

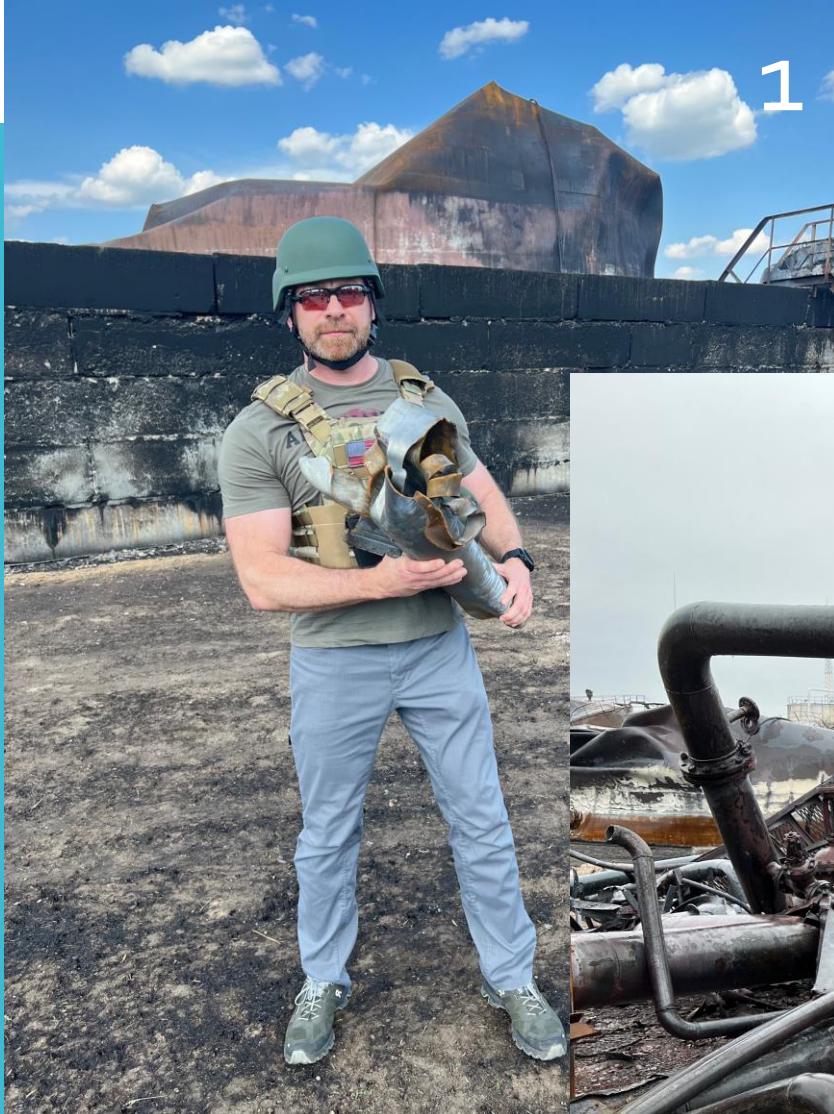
# Growing production and opportunities during a war

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(1) Assessing damage at the refinery after the 1<sup>st</sup> ballistic missile attack in 2022

(2) Assessing damage at the refinery after the 3<sup>rd</sup> ballistic missile attack in 2022



# The Significance Of the Natural Gas Production And Infrastructure In Ukraine

- Second largest 1P and 2P reserves base in Europe.
- Significant potential for discovery of large prolific onshore conventional reservoirs utilizing modern Western technology, especially in the areas of advanced 3D Seismic acquisition, processing and interpretation.
- Significant potential for shallow and deep-water Black Sea reserves, especially in line of recent discoveries by Romania and Turkey and in-house shallow water 3D seismic interpretation.
- Unconventional potential comparable to plays like deep Woodford or Eagle Ford shales.
- Very active ongoing operations; UGV (Ukraynicheskiy Gazovyy Dobychnyy Vezh) is running 41 rigs, 28 workover units, 8 coil tubing units, over 20 wireline and slickline units producing roughly 1.5 BCFE/D.
- Well developed gas pipeline infrastructure with the ability to deliver gas to all major European hubs.
- Largest in Europe underground gas storage infrastructure, located primarily in Western Ukraine.
- Highly trained and sophisticated work force, high quality universities
- European natural gas prices of 10 to 40 dollars per MCF, with long term strip around \$15/MCF.
- Significant opportunities for service companies to enter an undersaturated market.
- Opportunities for operators to target onshore oil and gas production investments.
- Exciting market for storing and marketing American made LNG.

