (in 2017 — 4.63%), DTEK Kyiv Grids was 6.75% (in 2017 — 7.01%), DTEK Donetsk Grids was 17.23% (in 2017 — 16.49%). The average for Ukraine was 11.82%.

Electricity distribution in 2018, mln kWh

Enterprise	industry	households	utilities	other non-industrial consumers	transport and construction	agriculture	Total
DTEK Dnipro Grids	16,774.7	3,377.5	1,425.1	1,101.0	184.8	245.7	23,108.7
DTEK Kyiv Grids	1,272.8	3,491.9	2,364.6	1,608.5	677.5	9.2	9,424.6
DTEK Donetsk Grids	544.6	1,471.6	255.8	681.1	—	114.5	3,067.5
DTEK Energougol ENE	136.2	14.4	427.9	6.1	—	—	584.6
DTEK Power Grid	7,477.0	1.5	—	8.9	11.2	0.8	7,499.4

According to the Electricity Market Law, companies must conduct unbundling — separation of a distribution system operator from production and supply of electricity. These changes occur within the framework of the first stage of the energy market reform and are the basis for the liberalization of the retail electricity market.

The DTEK Group carried out systemic changes in its activities. DTEK Power Grid and DTEK Energougol ENE will focus solely on electricity distribution and network operation. Kyivenergo, DTEK Dniprooblenergo and DTEK Donetskoblenergo, according to the requirements of the Law, unbundled their activities. From January 1, 2019, electricity is distributed by DTEK Kyiv Grids, DTEK Dnipro Grids and DTEK Donetsk Grids. Electricity supply services to consumers are provided by Kyiv Energy Services, Dnipro Energy Services and Donetsk Energy Services.

Unbundling of activities ensures equal access to the networks of distribution system operators for all electricity suppliers. In the new market model, distribution system operators are also responsible for provision of reliable power supply, development of infrastructure and operation of electricity networks.

DTEK Renewables

Renewable power generation

677.0 mln kWh of green electricity was produced by the company in 2018. This is 6.1%, or 39.2 mln kWh, higher than in 2017.

The main factors affecting the performance indicators:

- Botievo Wind Farm increased electricity supply by 4.8%, or 30.2 mln kWh. This was facilitated by favorable weather conditions and properly organized operation of the equipment. In 2018, the availability factors of wind power plants and infrastructure of the plant increased to 98.64% and 99.34% (in 2017 — 98.33% and 99.23%, respectively). This is in line with the best world performance of wind farms;
- 12.7 mln kWh were produced by Tryfonivs'ka SPP. The equipment availability factor of the solar plant was 99.89%.

DTEK Oil&Gas

Gas production

In 2018, natural gas production amounted to 1,648.5 mln cubic meters, which exceeded targets by 50 mln cubic meters. Gas condensate production amounted to 51.5 ths tonnes. Compared to last year, gas production decreased by 0.4%, condensate — by 6%.

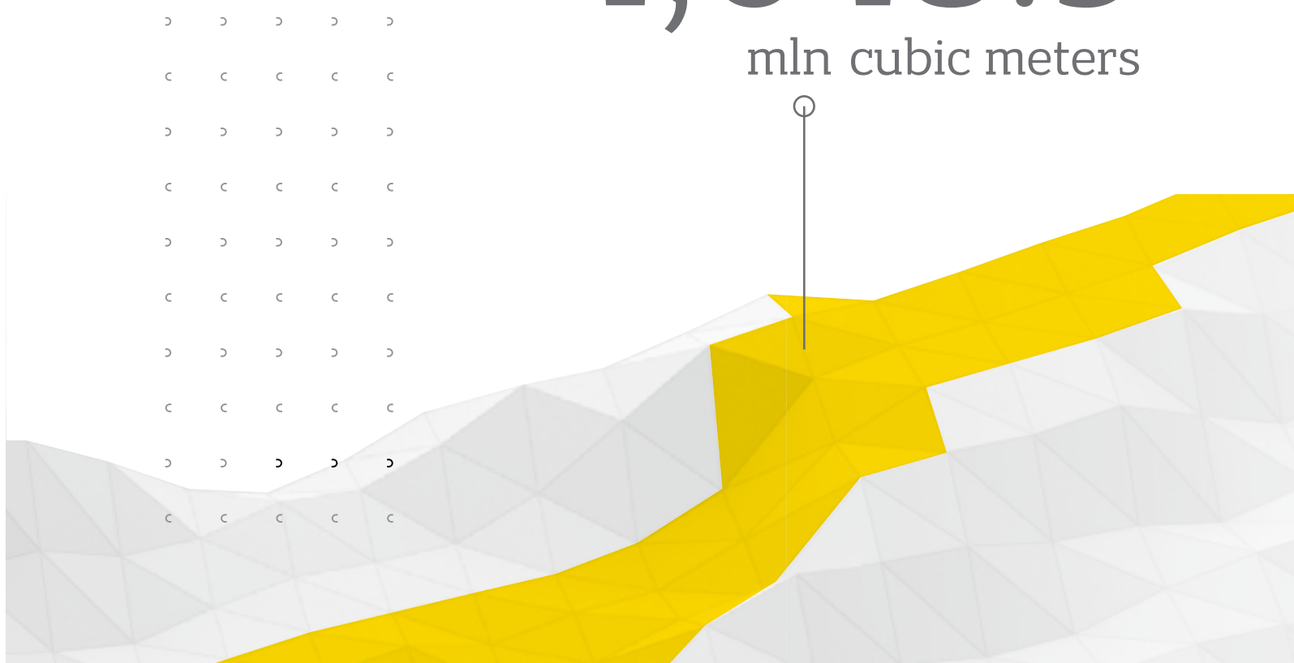
The main factors affecting the performance indicators:

- completion of drilling at well No.25 at the Semyrenkivs'ke field, with a depth of 5,652 meters, with a distance of 700 meters from the vertical, and well No.61, with a depth of 5,605 meters, and 380 meters from the vertical;
- overhaul of high condensate wells No.8, No.23, No.68 and No.70 at the Semyrenkivs'ke field;
- carrying out of measures to intensify flow rates at the existing well stock.

