

# **Bettering Human Lives**

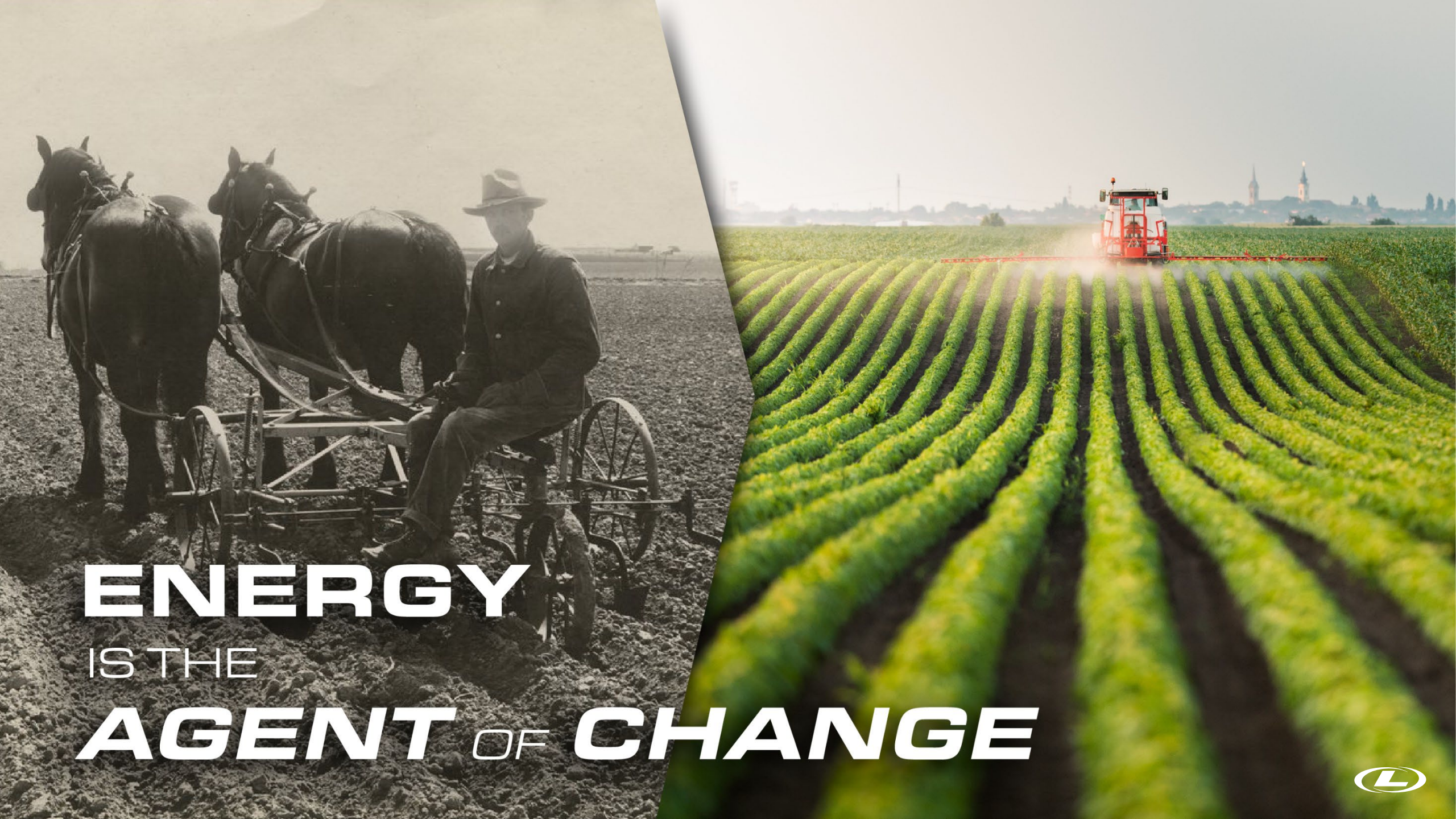
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**Chris Wright**  
**Liberty Energy**