## UGV (Ukrgasvydobuvannya) at a glance: the upstream gas producer in the Naftogaz companies group



**The largest hydrocarbon resource base** in Ukraine



**70%** of domestic gas production in Ukraine



**The largest number of operating drilling rigs** in Europe



**International projects** ongoing during war



**18 thousand** personnel including those with international experience



**Among TOP-3 largest taxpayers** in Ukraine

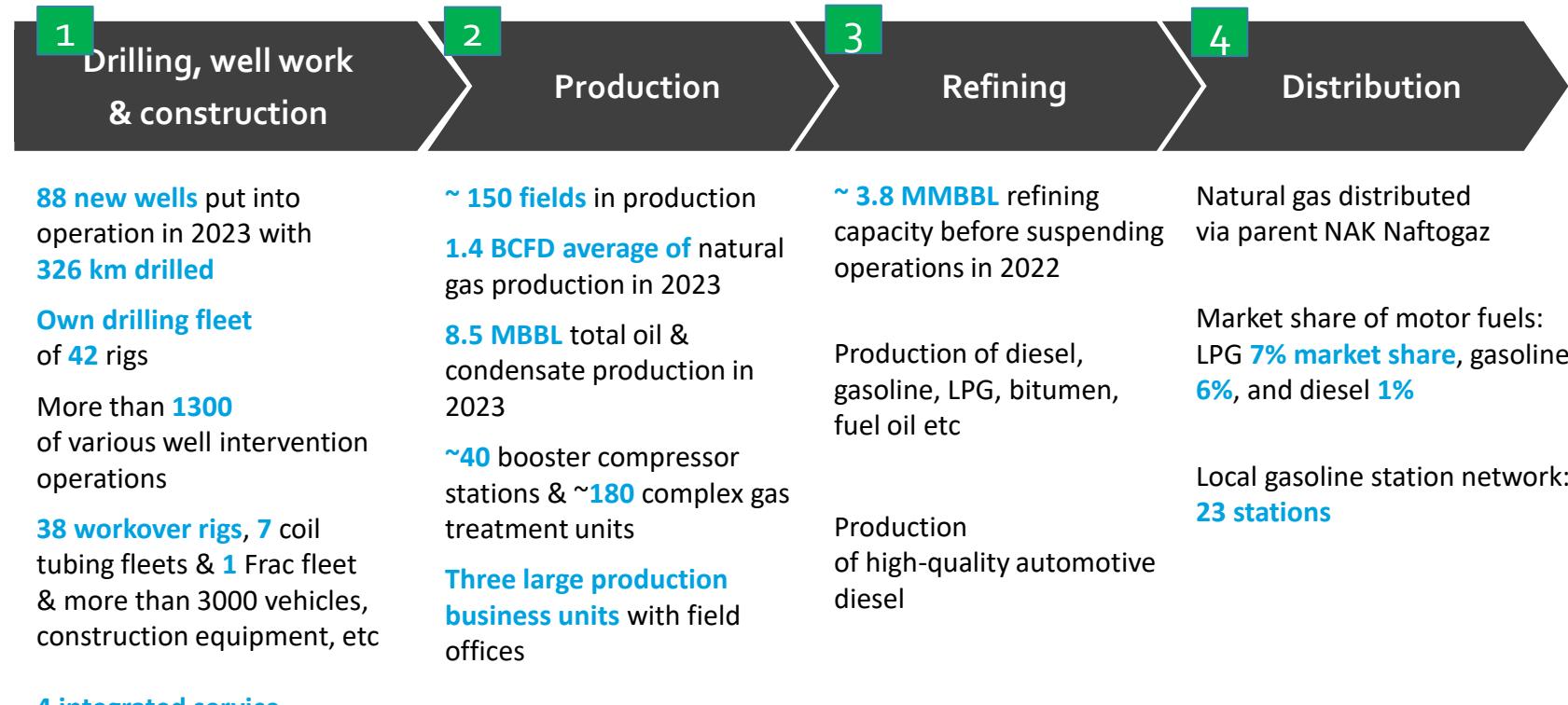


Over **\$25 million** assistance to help protect Ukraine during wartime



**232 social projects** implemented in 11 regions of Ukraine during 2021-2023

**UGV is an upstream arm of the Naftogaz group and a fully integrated integrated company with a strong presence across multiple value chains**



