ECU
ENERGY COMPANY OF UKRAINE

ACHIEVING THE IMPOSSIBLE: HOW THE UKRAINIAN ENERGY SECTOR COUNTERED RUSSIAN ENERGY TERRORISM

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ENERGY MARKET OF UKRAINE
BEFORE 24 FEBRUARY 2022

Before 24 February 2022, the country's capacity

48.5 GW

AVAILABLE CAPACITY

4

Nuclear power plants

13,8 GW

13

Thermal power plants

15,5 GW

27

Combined heat and power plants (with capacities exceeding 10 MW), along with a dozen small-scale power stations

4,6 GW

13

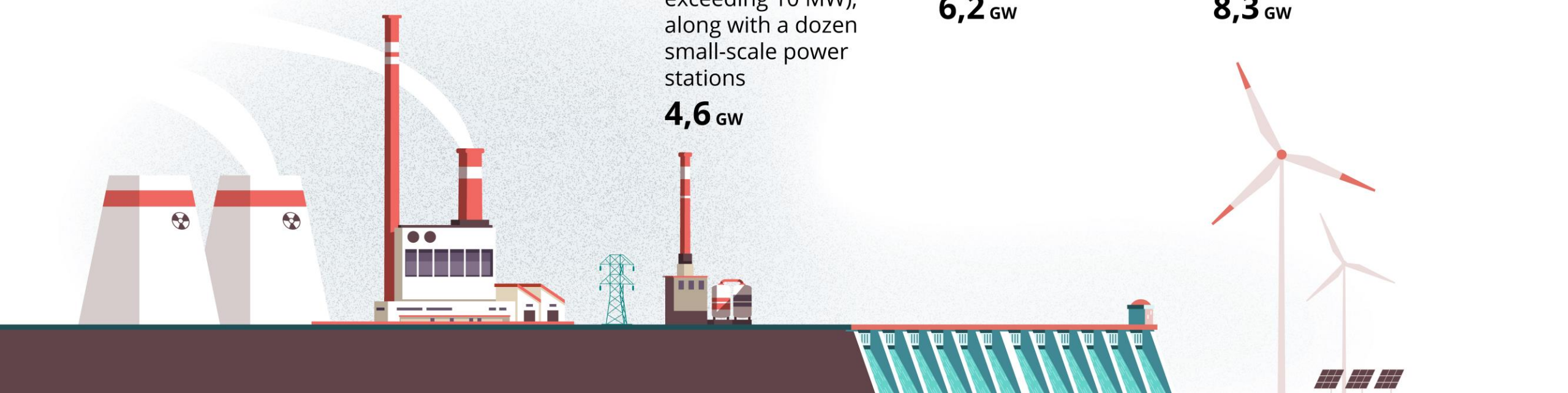
Hydroelectric power plants and pumped storage plants

6,2 GW

1,300

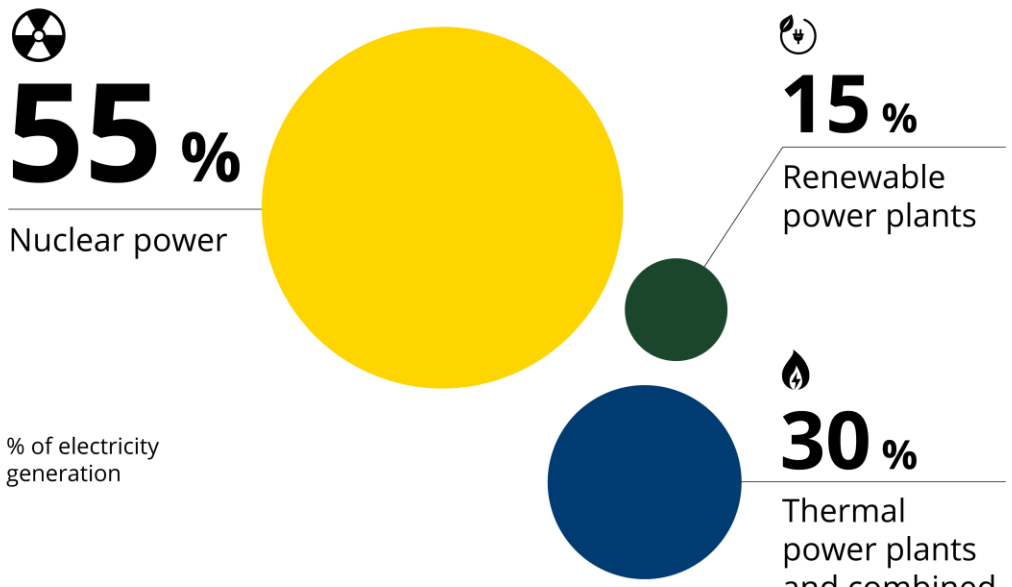
Wind, solar and other renewable power plants

