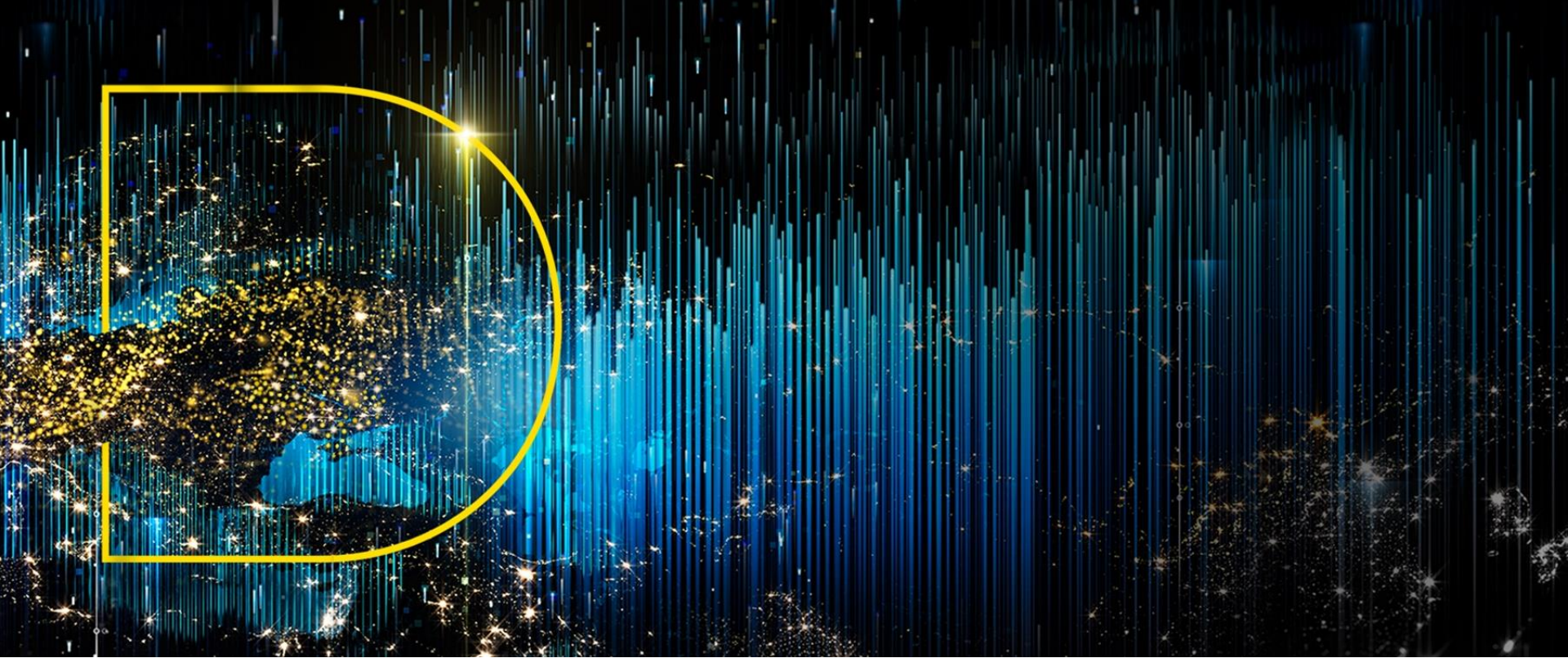




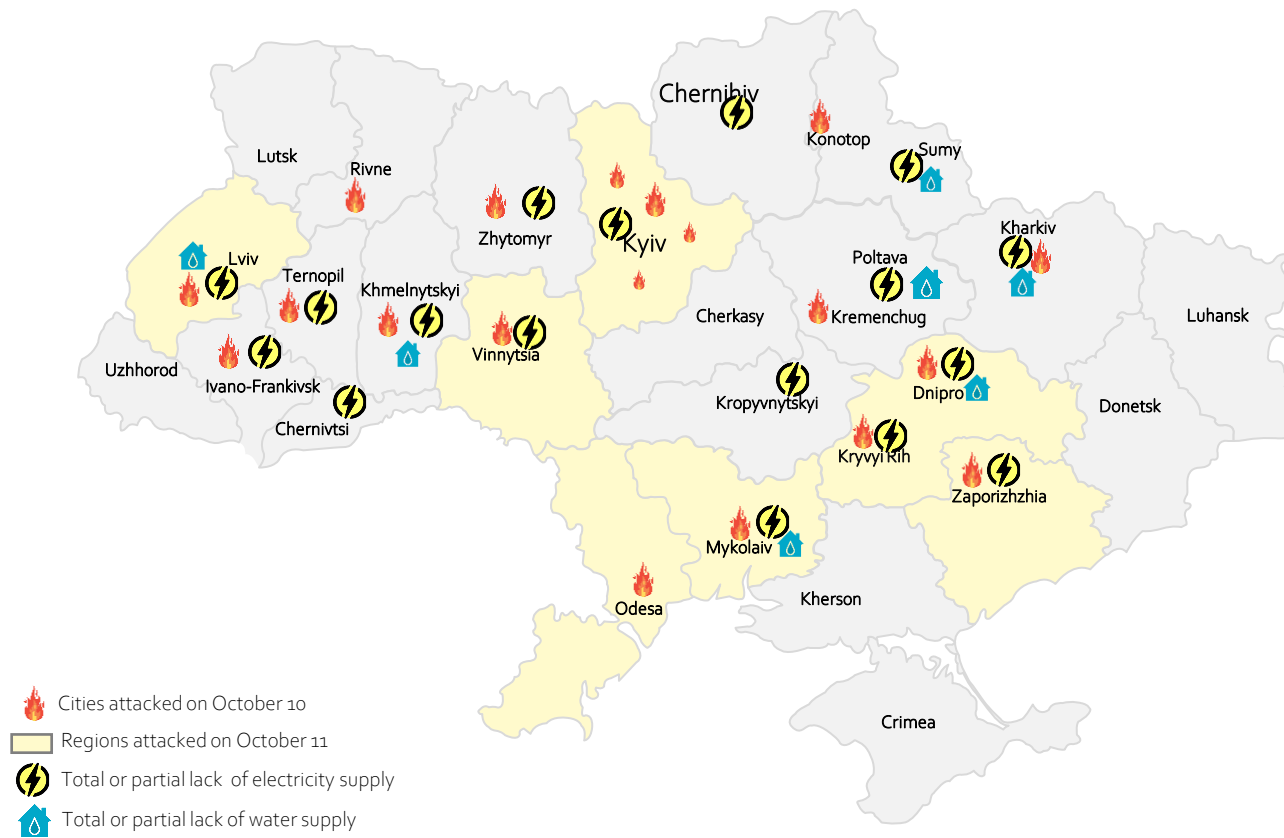
DTEK Humanitarian and Technical Aid Needs



Actual Situation in Ukraine



Up to 30% of Ukrainian Energy Facilities Damaged by russian Shelling



Starting from 10th of October, Russia launched hundreds of missiles and unmanned aerial vehicles (UAVs) over Ukraine

Tens of people killed

Hundreds of people injured

Significant damage was caused to the energy system, so Ukraine is forced to stop exporting electricity to the EU



DTEK Energy

War impact: damaged power equipment replacement



1. Starting from 10th of October, Russia performs missile and drone strikes on Ukrainian energy infrastructure
2. 3 out of 9 DTEK TPPs have been destroyed, triggering blackouts
3. 2 TPPs were captured in February / March, and cut off the grid
4. Other 4 TPPs have suffered severe damages and operating in a limited power mode
5. Due to the shelling of energy infrastructure:
 - Country rolling blackouts and power cuts applied
 - Some of the cities and towns were totally blackout and left without internet / mobile connection, water and heating supply for the days



Key Needs for DTEK Energy (1/2)



Equipment	Description	Amount	Vendors
Power, current and voltage transformers	Three-phase autotransformer 240000/330/220, or similar (Rated voltage of windings, HV - 330 kV, MV - 220 kV, LV - 38.5kV, Rated power: 240 MVA, Frequency, Hz: 50, with forced circulation of oil and air, lightning-proof, outdoor)	1 pc	
