
DTEK Energy in action
DTEK: BUILDING BACK GREENER AMID WAR

DTEK POWER PLANTS SUFFERED THE MOST DAMAGE

12,336 attacks were directed at all DTEK enterprises

14,570 pieces of DTEK equipment were damaged

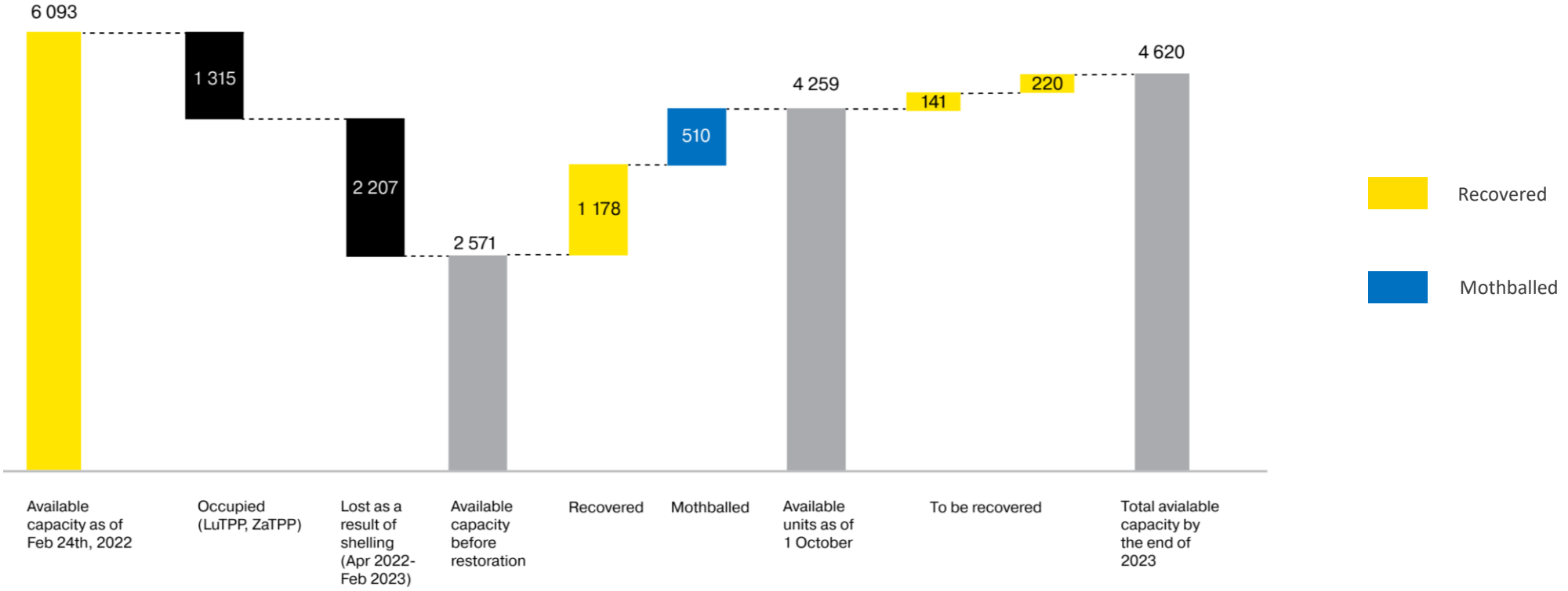
All DTEK power plants have been actively targeted by russia

4 steam turbines were damaged or destroyed

RESTORATION OF DTEK GENERATING FACILITIES IS IN LINE WITH GOVERNMENT APPROVED SCHEDULE

- Since February 24th, 2022, 12 power units or 1,315 MW of capacity appeared on the occupied territories.
- As a result of strikes and attacks of the TPPs, 13 power units or 2,207 MW of actual capacity were disabled.
- DTEK has **restored 8 TPP units** at its own expense and **brought back into operation 2 mothballed power units**. **2 more TPP units will be restored by the end of 2023**. A full-fledged repair campaign was also carried out (repair of 27 power units). In total, UAH 3.9 bln (approximately EUR 101 mln) will be spent on repairs and restoration by year-end.
- Thermal power generation is critically needed for **balancing of the energy system** (**operation of nuclear power plants and renewables**).