8,3 GW

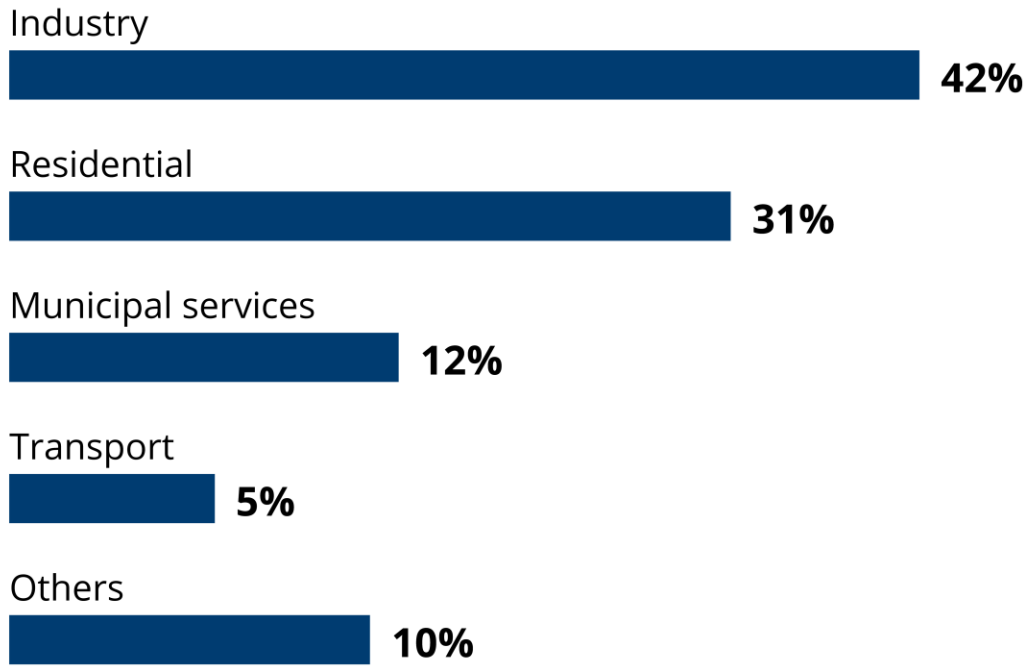


ENERGY MARKET OF UKRAINE
BEFORE 24 FEBRUARY 2022

GENERATION



CONSUMPTION



IMPACT OF WAR ON ENERGY MARKET OF UKRAINE

DAMAGED OR TEMPORARILY OCCUPIED

10 GW Total capacity of power plants temporarily lost due to russian occupation

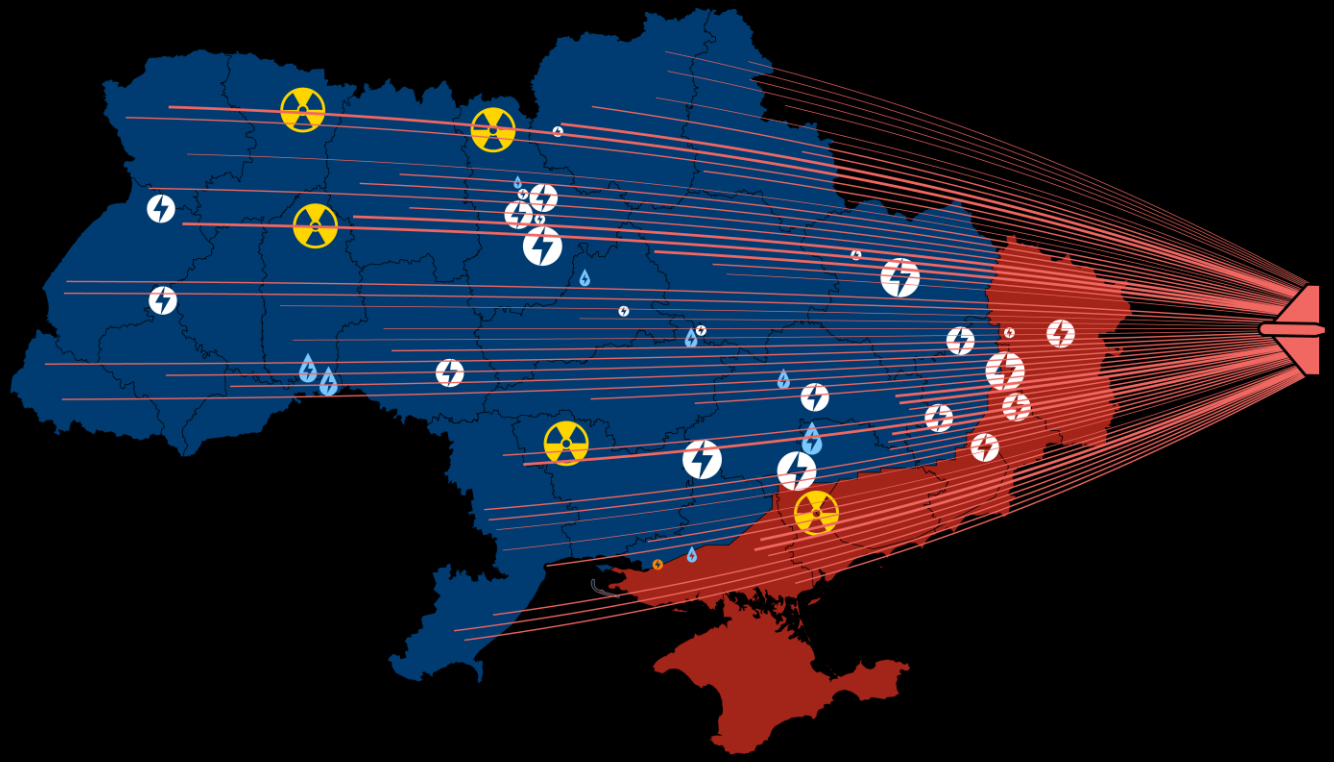
44 % Nuclear power plants

78 % Thermal power plants

20 % Solar power plants

12 % Hydro power plants

75 % Wind power plants



Strikes **255**

Hits **112** Energy Facilities

IMPACT OF WAR ON ENERGY MARKET OF UKRAINE

CHANGE IN GENERATION

↓29 % Total production of electricity in Ukraine for 2022 decreased compared to 2021

↓28 % Nuclear power plants

↓35 % Thermal power plants

↓27 % Solar power plants

↑10 % Hydro power plants

↓58 % Wind power plants

DECREASE IN CONSUMPTION

-20 %

Citizens left the country

8 Million

-18 %

Decline in residential consumption

-52 %

Industrial consumption

TO BE OR NOT TO BE?