	Single phase autotransformer 210000/400/330-73, or similar (Rated voltage of windings, HV - 400 kV, MV - 330 kV, LV - 35 kV, Rated power: 240 MVA. Frequency, Hz: 50, with forced circulation of oil and air and on-load tap-changer)	2 pcs	ABB, Siemens, HPL, GE, Trench Germany GmbH
	Single phase autotransformer 133000/400/220, or similar (Rated voltage of windings, HV - 400 kV, MV - 220 kV, LV - 35 kV, Rated power: 133 MVA. Frequency, Hz: 50, with forced circulation of oil and air, lightning-proof)	1 pc	
	Current transformer 2000/1, U=330 kV, accuracy class 0.2S, IEC 61869	27 pcs	ABB Siemens, HPL, GE, Trench Germany GmbH, KONCAR - Instrument transformers Inc.
	Current transformer 1200/1, U=220 kV, accuracy class 0.2S, IEC 61869	10 pcs	
	Current transformer 1200/5, U=154 kV, accuracy class 0.2S, IEC 61869	16 pcs	
	Current transformer 1200/5, U=110 kV, accuracy class 0.2S, IEC 61869	19 pcs	
	Voltage transformer U1=400/V3 kV, U2=100/V3 V, accuracy class 0,2, IEC 61869	3 pcs	ABB, Siemens, HPL, GE, KONCAR
	Voltage transformer U1=330/V3 kV, U2=100/V3 V, accuracy class 0,2, IEC 61869	6 pcs	
	Voltage transformer U1=220/V3 kV, U2=100/V3 V, accuracy class 0,2, IEC 61869	3 pcs	
	Voltage transformer U1=150/V3 kV, U2=100/V3 V, accuracy class 0,2, IEC 61869	3 pcs	
	Voltage transformer U1=110/V3 kV, U2=100/V3 V, accuracy class 0,2, IEC 61869	3 pcs	