In 2018
natural gas production amounted to

1,648.5

mln cubic meters



Investment projects

UAH 19.9 bln was invested in production development across DTEK Group. The amount of capital investment almost doubled year-on-year, laying the foundations for improved performance statistics across all activity areas in the future. This will contribute to achieving Ukraine's strategic goal of energy independence.

Investments volume, UAH mln (IFRS, ex VAT)*

Business segment	2017	2018	Change, (+/–)	Change, (%)
DTEK Energy	8,416	7,587	–829	–10
Coal production and processing	4,552	4,061	–491	–11
Electricity generation	1,526	1,408	–118	–8
Kyivenergo	1,199	103	–1,096	–91
Others	147	465	+318	+216
DTEK Grids	992	1,932**	+940	+95
DTEK Renewables	370	9,556	+9,186	+2,483
DTEK Oil&Gas	1,143	1,685	+542	+47
DTEK Group	10,388	19,878	+9,490	+91

* Excluding the cost of intangible assets.

** The total amount of investments includes UAH 1,550 mln until the moment when DTEK Grids was separated from DTEK Energy

UAH 19.9 bln

was invested in production development of DTEK Group

DTEK Energy

Coal mining and processing

Ukraine has sufficient reserves of G-grade coal to become energy independent. The company invests in the industrial development of enterprises and the new-generation of equipment for the maximum conversion of thermal generation to domestic coal.

Key projects in 2018

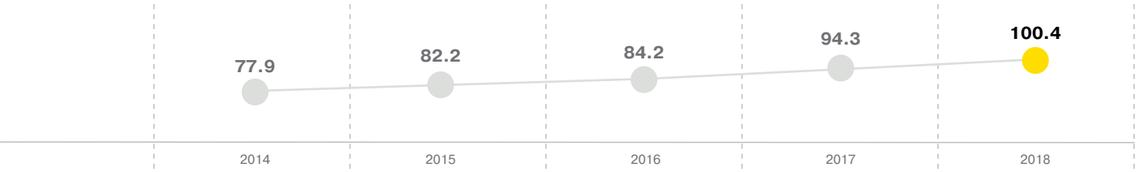
Ensuring stable ventilation of mines

- The Yuvileina mine is building a ventilation well. This long-term project provides for ventilation of the mine workings and transport connections to the work site to ensure access to new reserves and extraction of 19 mln tonnes of coal. In 2018, preparation for the well operation in the "load" mode was in progress — construction, installation work on the garage-charging facility was completed, and the side-tilting facility was constructed. The lift system for staff transportation has been working since 2016, the airing mode since 2013.
- The Dniprovs'ka mine is carrying out replacement of its main ventilation fan to provide enhanced airflow, which is important for maintaining coal production volumes. The project is to be carried out in three stages. During the first stage, the mechanical part of the main fan installation was commissioned, a vestibule-gateway was erected, and the channel door was replaced. In the second and third stages, which are scheduled to begin in 2020, the electrical part of the fan and charge feeders will be replaced.

Modernization of processing facilities

- The first supplies of equipment were made to the DTEK Oktyabrs'ka CEP as part of a project to modernize outdated facilities, which envisages enrichment of 1–13 mm run-of-mine coal in heavy-medium hydrocyclones.
- Two new centrifuges have been installed at the DTEK CCM Pavlohrads'ka CEP, one of the company's most powerful processing plants. This project will have a positive impact on the region's ecology, because the installation of centrifuges will reduce the consumption of chemicals during the enrichment of coal, while reducing the load on the water-slurry system of the enterprise. According to the results of 2018, the use of reagents was reduced from 11.4% to 10.4%, and the throughput load of the plant was increased from 925 to 1,013 tonnes per hour. It is planned to continue the implementation of the project and install two more centrifuges.
- The DTEK Dobropil's'ka CEP and DTEK Oktyabrs'ka CEP are building waste dumps using innovative "green dump" technology. A clay bank-up is carried out for each tier of the dump by building an internal drainage system and a fire-prevention protective layer. These projects reduce the environmental impact by eliminating the formation of combustion sources and the contact of waste coal with the environment, while water will be discharged into the pond and reused in production. In 2018, construction and installation work at DTEK Oktyabrs'ka CEP was completed, which ensures the disposal of waste coal for 10 years. The completion of the DTEK Dobropil's'ka CEP project is expected in 2019.

DTEK Energy's performance in coal production increased by one-third due to the development of production facilities, tonnes/person per month*



*The data are given for mining of D, DG-grade coal.

Upgrading and developing new equipment

- On the request of the company, engineering plants are developing new-generation equipment aimed at increasing production levels of G-grade coal over a shorter time to minimize the use of anthracite by thermal generation. At the same time, coal deposits in Ukraine are characterized by location at great depths — from 500 to 1,000 meters, and thin productive reservoirs of 0.8–1 meters.

2013—2016
Development of fundamentally new equipment for carrying out rectangular airways in thin coal seams, in which equipment for coal extraction is then installed. Several of the company's mines carried out testing for a cutting frontal complex (CFC), in order to adapt it to work in various mining and geological conditions. Performance of the CFC allows an increase in the pace of mining, including through hard rock. The first samples were delivered to the Stashkov mine.

2017—2018
A CLS 450 cleaning combine has been developed and has passed industrial tests. It is intended for mining thin and medium coal seams in difficult mining and geological conditions. The CLS 450 will increase the output at the workface to over 2 ths tonnes of coal per day. The combine's completely conforms to the international standard of labor protection OHSAS 18001: 2007.

