

# Growing production during a war

Oleg Tolmachev, Vidnova Energy Consultants LLC, September 2024

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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 202



## 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 (Ukrgazvydobuvannya) 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

And most importantly, with investments and focus on adding new fields and unconventional, a line of site to exporting gas to Europe, and, together with the American LNG, ending Europe's dependence on the Russian gas.

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UGV (Ukrigasvydobuvannya)  
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** even in wartime conditions



**18 thousand** oil & gas personnel with Ukrainian and international experience



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

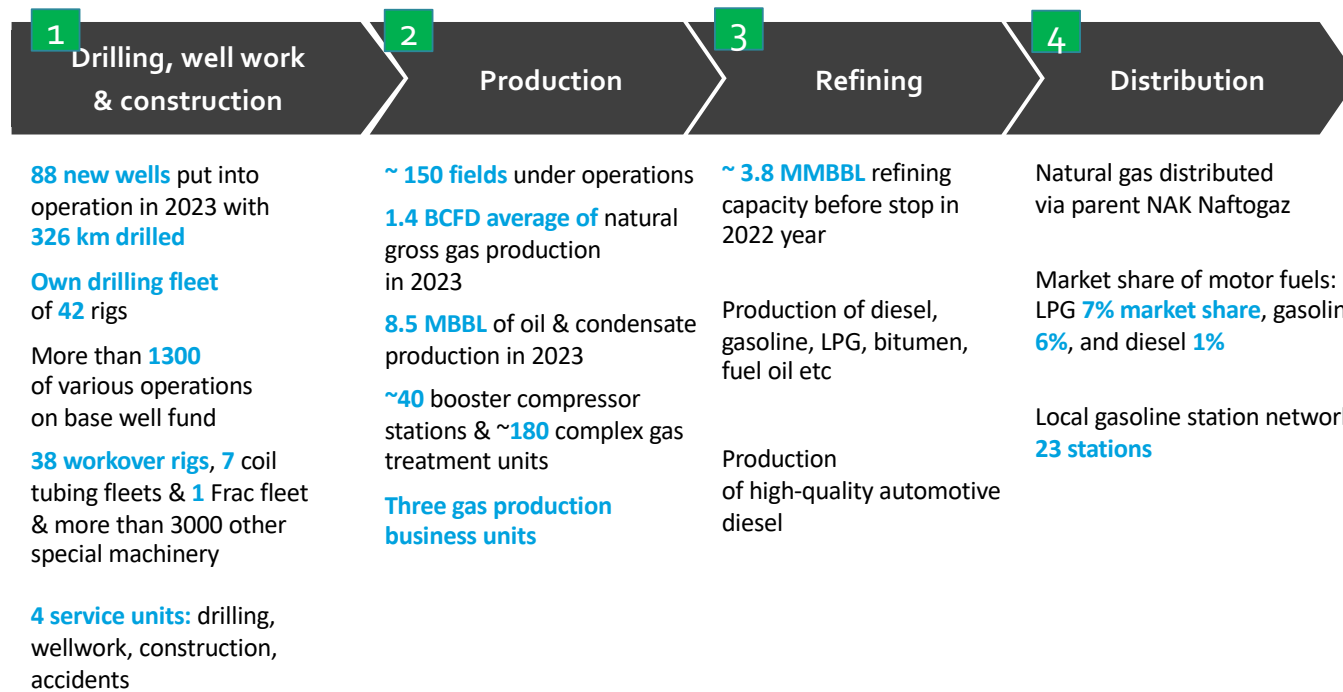


Approximately **UAH 1 billion** assistance to help protect Ukraine during wartime