# Operational Footprint

-  **UGV HQ**  
(Headquarters)
-  **Chornomornaftogaz**  
(Offshore E&P unit)
-  **LGPU**  
(Lviv Gas Production Unit)
-  **ShGPU**  
(Shebelinka Gas Production Unit)
-  **PGPU**  
(Poltava Gas Production Unit)
-  **UGV Service**  
(Integrated Workover Services Company)
-  **UPGGK**  
(Gas, Oil and Gas Condensate Refining and Processing Division)
-  **UkrBurGas**  
(Integrated Drilling Company)
-  **UkrNDIGas**  
(Integrated R&D Institute)
-  **UkrGeophysics**  
(Internal Wireline Company)
-  **UBMR**  
(Integrated Construction Company)
-  **Gas Stations**



## Running a State-Owned Enterprise...

**Managing a state-owned company can be frustrating under the best of circumstances**



- Overstaffed, complicated org structures, redundant or broken business processes.
- Overly bureaucratic due to left over Soviet management style and constant criminal investigations by the state, LLC structure does not shield from criminal prosecution.
- Lack of full suite of modern technology in engineering and geoscience, drilling and completion.
- Siloed organization, lack of motivation (do just enough not to get fired, “not mine”)
- Inefficient public procurement law
- Corruption and theft
- Logistical challenges
- Physical risks to the employees and infrastructure related to the war.
- Streamlined and simplified the org structure, reduced office G&A personnel by 20%
- Close work with law enforcement and government stakeholders to help alleviate problems.
- Fast implementation of modern dynamic and static integrated reservoir modeling, new seismic re-processing and re-interpretation techniques, modernizing well designs, bit, cement and mud programs
- Full involvement with leading, motivating, and upgrading teams
- Can’t change the procurement law
- 30% of my focus on investigations, work with LE, prosecuting and/or firing corrupt employees

## War challenges – the school of hard knocks

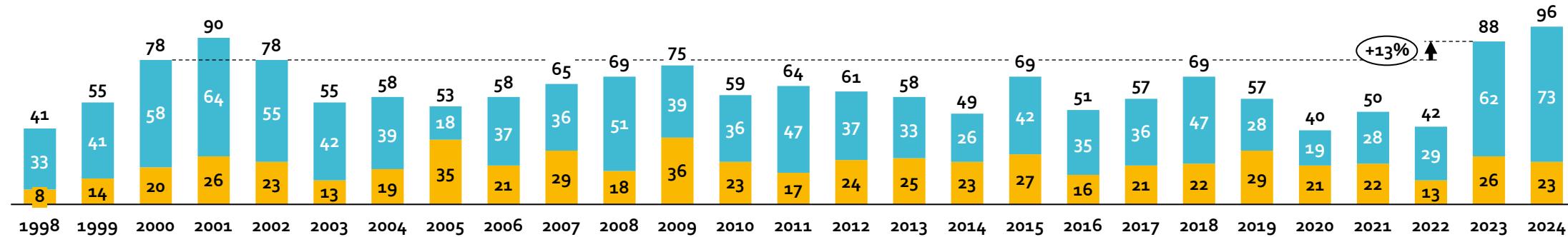
- Military: unstable front line in several areas and a possibility of enemy advancing, concern for employees life and safety, repositioning warehouses, equipment and field offices, procuring personnel protective equipment, building bomb shelters and physical deterrents for surface infrastructure, communicating with military command and counter-intelligence, ascertaining means of reliable communication between with remote offices and sites as part of evacuation algorithms.
- Logistical: much of equipment and materials was procured from Russia and Belarus, for example: methanol, KCl, logging tools, vehicles, cranes, coil tubing unit equipment, consequently new vendors and supply routes had to be identified and onboarded in a matter of days.
- Human: work force availability challenge due to employees leaving to fight, maintaining employee morale, especially those operating in unsafe areas, finding quality technical personnel, difficulties with attracting expats to continue localizing technology.
- Services: several western companies have departed from the Ukrainian service market, others have tough time procuring their equipment and consumables outside of Ukraine, experiencing shortage of work force.
- Financial: war time limitations on currency payments, hryvna inflation, uncertainty in future exchange rates and budgets