The first samples were delivered to Dobropil's'ka and Bilozers`ka mines.

2018—2019
Development of a new type of heavy-medium tunnel boring machine with installation for anchorage. The project aims to increase the rate of development of extraction from 5 to 10 meters per day. Testing of the new equipment, RH-160, is scheduled in 2019 at the Stepna mine.

- To improve safety and efficiency of operations, the company is upgrading its mining equipment. In addition, new equipment has improved performance, which reduces operating costs. In 2018, DTEK's Pavlohradcoal mines were supplied with 12 tunneling and 8 cleaning combines, as well as 35 electric locomotives were modernized. DTEK Dobropolyeugol was supplied with 3 tunneling and 2 clearing combines.

Cooperation with research institutions

Development of coal deposits is a knowledge-intensive process, since in Ukraine the mining and geological conditions are among the most complex in the world. The company, together with research institutions, is developing solutions for the efficient development of deposits. Cooperation is in the following directions:

Polyakov Institute of Geotechnical Mechanics under the National Academy of Sciences of Ukraine
- developing recommendations for the ventilation and the degassing of the mine network
- examining aerogas control projects and fire protection projects at the mines
- developing measures for the opening and degassing of reservoirs
- studying the ability of coal seams to oxidation and spontaneous combustion
- determining the physico-mechanical indicators of rocks and coals

NTU "Dnipro Polytechnic"
- developing recommendations for rock-pressure control
- fixing a working face with a difficult-to-control roof
- rational parameters of mining operations

Pisarenko Institute for Problems of Strength under the National Academy of Sciences of Ukraine
- research and modeling of the condition of surface objects

Ukrainian State Geological Research Institute
- geological examination and estimation of the initial value of coal reserves

SE "UkrNDIvuhlezbahachennya"
- certification of coal for branding
- coal quality analysis

SE "Shulgin State Road Research Institute"
- studying the composition and properties of the rock
- developing recommendations for design and construction of highway embankments using byproduct rock of enterprises

Electricity generation

Reduction of the share of imported energy resources in the country's fuel balance and integration with the European energy system ENTSO-E remain the key tasks of the energy sector. The company actively supports these processes to strengthen the energy security of Ukraine. In 2018, DTEK Energy continued converting its TPPs to run on domestic coal and preparing for work according to ENTSO-E standards.

Key projects in 2018

- DTEK Prydniprovs'ka TPP: power unit No.9 was switched from anthracite to G-grade coal. To re-equip the power unit, more than 200 tonnes of heat and mechanical equipment was installed (gas, air, dust pipelines); three new fans were installed in the gas-air-drying scheme, 16 old burners were replaced with new ones, with low nitrogen oxide emissions.

  Similar work on re-equipment of the power unit No.10 has been completed in 2019. A new electrical filter was built as part of the project. Starting in 2012, when upgrading and reconstructing power units, the company has been reconstructing electrical filters to achieve dust emissions in accordance with Directive 2001/80/EC.

- DTEK Myronivs'ka CHPP has completely transferred from anthracite to using G-grade coal. In the reporting period, the re-equipment of boiler No.9 was completed, similar work on boiler No.10 was completed in 2017.

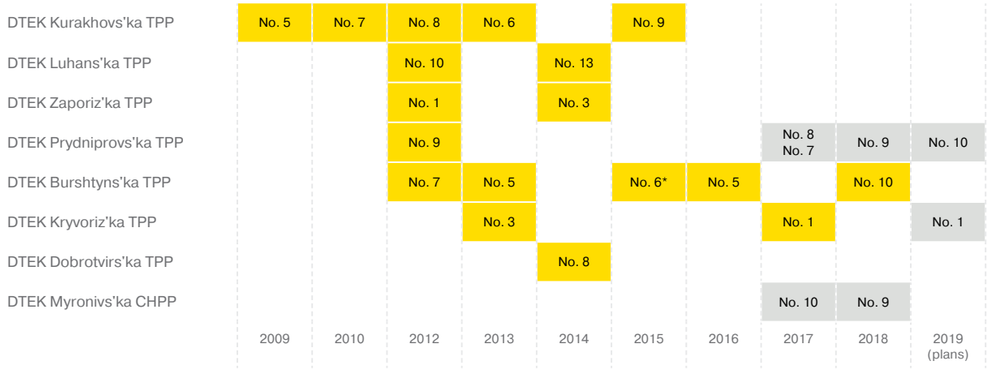
- DTEK Burshtyns'ka TPP has reconstructed power unit No.10. As part of the project, a new boiler was built and the boiler drum, turbine, auxiliary transformer, turbine generator excitation system, dust preparation system and other equipment were replaced. Also, a new automatic control system was installed, which has advanced functions for predicting the operating modes of equipment. The project has significantly improved production capabilities — the installed capacity of the power unit has been increased by 15 MW to 210 MW and the service life of the equipment has been extended by 15 years.

- DTEK Ladyzhyns'ka TPP built a solar power plant at a dam with installed capacity of 0.5 MW. Ladyzhyns'ka SPP has supplied electricity to the United Energy Systems of Ukraine since July 1, and produced 265.5 ths kWh during the past year.

- DTEK Zaporiz'ka TPP completed a pilot project to develop a standard plan for monitoring, reporting and verifying greenhouse gas emissions by thermal generation enterprises. This is a preparatory stage for the implementation of a national scheme for trading emissions of greenhouse gases. The project was implemented jointly with the World Bank under the Partnership For Market Readiness program, which was initiated to combat climate change.

- 11 power units of DTEK Energy TPPs completed the reconstruction of automatic frequency and power control systems, which will ensure the maintenance of the current frequency in accordance with ENTSO-E standards.

4 GW of installed capacities were restored by DTEK Energy, due to the modernization of its TPPs and CHPP



* Overhaul with an increase in installed capacity.