ROLL BACK POWER MARKET

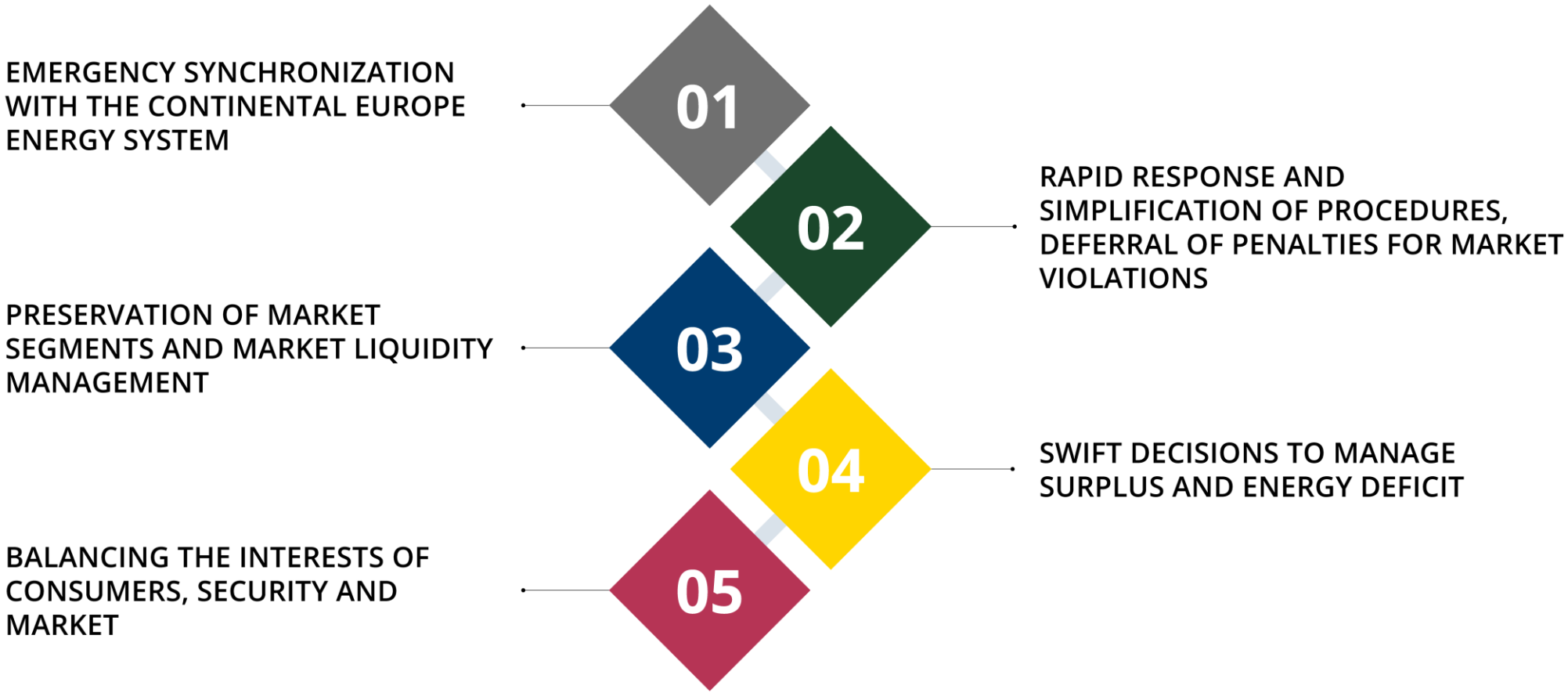
FULL ADMINISTRATION CONTROLL

KEEP POWER MARKET

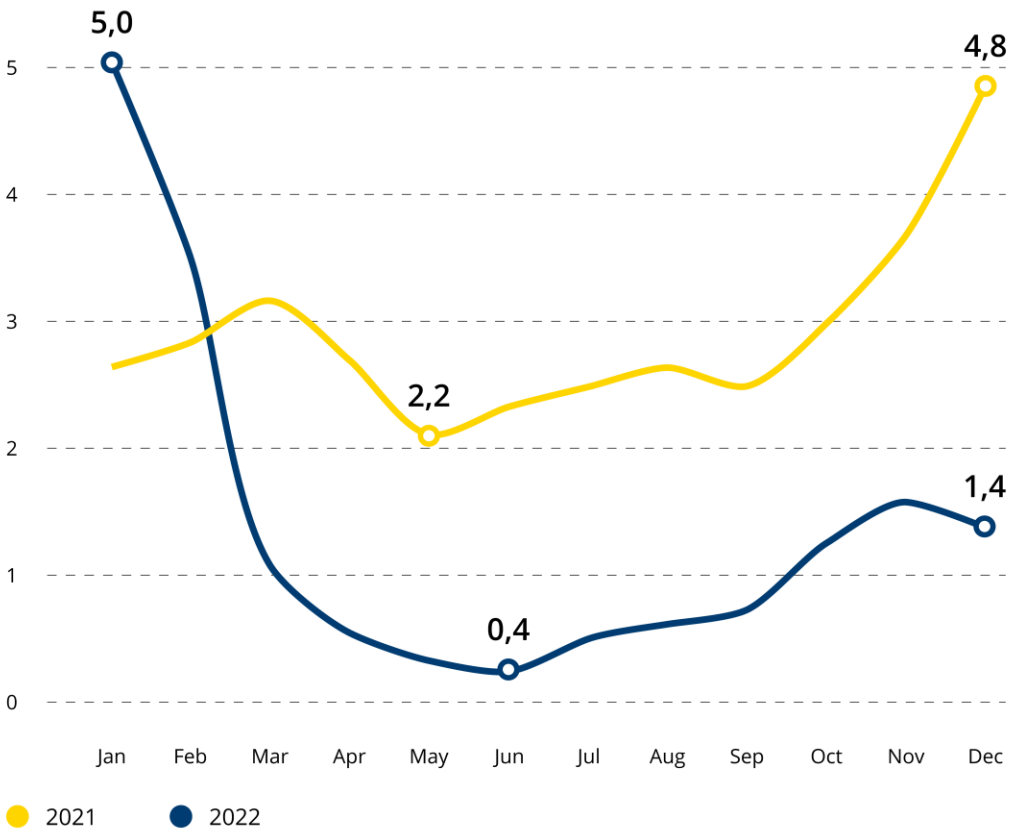
PROTECT IT FROM WAR