Restoration in 2023, MW



REFORMS ARE CRUCIAL TO INCREASE INVESTMENTS AND SECURITY OF ENERGY SUPPLY

According to the recent report of the European Commission on Ukraine's accession perspectives, energy sector reforms should be continued amid war, despite the martial law.

ACHIEVEMENTS IN 2023:

- UKRAINE ENERGY MARKET OBSERVATORY
- ADOPTION OF REMIT
- PRICE LIBERALISATION
- RENEWABLES LEGISLATION

FURTHER REQUIRED STEPS:

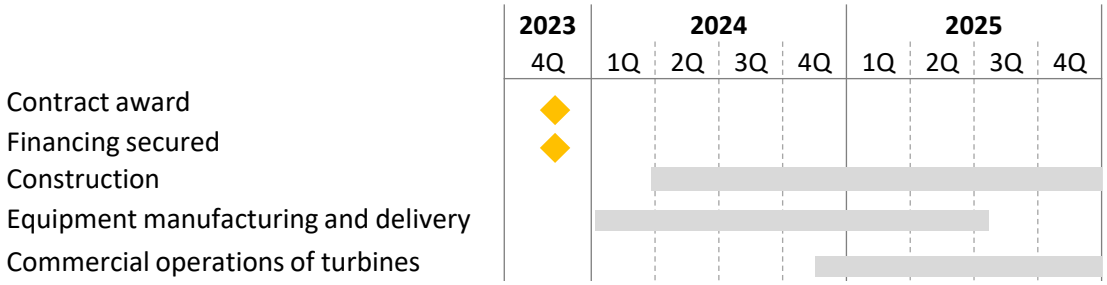
- ELECTRICITY MARKET LIBERALIZATION:
  - THE REMOVAL OF PRICE CAPS – NECESSARY TO SECURE ELECTRICITY IMPORT DURING WINTER PEAKS
  - ELIMINATION OF PSO
- IV ENERGY PACKAGE AND MARKET COUPLING. ROADMAP. EDUCATION PROGRAM FOR MARKET PLAYERS

TYLIGULSKA WPP- LARGEST READY-TO-BUILD PROJECT IN UKRAINE AND ONE OF THE LARGEST IN EUROPE

Project status and development history

Land secured	✓	In 2021, DTEK RES, together with the Danish company Vestas, a leading global wind turbine manufacturer, began the implementation of the Tyligulska WPP project with a design capacity of 500 MW in the Mykolaiv region
Grid connection secured	✓	
Grid connection built	✓	Two wind monitoring campaigns were carried out during the development of the project (average annual wind speed of 7.5 - 7.6 m/s)
Project design	✓	Before the full-scale invasion 19 turbines (114 MW) were delivered to the construction site. After the outbreak of hostilities, the implementation of the project at full scale had to be suspended. Nevertheless, even under martial law, DTEK RES has successfully installed 19 wind turbines
WTG selection	✓	
Wind measurement	✓	DTEK can resume the project promptly and complete the construction of the remaining 384 MW. All preparatory works have been completed, a substation and on-site lines are in place, part of the foundations and infrastructure have been built
Environmental permits	✓	
Construction permits	✓	Data collection, processing, and preparation of interim and final reports of the second stage were carried out by Deutsche WindGuard Consulting GmbH

Project timeline and key milestones



* In 2021-2023 DTEK has constructed stage 1 of the Tyligulska WPP (114 MW, invested €192 mln) and intends to launch the construction of stage 2 (384 MW, expected investments – €402 mln)

Project highlights

Ready-to-build capacity
500 MW (384 MW*)