DTEK Renewables

Renewable power generation

According to the Energy Strategy of Ukraine, annual generation by wind and solar power plants should reach 25 bln kWh by 2035. To help achieve this goal, the company plans to increase its portfolio of completed projects to 1,000 MW by 2020.

Key projects in 2018

- Prymors`k wind park (installed capacity of 200 MW): a contract was signed with GE Renewable Energy on acquisition, installation and further maintenance of 52 wind turbines. As at other plants of the company, new-generation wind turbines will be installed, which adapt to the direction and strength of the wind, with a capacity of 3.8 MW each. In addition, GE will supply high-voltage equipment for a central distribution point of 150 kV, two 150/35/10 kV substations and one 150/35/10 kV distribution substation. This will be the first case in Ukraine when digital technologies for controlling high-voltage equipment and substations will be introduced.

  Construction of the wind farm consists of two stages. In 2018, during the first stage, the infrastructure construction and installation work was completed, all sets of towers and blades were delivered, commissioning works were carried out at the central distribution and transformer substations. The first seven turbines have been commissioned in March 2019.

  Driveways and pile fields were prepared for the construction of foundations for wind turbines planned for the second stage of the project. The completion of the project is expected in 2019.

- Orlivs`ka wind park (installed capacity of 100 MW): a contract for the construction of a wind park was concluded with the Danish company Vestas, which will supply 26 wind turbines with a capacity of 3.8 MW each. Vestas equipment has proved effective in Ukraine both in terms of wind-dynamic characteristics and electrical power output to the grid. In 2018, preparatory work was carried out at the construction site, and in second quarter 2019 will start delivery of the main equipment.

- Nikopol solar plant (installed inverter capacity of 200 MW): the project partner is China Machinery Engineering Corporation (CMEC), with whom a contract for design and construction of the plant has been concluded. Lands unsuitable for agriculture in the territory of an abandoned quarry are reserved for construction. Seraphim Solar and Trina Solar were selected as suppliers of solar panels, KSTAR will supply inverter substations, Xian Electric Engineering will supply transformers (all of them are Chinese companies). In 2018, solar panels and inverters were installed as part of the project, and infrastructure construction was completed.

  The plant generates green electricity as of 1 March 2019. Nikopol SPP is among the top 3 largest solar power plants in Europe (at the time of construction).

- Development of new projects: 1,000 MW of installed capacity in renewable energy should be achieved by 2020 in accordance with the development strategy of the company. A new project will be the construction of Pokrovs`k solar plant, the start of green power generation are planned in 2019 (installed inverter capacity of 240 MW).

- In addition, the company is developing projects which implementation is planned for 2020. Tylihul's'ka WPP and Tylihul's'ka WPP-2 with total installed capacity of 565 MW are projects in the wind energy sector. The new plants will produce around 2 bln kWh annually. This will allow CO_2 emissions to be cut by almost 3 mln tonnes annually. Among the solar projects, Vasyl'kivs'ka and Pavlohrads'ka SPPs (installed inverter capacity of 115 MW and 105 MW respectively) are under design.

1 GW of installed capacity of DTEK Renewables will reduce 2,600 ths tonnes of CO_2 emissions' equivalent per year

Data as of May 30, 2019

Constructed	Under construction	In the design phase
Botievo WPP 200 MW	Prymors'k WPP-2 100 MW	Tylihul's'ka WPP 565 MW
Tryfonivs'ka SPP 10 MW	Orlivs'ka WPP 100 MW	Vasyl'kivs'ka SPP 115 MW
Nikopol SPP 200 MW	Pokrovs'k SPP 240 MW	Pavlohrads'ka SPP 105 MW
Prymors'k WPP 100 MW		

Production of electricity from fossil fuels involves the downside of atmospheric emissions of greenhouse gases. To estimate these emissions, the CO_2 equivalent is used, which allows all greenhouse emissions to be brought to a common denominator. To calculate the contribution of renewable energy to the reduction of emissions, we use conversion factors for specific CO_2 emissions per 1 kWh from the average calculation for thermal power plants. In 2010, the National Environmental Investment Agency of Ukraine approved the value of this indicator in the amount of 1,063 kg of CO_2 per 1 kWh.