## Achieving a rapid production increase

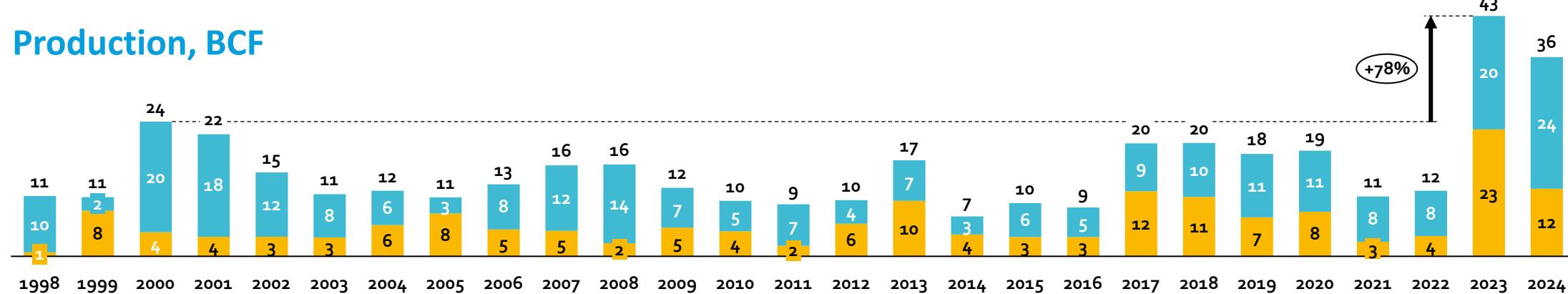
- Improvement of technical capabilities of the G&G team, including addition of expats
- Acquisition and re-interpretation of 3D seismic in Western and Eastern Ukraine which is critical for discovering new fields and improving performance in exploration and appraisal wells.
- Implementation of the geological assurance review process which resulted in over 80% success in exploration wells adding significant production volumes and reserves.
- Largest geological discoveries in the last 20 years made in eastern Ukraine provided superior quality drilling inventory.
- Executive decision to throw all resources to capitalize on geological discoveries and focus activity on high quality exploration and appraisal drilling candidates
- Marked improvement in the pace of drilling operations by utilizing modern bit designs, casing problems and reduction of non-productive and flat time.
- Wide implementation of artificial lift, digital well surveillance and modern approaches to workover techniques improved the base decline.
- Relentless focus on procurement and logistics aimed at addressing challenges of operating at war
- Management changes in capital construction, drilling, and production organizations
- Synergies across the family of Natfogaz companies as well as the Transmission System Operator (TSO of Ukraine)