Annual generation
1.7 TWh

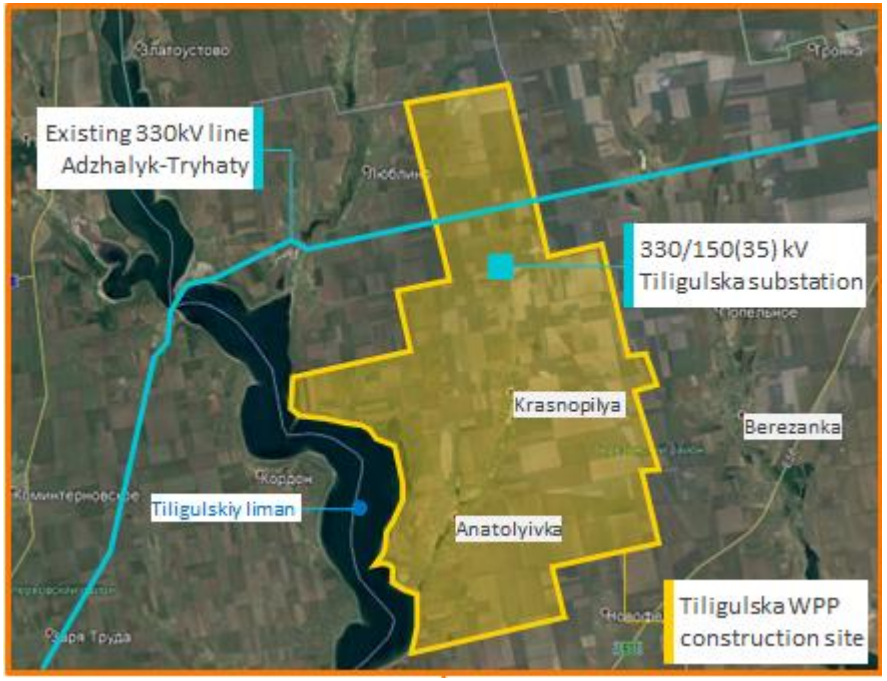
Total area of land plots
200 ha

Estimated capex
€594 mln (€402 mln*)

In-site cable length
630 km

Average annual EBITDA
€100 mln

Equipment supplier
Vestas



DTEK Grids Modernization (1/2)

1 PROJECT SCOPE

Rebuilding and modernizing existing power distribution network into a smart grid in Kyiv city, Kyiv, Dnipro and Odesa regions

2 PROGRESS TO-DATE

Detailed technological grid development concept and plan created to meet the future challenges in the energy sector

3 EXPERTISE EMPLOYED

Extensive cooperation with E.DSO and state DSOs[1] on technical requirements and development of virtual concept

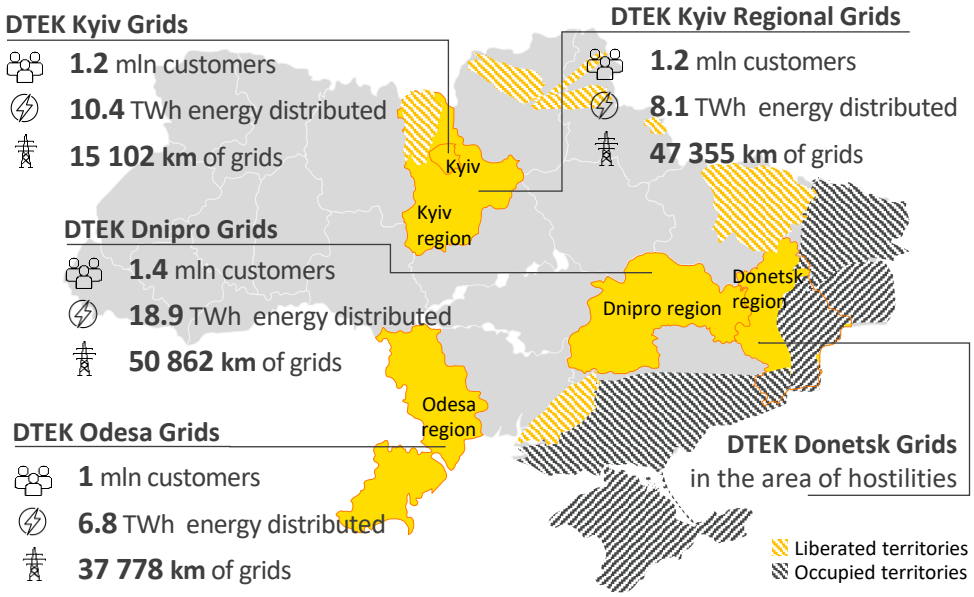
4 TIMEFRAME

10-year investment plan to transform the regional grids, starting with a pilot project in the city of Irpin

5 STANDARDS

Technological standards for equipment and grid construction principles were reviewed to synchronized with the EU standards

DTEK Grids Overview



Grid challenges

- Reliability
- Flexibility
- Efficiency
- Enabling Energy Transition
- Sustainability