DTEK Oil&Gas

Gas production

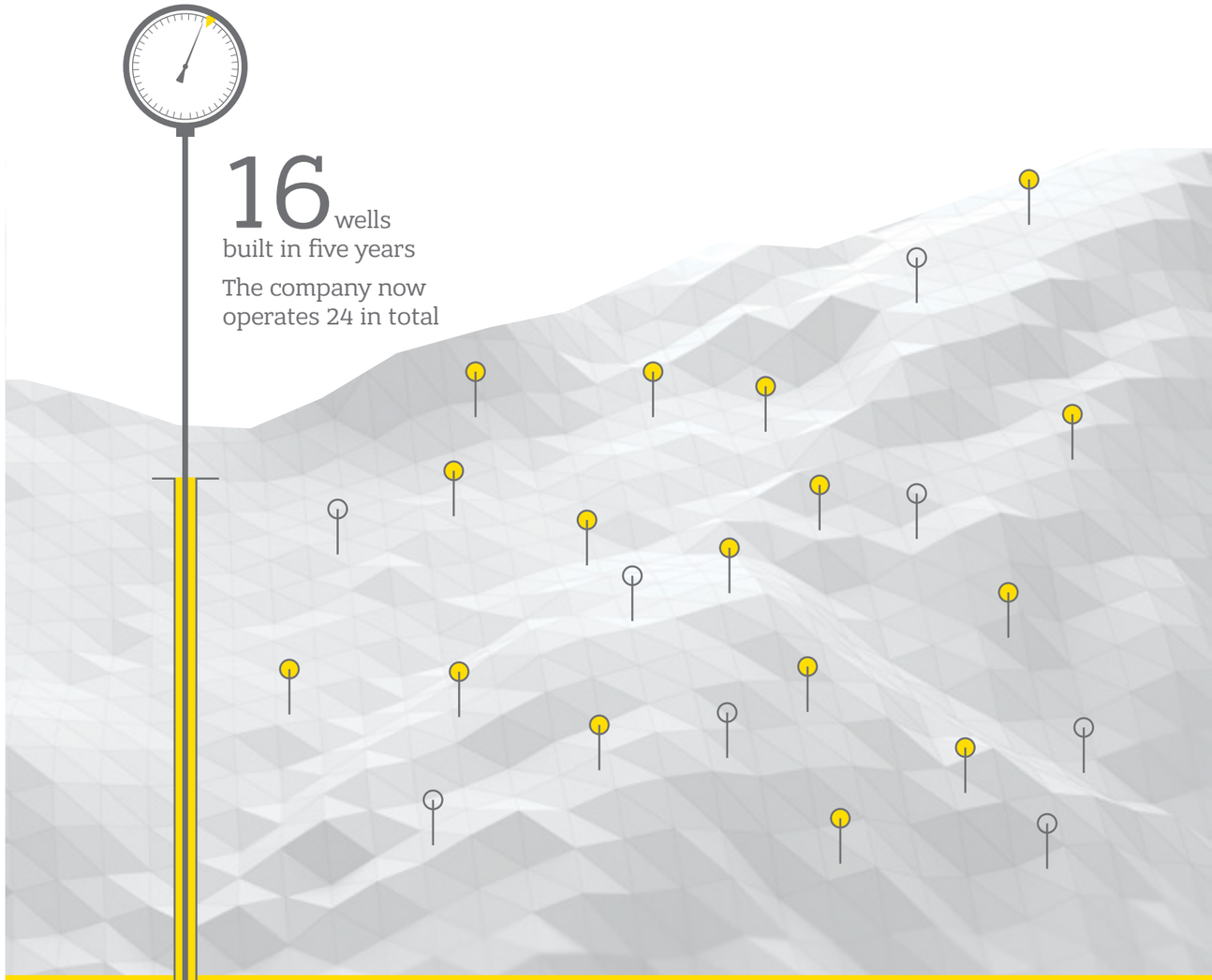
The company is the largest private gas producer in Ukraine. As a leader we feel responsibility to introduce new solutions and technologies, and share the accumulated experience in order to contribute to the development of the industry. Technological progress expedites achieving the goals of the Energy Strategy of Ukraine — to fully meet the country's need for natural gas from its own production.

Key projects in 2018

- Wells No.25 and 61 were drilled at the Semyrenkivs'ke field. Production well No.25 was designed and drilled in compliance with the requirements and standards of the American Petroleum Institute (API) and the International Association of Drilling Contractors (IADC). Exploration well No.61 was drilled to study the marginal part of the field.

  Since 2017, the company has been using a pit-free drilling method using the technology of sludge decantation and recycling, which meets international environmental standards.
- Overhauls of wells No.8, 23, 68 and 70 — with a high content of gas condensate — at the Semyrenkivs'ke field were completed. When repairing some wells, the company used the technology of snubbing, which allows to carry out work without killing of well, continuing mining operations.
- Drilling of production well No.43 was started at the Semyrenkivs'ke field.
- A fully automated propane-refrigeration unit at the Semyrenkivs'ke field was commissioned to stabilize natural gas production. The project has become unique for the industry in terms of the equipment and technological solutions used.
- Compressors have been put into operation at gas utilization plants, which will improve the environmental friendliness of the enterprise by returning to the condensate stabilization gas treatment system.
- An automated dispatch control system (ADCS), developed by the company, was patented. The ADCS collects data from wells, from hydrocarbon metering stations, gas treatment installations, gas pollution systems, early detection and warning of emergencies. The system automatically analyzes technological parameters and sends information to users' computers and/or mobile devices.

DTEK Oil&Gas
is among the best expertise in the industry



DTEK Grids

Electricity distribution and grid operation

> The company intends to develop the concept of a Smart Grid, which will require a system upgrade of the electricity networks for the integration of modern technologies. This will allow cities to meet demand for automated management of their power grids to increase the comfort level for residents.

DTEK Grids began the implementation of automated power management system ADMS (SCADA), which accumulates and processes data from all parts of the networks. Implementation of this level of software is an important step in building a Smart Grid. For example, as soon as the system receives a signal of power outage somewhere, the ADMS identifies the incident site, analyzes what caused the failure, calculates options for optimal line switching and minimizes inconvenience for customers. Thus, the company's specialists will receive a tool for swift resolution of abnormal situations, and call-center employees will immediately inform customers of the cause of the failure, as well as the timescale for fixing the problem. Such a system is expected to be fully operational in Kyiv in three years, and in the Dnipropetrovs'k region in five years.

One more criteria by which evaluation of the company's effectiveness can be measured is connection to the electric grid. Simple and understandable conditions of this process are an important indicator in assessing the country's investment attractiveness in the Doing Business rating. The rules on data disclosure contained in the Law "On the Electricity Market" and their implementation by The Distribution System Code provide the basis for building such conditions. According to the requirements, as of 1 January 2019, distribution system operators have been obliged to make their geo-information data publicly available.

DTEK Grids is one of the first in Ukraine to fulfill this requirement. In 2018, DTEK Kyiv Grids, DTEK Dnipro Grids, DTEK Donetsk Grids and DTEK Power Grid opened their maps of electricity networks online. Using the geographic information system, each user can obtain information about the location, voltage level; find the addresses and name of transformer substations, and distribution points. Development of the maps will be continued — the next steps will be an introduction of data, indicated available capacity, as well as creation of an online resource for customers to connect to networks.