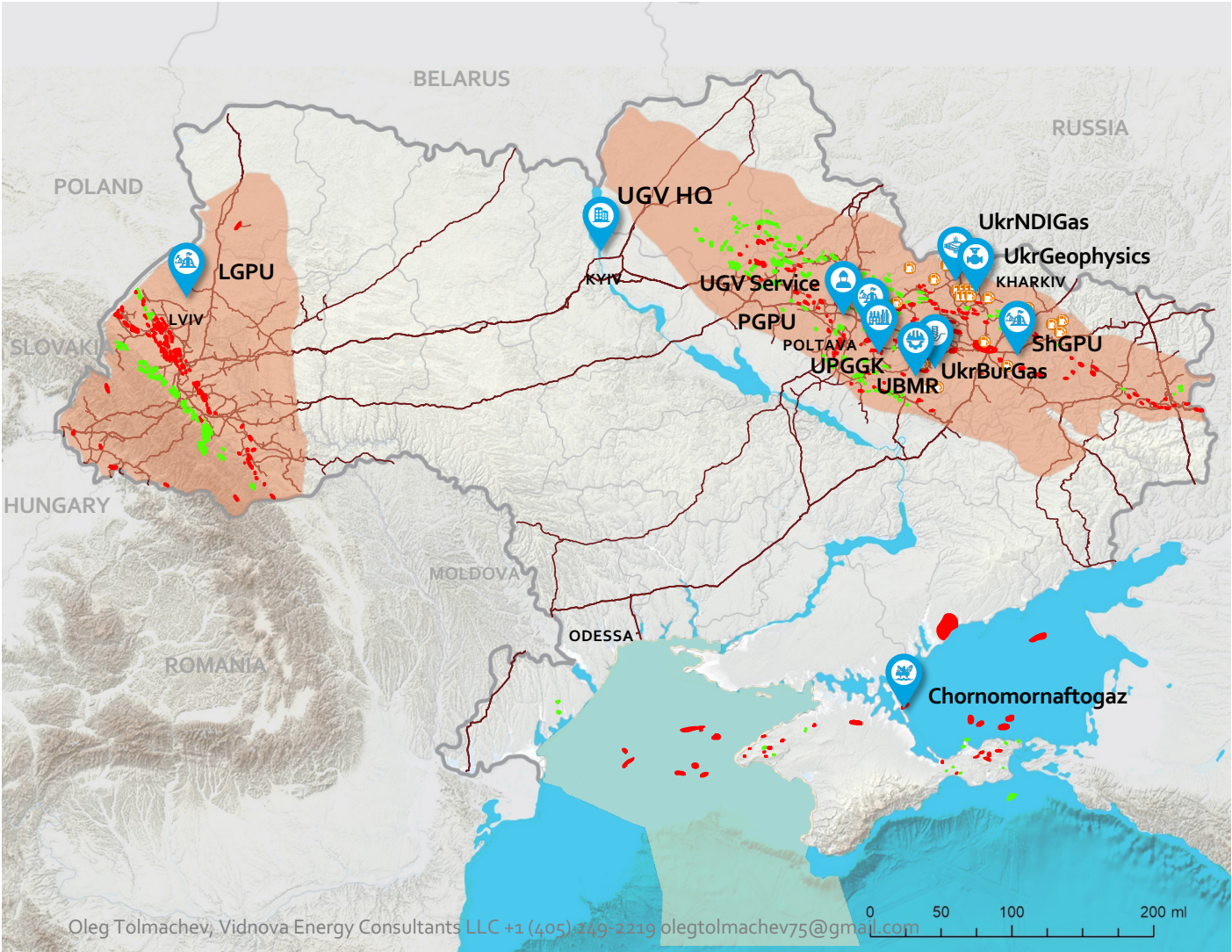
**232 social projects** implemented in 11 regions of Ukraine during 2021-2023

UGV is an upstream arm of the Naftogaz group and a fully integrated 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.
- 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.
- Streamlined and simplified the org structure, reduced G&A personnel by 20%
- Close work with law enforcement and government stakeholders to somewhat alleviate the problem but it remains an issue due to the legal and law enforcement environment.
- 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



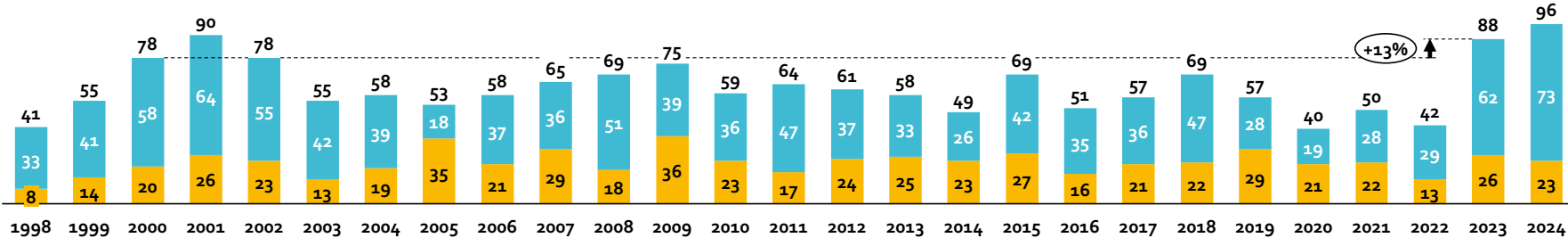
## Achieving a rapid production increase