# Gas production from exploration and development wells drilled in 2023: the best performance of the last 25 years

## Number of wells



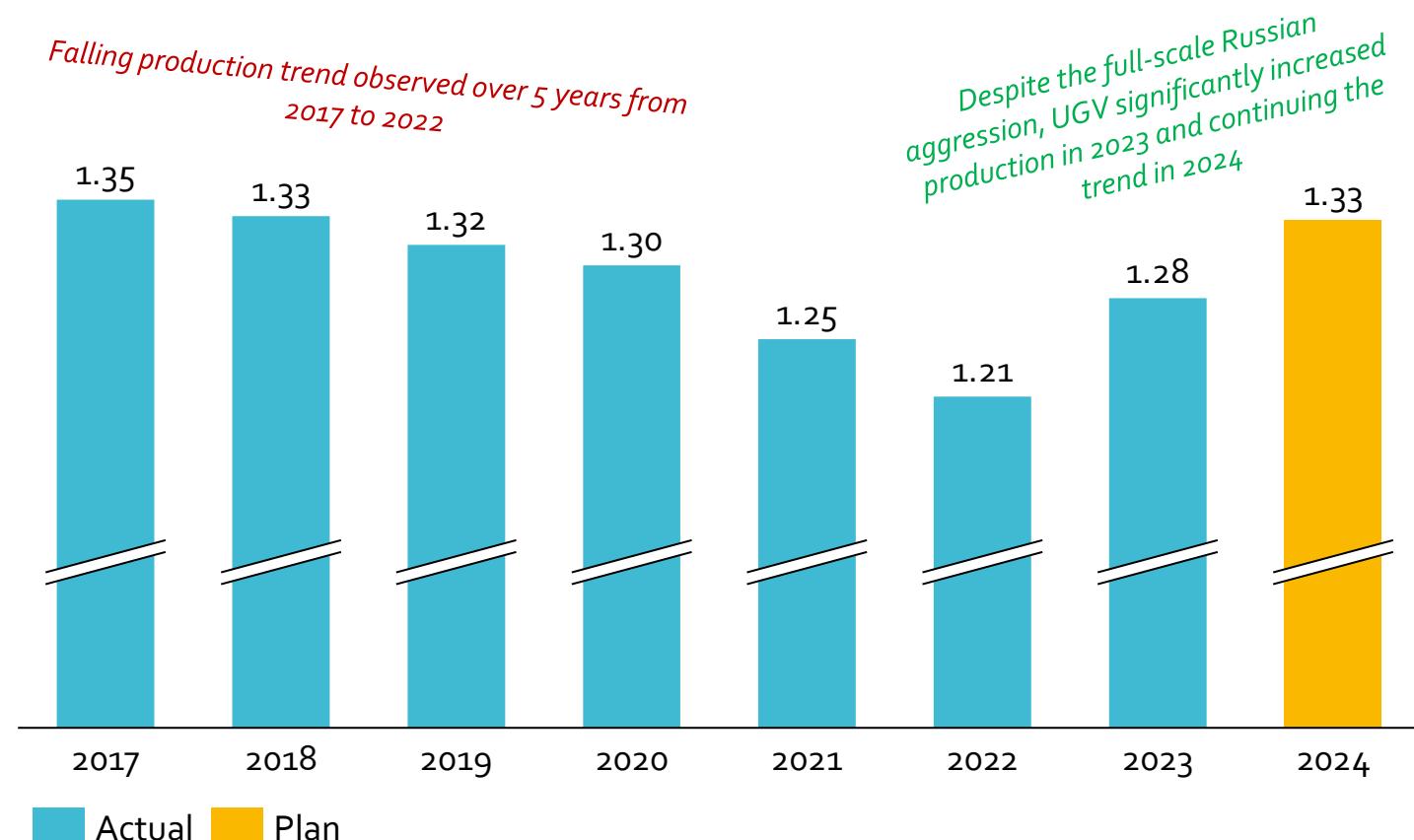
## Production, BCF



■ Development ■ Exploration

**UGV has significantly increased production in 2023 relative to the previous two years and broke the trend of falling production that started in 2017... During the full scale war.**