In addition, departments for technological connections created in 2018 at DTEK Dnipro Grids and DTEK Donetsk Grids (the same department has been operating in Kyiv since 2017) will contribute to the increase in access availability to electricity grids. The task of the department's specialist staff is to prepare technical documentation, conduct all contractual and accompanying work with the client, as well as monitor the progress of work at each stage. Thus, customers should just submit an application through the Customer Service Centres or the company's website, which is immediately sent to this department's specialist representative. This approach helps to minimize the time for connecting and increase the number of completed applications. In 2018, DTEK Dnipro Grids almost doubled the number of established connections to more than 6,000. Perhaps, this is the secret of leadership of Dnipropetrovs'k region in the number of home solar power plants. Practically 6 mln kWh were sold in May-September 2018 by the regional prosumers — households that independently generate electricity for their own needs and sell the surplus to the network.

DTEK Grids made more than 11 ths connections in 2018

Enterprise	Standard connection						Non-standard connection
	I degree (up to 16 kW inclusive), pcs.		II degree (from 16 to 50 kW inclusive), pcs.		III degree (from 50 to 160 kW inclusive), pcs.		
	city	village	city	village	city	village	
DTEK Donetsk Grids	830	563	355	120	23	2	26
DTEK Kyiv Grids	166	—	555	—	32	—	312
DTEK Dnipro Grids	3,540	1,314	2,201	955	52	8	76
DTEK Power Grid	—	—	—	—	—	—	1
Total	**4,536**	**1,877**	**3,111**	**1,075**	**107**	**10**	**415**

DTEK Grids provided a wide range of communication channels to household consumers

Enterprise	Customer reach	Number of customer service centers	Number of contact centers	User account	PayHub	Facebook
DTEK Dnipro Grids	1,469 999	57	1	✓	✓	✓
DTEK Donetsk Grids	873 711	22	1	✓	✓	✓
DTEK Kyiv Grids	1,155 000	7	1	✓	✓	✓

Contact centers

- 24/7 support
- Free call
- Basic issues of power supply (transfer of meter readings, consultation on the account and current tariffs)
- Consultation on individual issues both by phone and on Facebook
- Contact in event of an accident
- Schedule of planned works

Customer service centers

- Principle of "one-stop shop"
- All electricity services, including connection to grids

Personal account and PayHub

- International security standards of payment systems
- No fee
- Online services for personal and mobile devices, based on Android and iOS
- All information and transactions on personal accounts (reception of meter readings, calculation of the cost of consumed electricity, payment, receipt of email)

Websites for customers

- Information about the company's work
- Online services for signing a contract with the company and joining the power grids
- Detailed information on current tariffs for households and legal entities
- Informing about the schedule of planned works

Key projects in 2018

Within the reporting period, DTEK Grids' enterprises built 147.1 km of high-voltage lines, reconstructed 38.1 km of power lines, and repaired 2,985.4 km of lines, of which 821.4 km were replacement cables. In addition, 10 points were built, 27 substations and distribution points were modernized, 4,932 facilities were repaired. All these projects are designed to improve the quality of life for end-users through uninterrupted power supply to consumers. Also, modernization of power grids provides for the elimination of power shortages, which arise during the development of cities, and to reduce the frequency of outages in electricity transmission.

DTEK Dnipro Grids:

- construction of the 150/10/6 kV Naddnipryans'ka substation, an important infrastructure facility, was completed in Dnipro. From 2019, this substation will provide electricity to new metro stations and reliable power supply to two districts of the city;
- for the first time in Dnipropetrovs'k region, aerial facilities (helicopters and drones) were used to survey power lines. Due to the data obtained, specialists will be able to carry out preventative repairs to suspect areas;
- in Dnipro and Pavlohrad, two updated customer service centers have been opened, which provide the entire package of basic services.

DTEK Kyiv Grids:

- technical update of the 35/10 kV Garnizonna substation has been completed, which supplies Kyiv airport. A modern automated control system has been installed at the substation. This allows for the online collection, storage and transmission of information on both the state of the equipment and the parameters of electrical connections. In addition, the substation's relay protection, electric and control systems were converted to modern microprocessor devices which allow for free programming;
- reconstruction of the 110/10 kV Center substation, which is responsible for the quality and stability of the power supply of the central districts of the capital, has been completed. The project has created a reserve capacity of 40 MVA;
- for the first time in Kyiv, unmanned aerial vehicles (drones) equipped with scanners, video cameras and thermal imagers were used to check the condition of power lines;
- reconstruction of the Poznyaky substation, aimed at improving the reliability of the power supply along the left-bank part of the city, continues. An 110 kV integrated distribution gas-insulated installation has already been commissioned; two cable lines have been built and are power-connected;
- construction of a 110 kV high-voltage cable transmission line was started as part of a long-term program for the modernization of the capital's power grids.

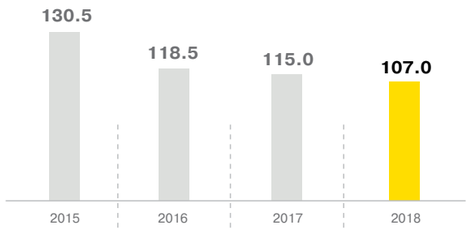
DTEK Donetsk Grids:

- the energy sector provides reliable power supply to settlements in the front-line zone. Since the outbreak of hostilities, energy supply has been restored in 1,037 settlements;
- the first stage of reconstruction of the 35 kV Selydove substation was completed, which will significantly increase the reliability of the power supply to the city of Selydove and the surrounding settlements;
- in Pokrovs`k, an updated one-stop shop customer service center was opened. For the residents of Pokrovs`k, Myrnohrad and Rodyns`ke, the center provides all services: from verification of meter readings to carrying out contracts;
- the project on the organization of a new Central Dispatch Center is on-going; it will improve the management of the region's energy infrastructure.

DTEK Power Grid:

- a comprehensive reconstruction of the 110 kV Vuhledar substation has begun to ensure a stable and reliable power supply to the city of Vuhledar.