2.5 YEARS IS MERELY THE BABY STAGE, TAKING ITS FIRST STEPS

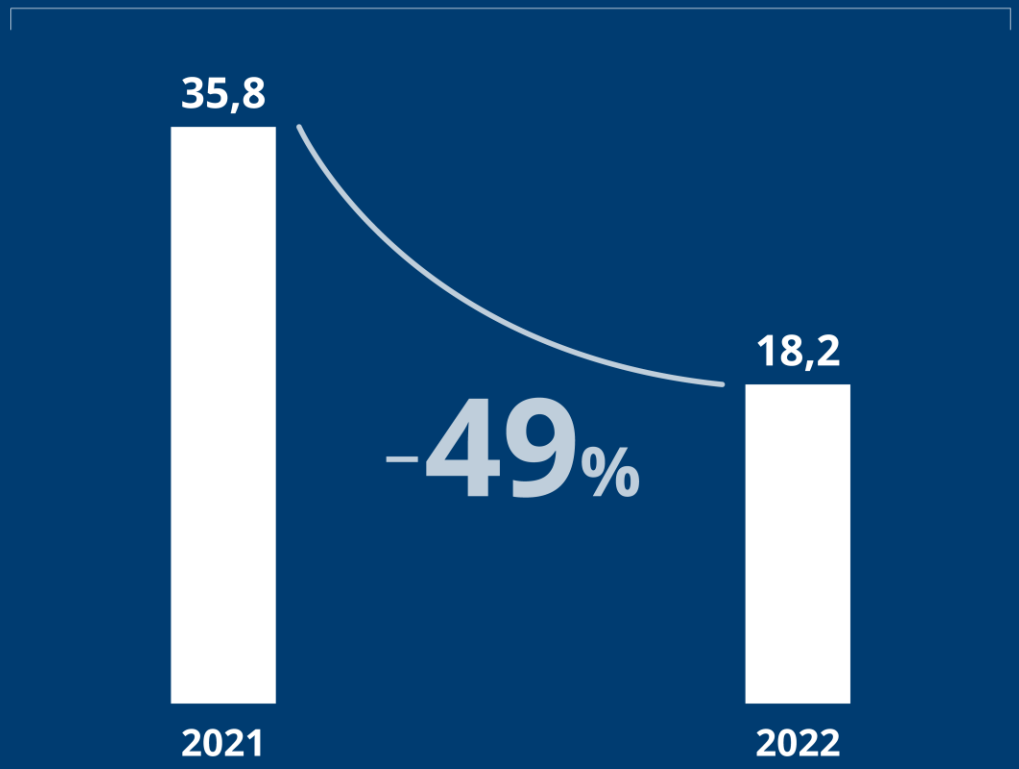
WHAT THE STATE DID TO SAVE THE ENERGY MARKET DURING WAR?