10-year modernization plan

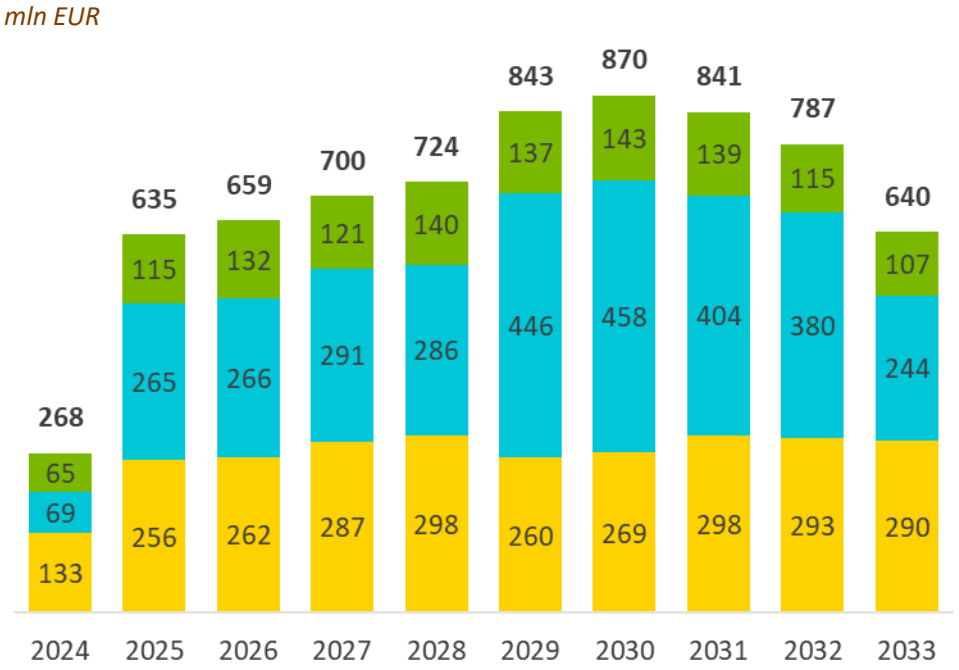
	CURRENT[2]		GOAL
SAIDI, min (Reliability)	714 min	7.8x	92 min
Total capacity	7 303 MW	1.6%	11 812 MW
Losses	8.1%	1.7x	4.8%
Smart meters installed	21%	+79%	100%
Customer Satisfaction Index	82.2%	+2.8%	85%

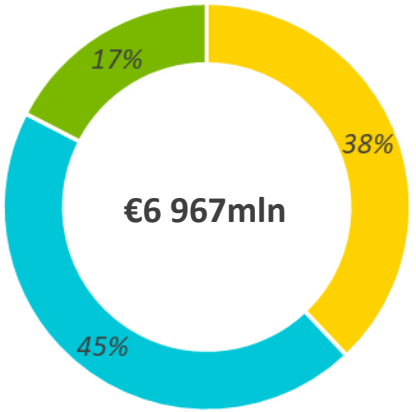
Note: 1. Distribution System Operator

2. "Current" state of the indicators is taken at the level of 2021, which excludes the influence of force majeure - a full-scale armed aggression of russian federation against Ukraine

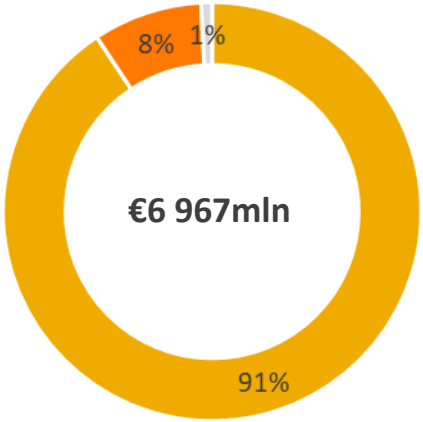
DTEK Grids Modernization (2/2)