CAIDI, average power cut index of DTEK Grids' consumers, min.



CAIDI is the ratio of the sum of all customer power cuts durations to the total number of customer power cuts. The index is measured in minutes. The index does not include force majeure situations and outages in line with emergency shutdown schedules. This data is given for all operators of the distribution system of DTEK Grids.

Characteristics of distribution system operators of DTEK Grids as of January 1, 2019

Enterprise	Total length of power lines, km	Total number of substations, pcs.	Total power of substations, MVA	Number of clients
DTEK Dnipro Grids	50,258.6	12,663	11,521.2	1,534,388
DTEK Donetsk Grids	32,691.8	6,921	5,105.9	886,808
DTEK Kyiv Grids	11,772.0	3,832	7,278.3	1,194,400
DTEK Power Grid	1,888.2	38	887.8	552
DTEK Energougol ENE	105.1	24	47.2	7,069
Total	**96,715.7**	**23,478**	**24,840.4**	**3,623,217**

New areas

Innovation and efficient use of resources

Further development of the Ukrainian energy sector is impossible without the integrated introduction of innovation. This is the only way to become part of the modern economy and global trends. DTEK Group integrates new approaches into the business ecosystem in order to find solutions and technologies for the transformation of industrial enterprises and the development of customer service.

Innovation DTEK: integration of innovative solutions

To select and implement advanced technologies and solutions, DTEK has created the Innovation management function, in 2018. The function is designed to focus on global trends and accelerate business transformation in order for DTEK Group enterprises to become part of modern energy and successfully work in the new electricity market.

Three key objectives of Innovation DTEK

1 Creation of an open innovation culture through cooperation with both external and internal environment. Building a unified center for managing ideas of the DTEK Group.

2 Creation of efficient technological communities to attract external expertise in advanced areas, as well as ensuring rapid progression of solutions from concept to end product, adapted to the needs of enterprises.

3 Scouting of start-up teams on local and international sites according to the business needs for innovation and creating a base of priority ideas for testing.

In 2018, the Energy Accelerator project was launched with the support of the Radar Tech technology cluster, which is aimed at finding innovative solutions for business needs. 182 start-ups applied for participation in the project, of which nine reached the final round and went through an accelerator program with DTEK mentors.

Three projects were selected for commercial implementation:

- **eVRscan.** 3D laser scanning systems, which, using a scanning lidar and drone, allow for determining the amount of coal reserves currently in warehouses and obtaining digitized data. The technology makes it possible to repeatedly increase measurement accuracy compared to traditional methods, which will improve the quality of fuel supply planning. The startup was the first of the accelerator winners to go through to commercial launch — DTEK Energy's electricity generation directorate took measurements at six stations and plans to use eVRscan in the future.
- **QRSmarty.** The startup's solution enables increased control over accounting and movement of inventory items. Laser markings are applied to consumables, goods, and materials, and software that allows you to see data on storage and movement can be integrated into the general enterprise accounting system. A commercial launch of the solution is expected in enterprises in the first quarter of 2019.
- **Railtex.** A platform that helps to find the most advantageous offer for both car owners and shippers. The platform developers, the Railtex team, plan to create a Ukrainian wagon exchange. Thus, the product will facilitate liberalization of this market, which can change the working conditions of the whole sector of the economy — industrial freights. The Directorate of Logistics of DTEK Energy assists in finalizing the product and bringing it to the market, attracting major industrial carriers and transport fleet holders.

STRUM: a network of fast-charging stations

Ukraine has been in the top 10 countries in the Global EV Revolution for two years in a row, according to InsideEV's. The high increase in the number of electric vehicles — 200% in 2017 and 93% in 2018 — is maintained at the state level by abolishing excise and VAT on the importation of electric vehicles. At the same time, the charging infrastructure for electric vehicles is still in its infancy: of 1,500 charging stations, only about 30 are fast chargers that can provide high-speed charging with power supply up to 50 kW.

In many countries, the driving forces behind charging infrastructure development are energy companies, for example, ENGIE, Enel, E.ON, EDF, Fortum, Vattenfall and others. Following this global trend and the demand in the Ukrainian market, the company launched the STRUM network of high-speed chargers in June. At the first stage, a convenient high-speed charging network was created in Kyiv. 10 pilot stations are located at a distance of 6–7 km from each other, which provides convenient logistics for drivers of electric cars. At the second stage of STRUM development, it is planned to cover the main long-distance routes of Ukraine: Kyiv — Odesa, Kyiv — Lviv and Kyiv — Dnipro. This will make travel by electric cars in terms of speed and comfort comparable to a trip by conventional cars.

STRUM provided charge for customer vehicles at 211 MWh in 2018. This is equivalent to using 94 ths liters of petroleum products, which could lead to 217 tonnes of CO_2 equivalent emissions. In future, the environmental impact will be enhanced by the organic growth of using electricity as fuel and the development of the network.