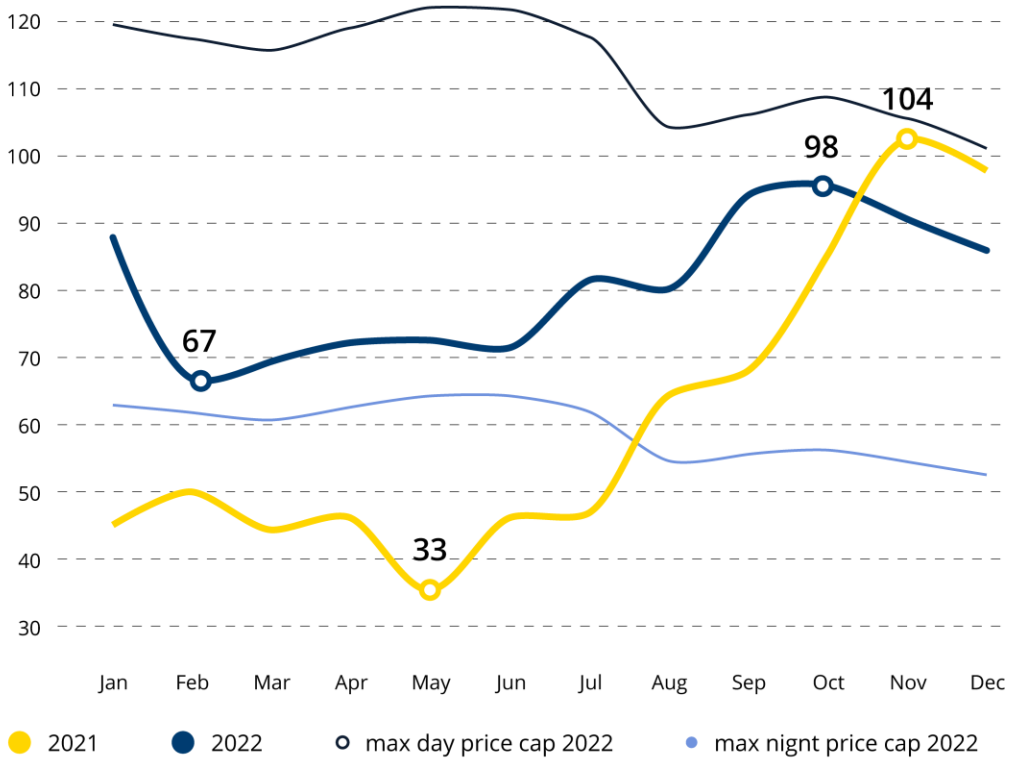
THE VOLUME OF TRADES ON THE DAM MARKET, MLN MWH



After the start of a full-scale invasion, trade volumes on the DAM market were halved due to shutdown of many enterprises and general market uncertainty.



WEIGHTED AVERAGE DAM PRICE
EUR/MWH (WITHOUT VAT)



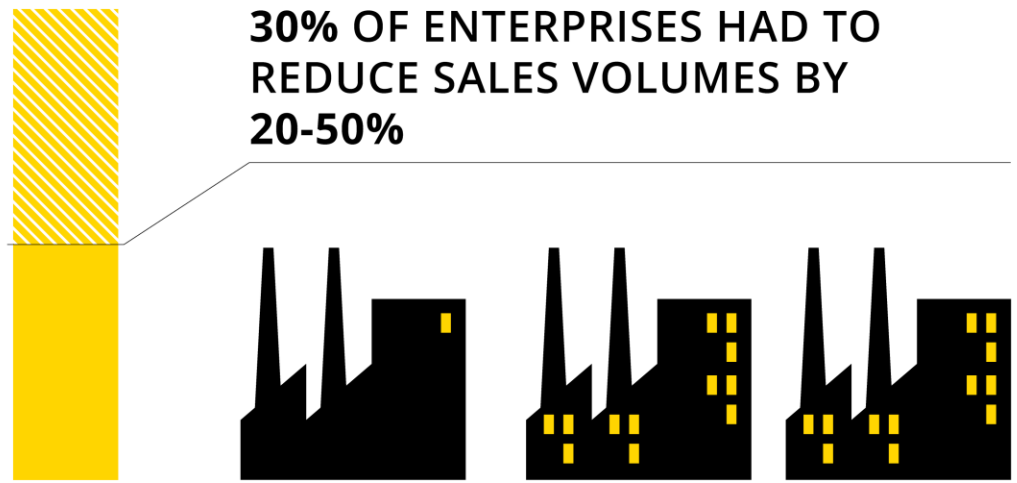
Due to a warm winter in February 2022, prices fell, but after the start of a full-scale invasion, they began to gradually increase, peaking in autumn 2022.