- Net gas production in 2017-2024, BCF/day



## UGV & Ukrainian oil and gas sector is starved for modern technology and service companies presence

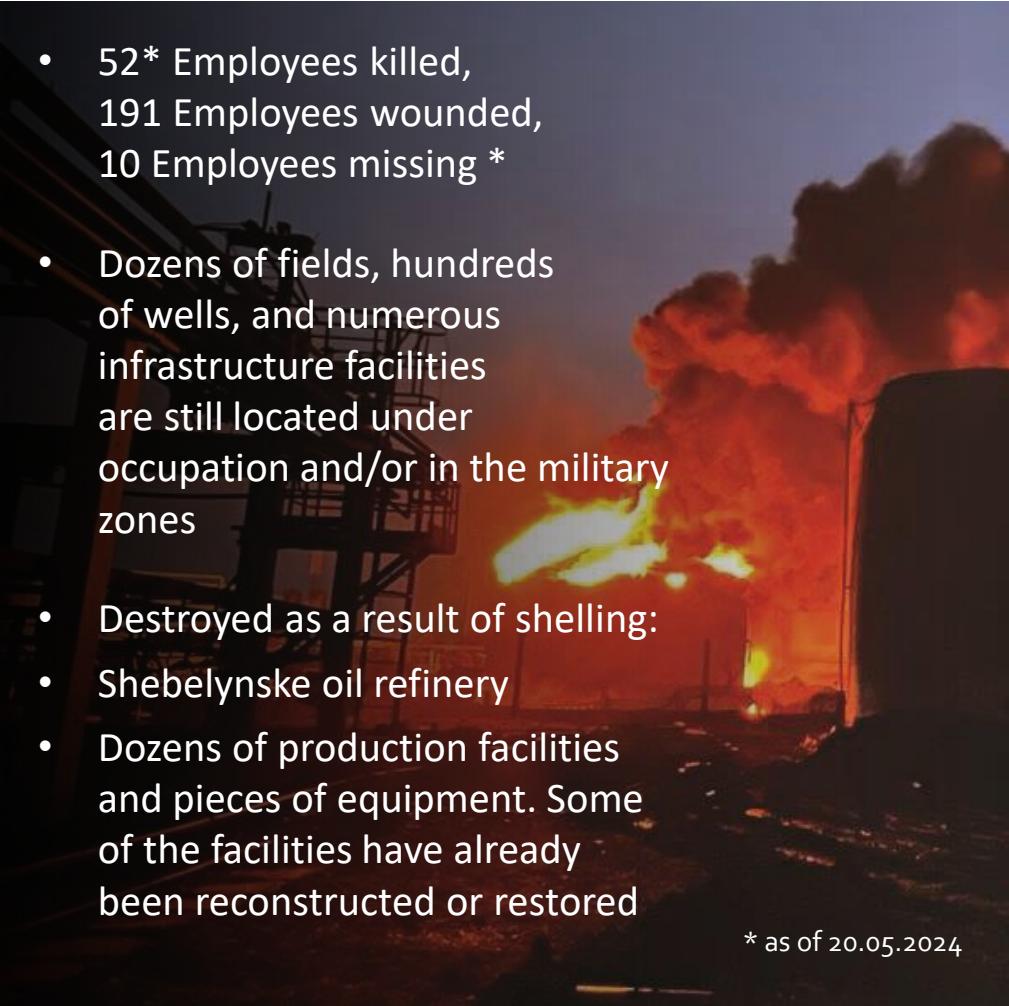
- Two snubbing units in disrepair and poorly trained personnel
- Several 5K lubricators
- 3 small 15K frac fleets in operation (3-4 pumps each)
- Around 15 coiled tubing units (including 8 UGV's)
- About 20 modern 1 mln lbs top drive drilling rigs, 40+ obsolete soviet rigs
- A fair number of workover units (~ 50 of various sizes)
- A fair number of wireline and slickline units (over 40)
- Artificial lift presented on the market mostly by capillary string set ups and ESPs
- Casing and production tubing manufactured in country
- Rig assist and snubbing rigs
- 10 & 15K lubricators
- Additional frac fleets, especially for horizontal developments.
- Available sand but no frac sand mines
- More modern rigs as older Soviet rigs fall into disrepair
- Swabbing rigs and foam air units
- Air drilling equipment
- More advanced TCP system (e.g. coil conveyed with hydraulic firing heads)
- Composite and dissolvable bridge plugs, retrievable packers
- Production and remediation chemicals
- Drill pipe and work string
- Premium casing
- And the list continues

## American LNG

- Russian gas exports to Europe have been reduced to a negligible volume
- Most of natural gas I Europe is provided by North Sea production (Norway) and U.S. LNG
- Ukraine has the largest in Europe underground storage network and is ready for with American companies to store and market deliquefied American natural gas
- Ukrainian gas storages are fully integrated into the European gas transportation network thus can move physical gas molecules everywhere in Europe.
- The ability to use the storage to take advantage of the market seasonality offers an opportunity to significantly increase profits marketing gas in cash markets.

# Dangers of Operating in War Time

- 52\* Employees killed,  
191 Employees wounded,  
10 Employees missing \*
- Dozens of fields, hundreds  
of wells, and numerous  
infrastructure facilities  
are still located under  
occupation and/or in the military  
zones
- Destroyed as a result of shelling:
- Shebelynske oil refinery
- Dozens of production facilities  
and pieces of equipment. Some  
of the facilities have already  
been reconstructed or restored



\* as of 20.05.2024

# Massive ongoing destruction of production infrastructure due to drone, cruise and ballistic missile attacks



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# Conclusions

- Through the resilience, ingenuity, persistence, and partner support, staying the course of capitalizing on geological discoveries and implementing western technologies and operational practices, UGV grown production in 2023 by 5.5% and will likely grow another 5% in 2024. This is an unprecedented growth trajectory for the company.
- Despite the war and significant expenses related to repairing infrastructure, building physical deterrents and shelters, UGV will likely show a positive 20 bln hryvnas on the P/L statement in 2024, that's \$MM500. Natural gas industry is highly commercially attractive in Ukraine.
- Country needs new technologies, high pressure frac fleet and modern 3D seismic acquisition equipment.
- In its portfolio, Naftogaz combines gas production and storage, and coupled with a well-developed export pipeline system, Ukraine is positioned to grow into marketing the American LNG into Europe.