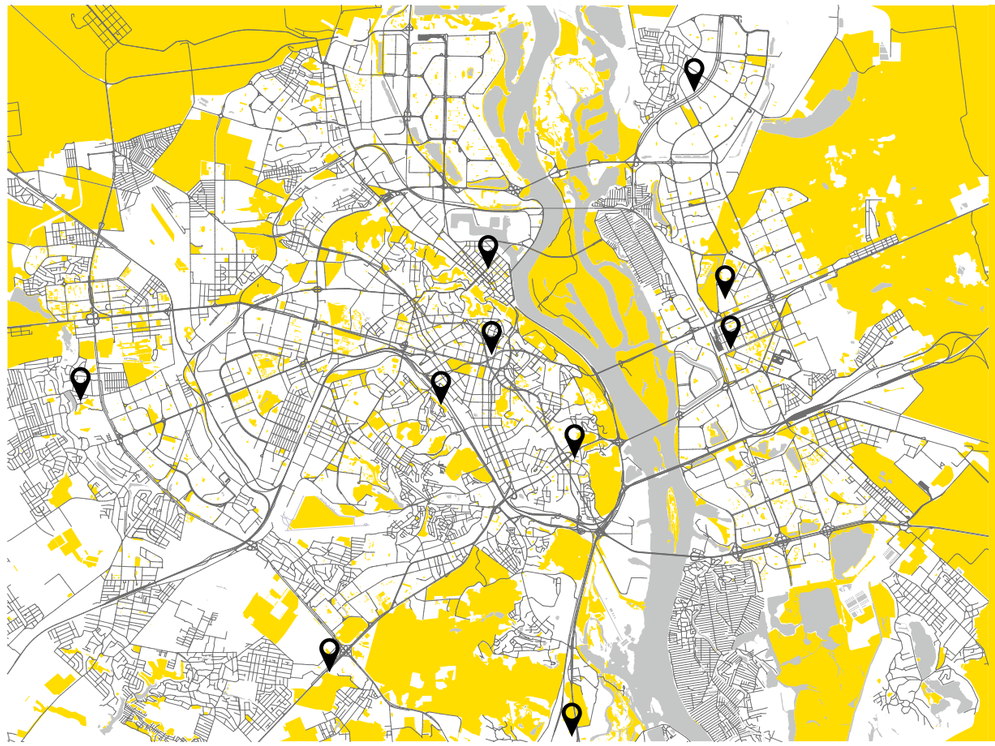


ABB equipment is installed in the STRUM fast charging network. Depending on the technical characteristics of the battery electric vehicle charging takes 15-50 minutes. The STRUM Charging mobile application is available for users, who can download it on PlayMarket and App Store.

Through the application, you can find a station and build a route, start and stop the process of charging an electric vehicle, and replenish the account. A similar application is used in 15 European countries for 10,000 electrical charges.

DTEK ESCO: energy eaving and energy efficiency

DTEK ESCO specializes in comprehensive energy efficiency and energy saving services. It is important to tell consumers what effect can be achieved, and teach them to select tools. This will help create a culture of energy consumption Ukraine.

At the end of 2018, the total amount of energy service contracts of DTEK ESCO exceeded UAH 712 mln. The company's portfolio includes 37 completed projects, for which annual savings are estimated at 40.2 mln kWh and 1.6 mln cubic meters of natural gas. This is equivalent to reducing CO_2 emissions by 38.4 ths tonnes.

DTEK ESCO specialists have implemented 14 projects for industrial enterprises, another five are in the final stage. The completed projects allow for increasing the reliability of the equipment and the level of industrial safety, as well as improving the working conditions of employees.

For example, at the Central Mining and Processing Plant, due to the installation and re-equipment of pumping units, pump energy savings of up to 50% were achieved, which will amount to about 1.8 mln kWh per year — while increasing the reliability of the ore enrichment process. Ilyich Iron and Steel Works installed three sets of automatics and modernized 24 gas burners in the sintering plant's firing machines, which reduced natural gas consumption by 35%. And the metal sheet-rolling workshop of the Ilyich Iron and Steel Works the modernized lighting system — 2,200 LED luminaires — will reduce electricity consumption for lighting by 60%, an estimated 7 mln kWh per year, and increase industrial safety.

DTEK Energy continues to implement projects to reduce energy consumption by thermal power plants. In 2018, lighting systems were upgraded in the turbine department of DTEK Ladyzhyns'ka TPP and DTEK Zaporiz'ka TPP, in the machine room of DTEK Prydniprovs'ka TPP, open switchgear of DTEK Kryvoriz'ka TPP (the expected total savings is 2.7 mln kWh per year). Switching to LED lamps ensures an optimally comfortable level of illumination of 200 lux for power engineers, which corresponds to recommended requirements for an industrial facility. In coal preparation, lighting systems at conveyor galleries of DTEK Dobropil's'ka CEP and the main building of DTEK Pavlohrads'ka CEP have been modernized.

The projects, in addition to saving energy, are aimed at improving working conditions and industrial safety.

In the public sector, the company completed nine energy-efficient projects for kindergartens and schools in Kyiv, Skvyra (Kyiv region), Pokrovs`k and Bakhmut (Donets`k region) in 2018. DTEK ESCO was selected on the results of tenders at the ProZorro platform, which is part of the Unified e-public procurement system in Ukraine.

As part of projects for the modernization of heating systems, the engineering utilities were insulated, the heating system was balanced, automatic weather control systems for coolant supply, and temperature sensors were installed. Energy saving windows were also installed at some sites. A comfortable temperature in the premises was achieved in all projects for children, and a reduction in the consumption of thermal energy from 20 to 45% was ensured for institutions.

> Since 2016, Ukraine has introduced an energy service mechanism in the public sector. The customer makes payment solely by saving energy, guaranteed and achieved as a result of the introduction of energy-efficient measures. The ESCO investor, upon completion of the contract, transfers to the customer all the equipment and all further savings.

DTEK was the first among Ukrainian companies to develop a set of energy-efficient products under the brand Rozumniy WATT (Smart WATT) for retail consumers. The sets include dual-zone electricity metering devices, LED-lamps, sockets with timers, instructions with tips on saving electricity and heat.

In 2018, the company opened up new opportunities for customers by offering to make a set independently, and expanded the choice of products for each position. In addition, an energy efficiency calculator is available at https://dtek-esco.com/calc, which is designed to help customers calculate current power consumption and show opportunities for rational consumption. This calculation makes it possible to determine the economic feasibility of acquiring a set, since it calculates how much the power consumption will change in a month, one year, five years, and 10 years.

At the end of the year, 18 ths sets of Rozumniy WATT energy-efficient household goods were sold (2,379 sold in 2017).