In general, DAM prices increased by a third, including for the peak product – by 44%.

Existing price caps kept prices down, which was one of the reasons for the rolling blackouts in the fall-winter 2022/2023

	2021 €/MWh	2022 €/MWh	
WEIGHTED AVERAGE DAM PRICE	64,4	82,8	+29%
INDEX PRICE DAM BASE	55,8	78,6	+41%
INDEX PRICE DAM PEAK	64,9	93,7	+44%
INDEX PRICE DAM OFF-PEAK	46,7	63,5	+36%

DEVASTATING IMPACT
ON POWER CONSUMPTION



30% OF ENTERPRISES HAD TO REDUCE SALES VOLUMES BY **20-50%**

CONSUMERS QUICKLY ADAPTED

Using generators

2000 **MW**
Capacities of generators were imported in 2022

Shifting work to nighttime when the electricity deficit was lower

66%
Companies changed work schedule

Purchasing imported electricity

200,000 **MWh**
Was imported in 2023

WHAT HAPPENED **TO POWER TRADING?**

POWER GENERATION

- Missile attacks on infrastructure
- Loss of capacity
- Change of generation structure
- Increased system imbalances

SUPPLIERS & TRADERS

- Impeded access to sourcing
- Collapse of trading margins
- Liquidity squeeze
- The numbers of traders and suppliers reduced by half

CONSUMERS

- Disruption of economic activities
- Destabilization of supply and consumption
- Break-up of pre-war power supply chains

THE CREATION OF THE **STATE-OWNED ENERGY TRADER**

STATE

- LARGEST PRODUCER
- INADEQUATE PRESENCE IN THE ENERGY TRADING AND MARKET OPTIMIZATION
- ONE OF THE LARGEST CONSUMERS

ECU ENERGY COMPANY OF UKRAINE — STATE-OWNED ENERGY TRADER

- MARKET OPTIMIZATION
- RISK MANAGEMENT
- ABILITY TO COMPETE IN ENERGY MARKETS (BOTH DOMESTIC AND EUROPEAN)
- TRADING PLATFORM FOR EXPANSION INTO EUROPEAN ENERGY MARKETS

THE CREATION OF THE **STATE-OWNED ENERGY TRADER**

2022
EXPORT TO EU: 45-50%

2023
WINTER HEATING SEASON. THE IMPORTER ELECTRICITY FROM EU

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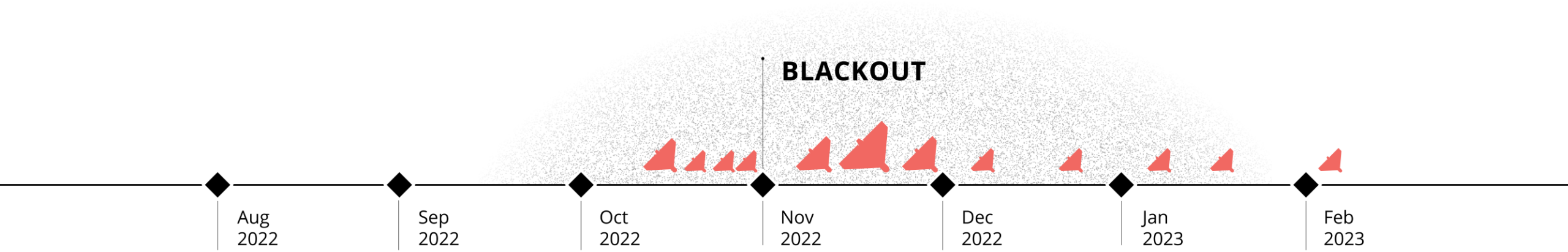
2023
THE FIRST STATE BALANCING GROUP