Key Needs for DTEK Energy (2/2)



Equipment	Description		Vendors
Circuit Breakers and Disconnectors	SF6 LTB-420E2/400kV/3150/40 kA, or similar	13 pcs	ABB, Siemens, HPL, GE
	SF6 HPL245B1/220kV/4000/50kA	5 pcs	
	SF6 HPL145B1/110kV/4000A/40kA	17 pcs	
	SF6 LTB 420E2/330kV/4000/50kA	13 pcs	
	SF6 LTB 170D1/154kV/3150/40kA	6 pcs	
	4000 A - 160 kA peak - 63 kA/3sec, 52 pcs	52 pcs	Hapam, ABB-Hitachi, Siemens, GE
	3150 A - 125 kA peak - 50 kA/3sec., 20 pcs	20 pcs	
Other positions:	Coupling capacitor 110/V3 2100 F (line 238), 1 pc	1 pc	-
	Bushings for AT (RIP bushings with silicone composite insulator): 400 kV, 9 pcs	9 pcs	ABB-Hitachi, Siemens, HSP, GE, ChinSun,
	Bushings for AT (RIP bushings with silicone composite insulator): 245 kV, 7 pcs	7 pcs	
	Transformer Oil (T-1500 or similar oil), 60000 kg	-	-



DTEK Grids

Impact of the war and needs



DTEK Grids Update

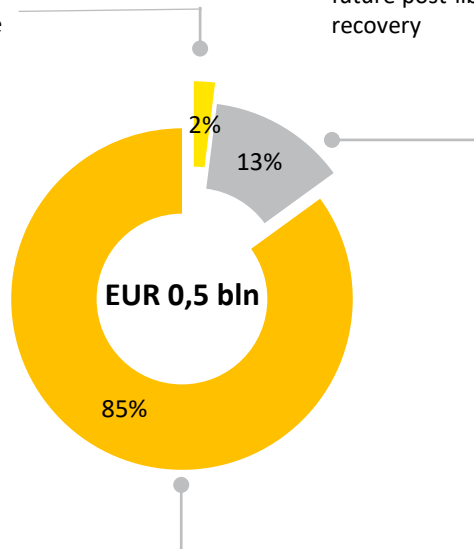
Required scope of assistance for restoration of DTEK GRIDS
(financing, supply of equipment and materials)

EUR 10 m

urgent need for
restoration after the
liberation

EUR 66,4 m

medium-term need for
future post-liberation
recovery



EUR 431,5 m

long-term need for post-liberation development of
electricity grids



International support of the company's activity in the conditions of war

- DTEK GRIDS received more than EUR 15 m of materials and necessary equipment to restore electricity supply.
- After 24 February DTEK GRIDS' team together with international partners and state agencies have elaborated effective logistic routes and mechanisms of receiving equipment
- Restoration of grids is provided in two stages:
 - **Restoration of electricity supply** to those customers who were left without electricity after the hostilities.
 - **Restoration of the normal mode scheme** to have the characteristics of the grid as we had before the start of full-scale war. Exclusion of bottlenecks, increasing / ensuring the reliability of power supply, and grid capacity.





Key Needs for DTEK Grids



Mobile substation 154 kV, with transformer 40,000 kVA and set of equipment for 110, 35, 10, and 6 kV

The period of restoration/reconstruction/construction of a destroyed substation is a rather long process (takes more than 1 year), during which considerable areas and many customers may remain without electricity supply. A mobile substation will solve this problem by replacing the main substation during its recovery.

Power cables and joints to connect it are one of the most urgent needs.

For example, we require it to connect 10 units of complete secondary substations. We have currently purchased these secondary substations, but the power cable is still needed. These complete secondary substations must be installed to replace damaged or destroyed ones as a result of armed aggression in the territories of the Kyiv region. These measures will improve the reliability of the power supply to about 5,000 customers in Irpin.

- Mobile substation 110 kV, 40 MVA – 3 pcs
- Power transformer 110 V, 10 MVA – 6 pcs
- Circuit breaker 110 kV, SF6 – 10 pcs
- Conical pole for OHL (22m) – 16 pcs
- Wires (Aluminum steel) 120-300 mm², 20 tone
- Complete secondary substation (2x630 kVA) with transformers, 30 pcs
- Power Cable 6-10 kV with XLPE Isolation 1x120 - 1x800 mm, 102 km
- Medium Voltage Transition Joint (POLJ 24) 1x120 - 1x800 mm, 754 pcs
- Power Cable Termination (POLT 24) 1x120 - 1x800 mm, 502 pcs

Thank you for your attention!



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DTEK has experience in solving logistic, custom, tax and legal issues related to the import of humanitarian aid from Europe to Ukraine (including, but not limited - cooperation with the Polish State Agency *RARS*)