- 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

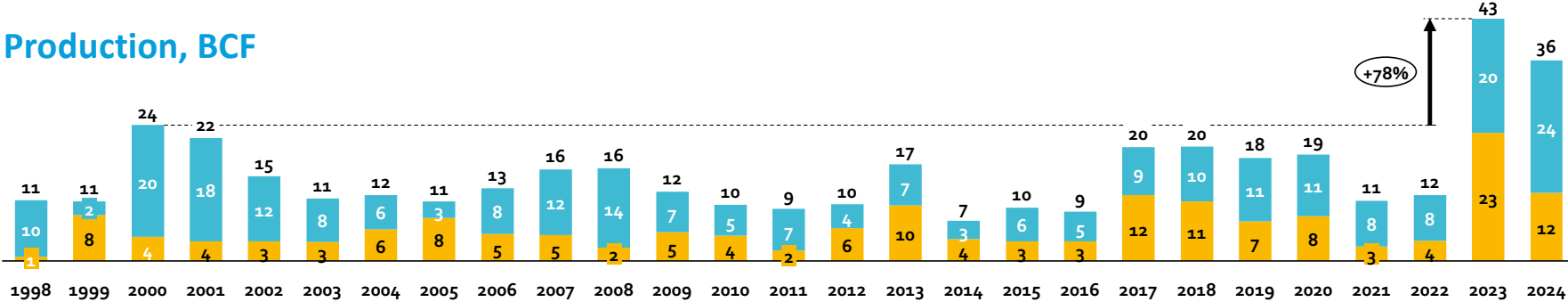
Operator (TSO of Ukraine)  
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# Gas production from exploration and development wells drilled in 2023: the best performance of the last 25 years

## Number of wells



## Production, BCF

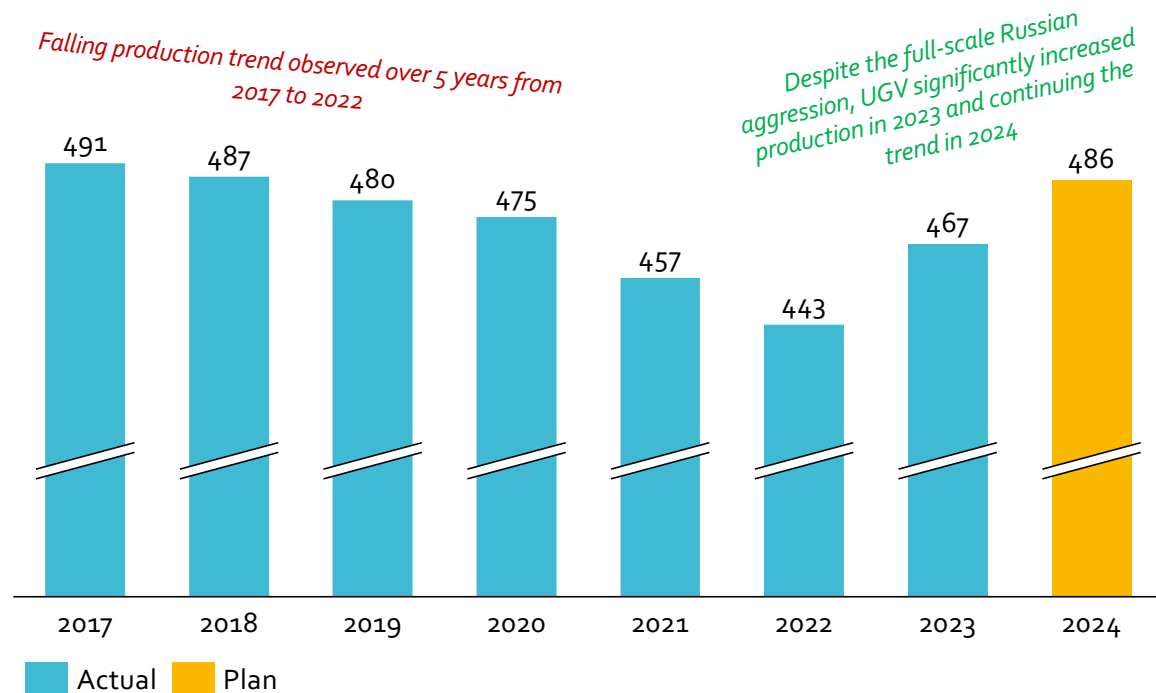


Development Exploration

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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/year



## Dangers of operating in wartime

- 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

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## UGV achievements in 2022 (first year of war):

- Maintaining gas production levels (3% production decline)
- launching large-scale 3D seismic exploration project in western Ukraine
- putting 41 new wells into operation, close to the previous year's performance
- commissioning a new booster compressor station in western Ukraine

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



# 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 exporting gas into Europe.
- Ukraine will prevail in its existential fight against Russian aggression and offer a very attractive investment potential.