2023
THE FIRST DIVIDENDS FOR THE STATE



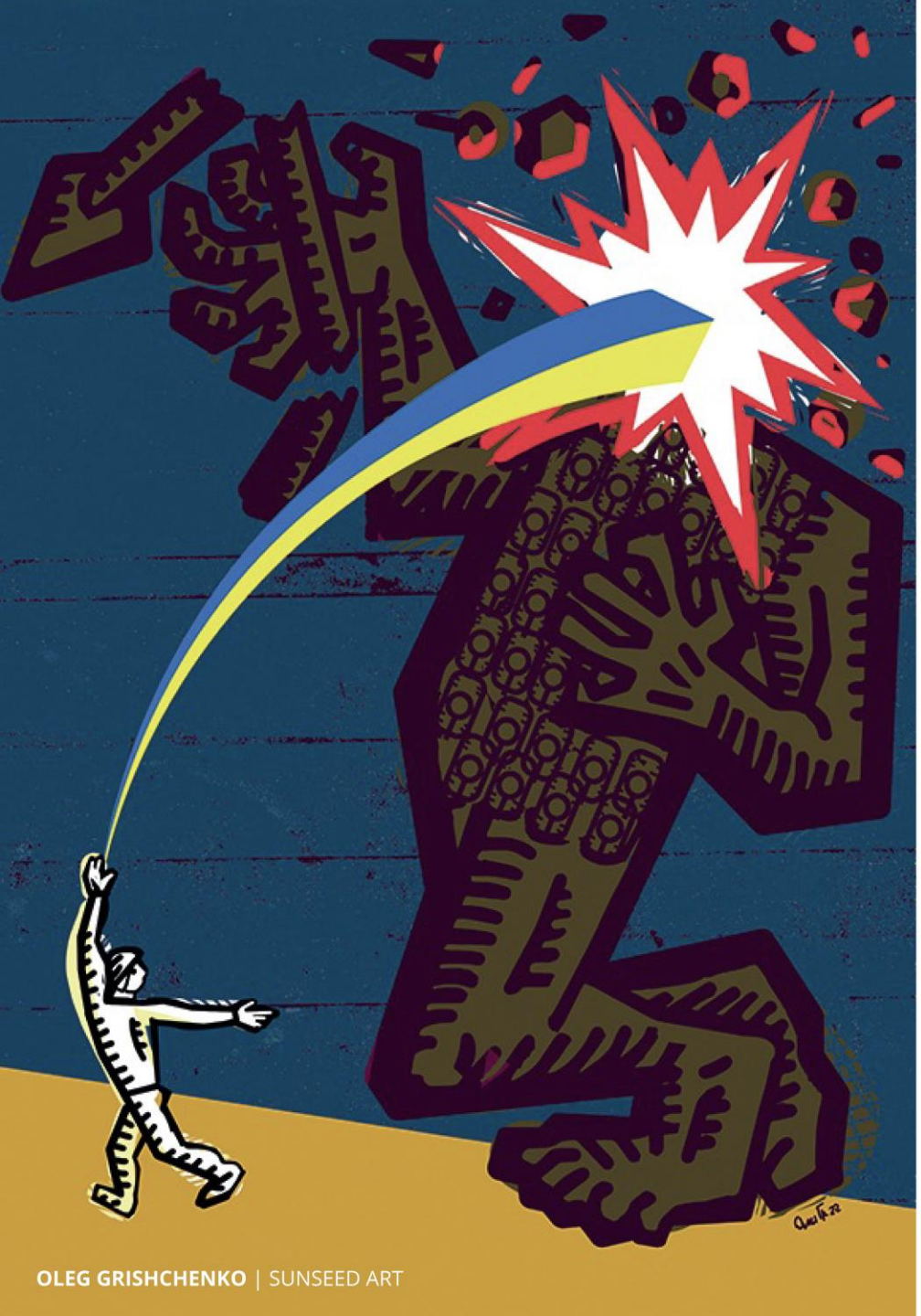
THE ROAD AHEAD

PATH TO FULL EU ENERGY MARKET INTEGRATION

- Integration and market coupling
- Energy diversification
- Infrastructure development
- Energy security and stability
- Regulatory alignment and reforms

RISKS AND HURDLES

- Regulatory challenges
- Lack of transparent and efficient market mechanisms
- Energy infrastructure limitations
- Geopolitical uncertainty and collisions
- Risk for financing and Investments
- Interoperability and technical compatibility
- Public perceptions and resistance
- Political commitment and international cooperation



WHEN THE GOING GETS TOUGH, TOUGH GETS GOING!

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