10-year investment plan

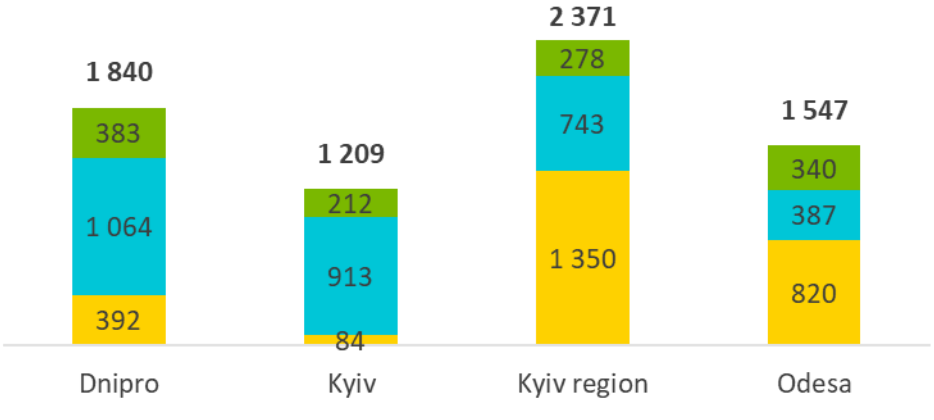




- **Reliability** - €2 645 mln
- **Flexibility** - €3 108 mln
- **Efficiency** - €1 214 mln



- **Equipment** - €6 319 mln
- **IT/OT** - €589 mln
- **Communication** - €59 mln



Complete transformation of DTEK Grids would require a **~€7 bln investment** with **€145 mln** investment for Irpin pilot project

917 110-150 kV substations	**579** Power transformers HV/MV	**4 234 765** Smart meters	**5 796** Automation primary/distribution/ secondary substations
2 556 Reclosers	**8 976** Power transformers MV/LV	**36 052 km** Overhead lines 0.4-20 kV	**13 957 km** Underground lines 0.4-20 kV

Note: calculations were made in UAH with recalculation for EUR at the NBU exchange rate as of May 12, 2023 – 39.97 UAH/EUR adjusted for CPI Europe (by DTEK Consensus forecast)

DTEK RENEWABLES - BATTERY STORAGE

WHAT

A stand-alone 20 MW / 40 MWh Li-Ion battery energy storage system will be deployed to support the grid by providing grid frequency regulations and power reserves

WHERE

Will be connected to the existing 10.5 kV point of interconnection. All permits are received, site civil works are completed, TSO connection has been approved, grid impact study is done. Project is at RTB (ready-to-build) stage

WHY

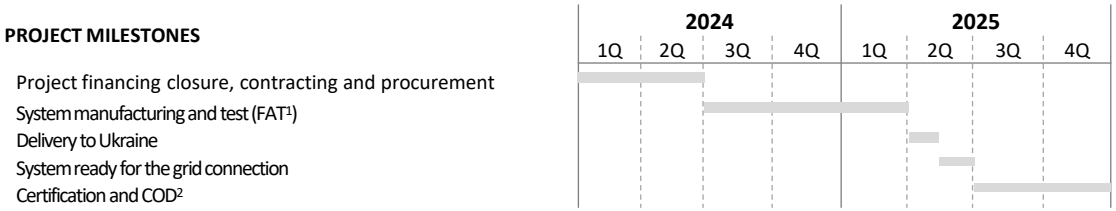
Ukrainian grid operator uses frequency and power regulations to maintain electrical stability in real-time by responding to deviations in the frequency flowing over the grid. Power plant and transmission line destruction created a significant shortage of power reserves and made the grid vulnerable

WHO

DTEK gained significant experience in storage systems by commissioning first Ukrainian grid-scale Li-Ion battery in 2021. DTEK EPC3 team with tier 1 supplier can deploy the project on time and budget

WHEN

PROJECT MILESTONES



PROJECT IN NUMBERS[4]

Battery size
20 MW / 40 MWH

Estimated revenue over the project life
$ 123.7 MLN

Estimated investment
$23.5 MLN

Average revenue
$34 367/ MW/ month

Useful life
15 YEARS

Estimated EBITDA over the project life
$115.3 MLN

Value stack
FCR[5], aFRR[6], power trading

While the business of energy storage project is largely merchant, it is a fundamentally profitable business model, in DTEK view.

This is because the contracts are only tendered for at levels that are profitable to the project (whether this involves trying to capture FCR or aFRR contracts or attractive prices in any "Day-Ahead" auctions) and if a contracted position is not achieved for the next day for whatever reason, the battery can trade in the intra-day wholesale market or offer capacity to the grid operator in the balancing market (where power prices are often more volatile than in the wholesale market) at prices DTEK is willing to accept.

[1] FAT – Factory Acceptance Test
[2] COD – Commercial Operations Date
[3] EPC – Engineering, Procurement and Construction
[4] As of April 2023
[5] FCR – Frequency Containment Reserve
[6] aFRR – automatic Frequency Restoration Reserve