November 15<sup>th</sup>, 2023



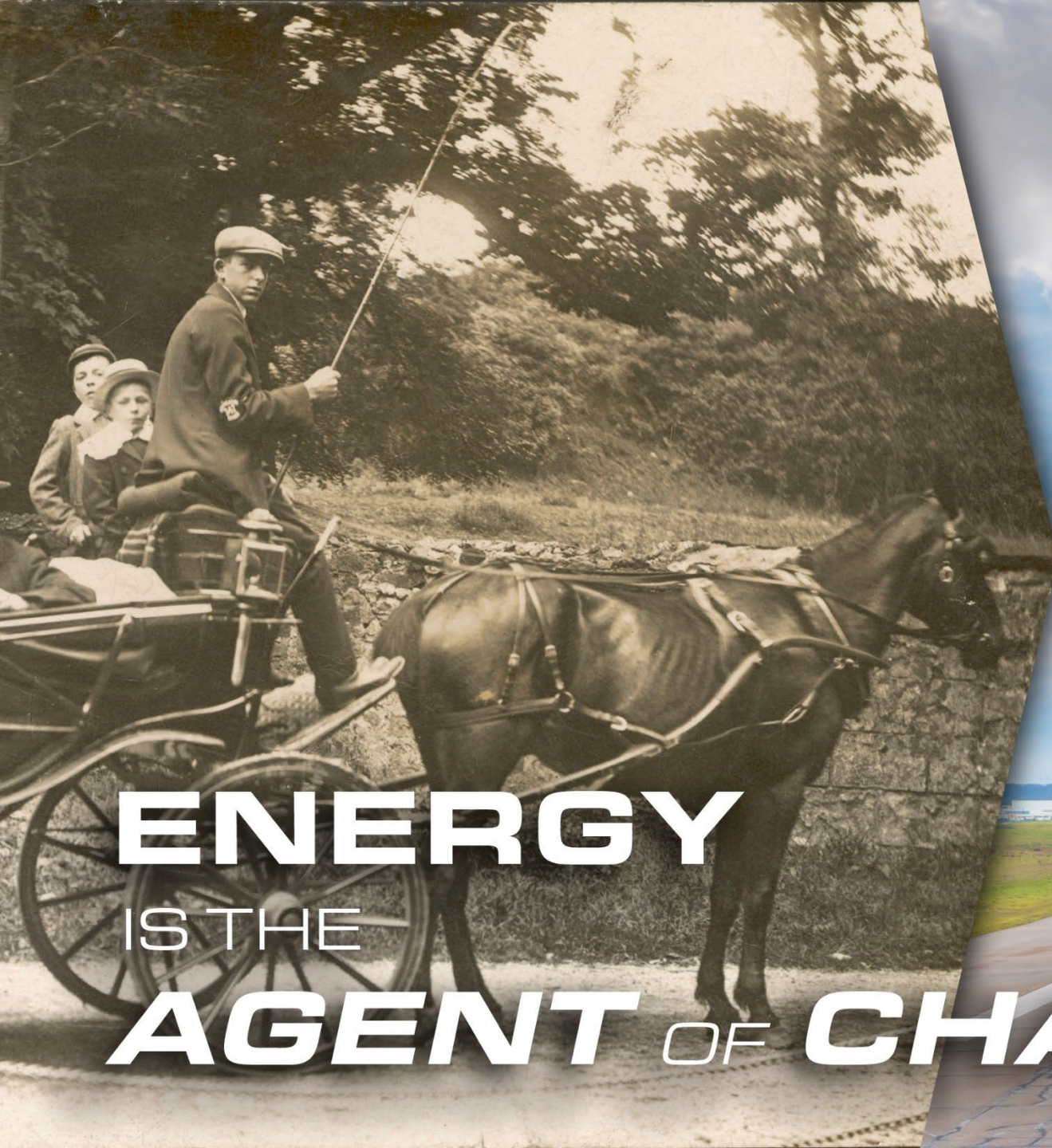




**ENERGY**  
IS THE  
**AGENT** *OF* **CHANGE**



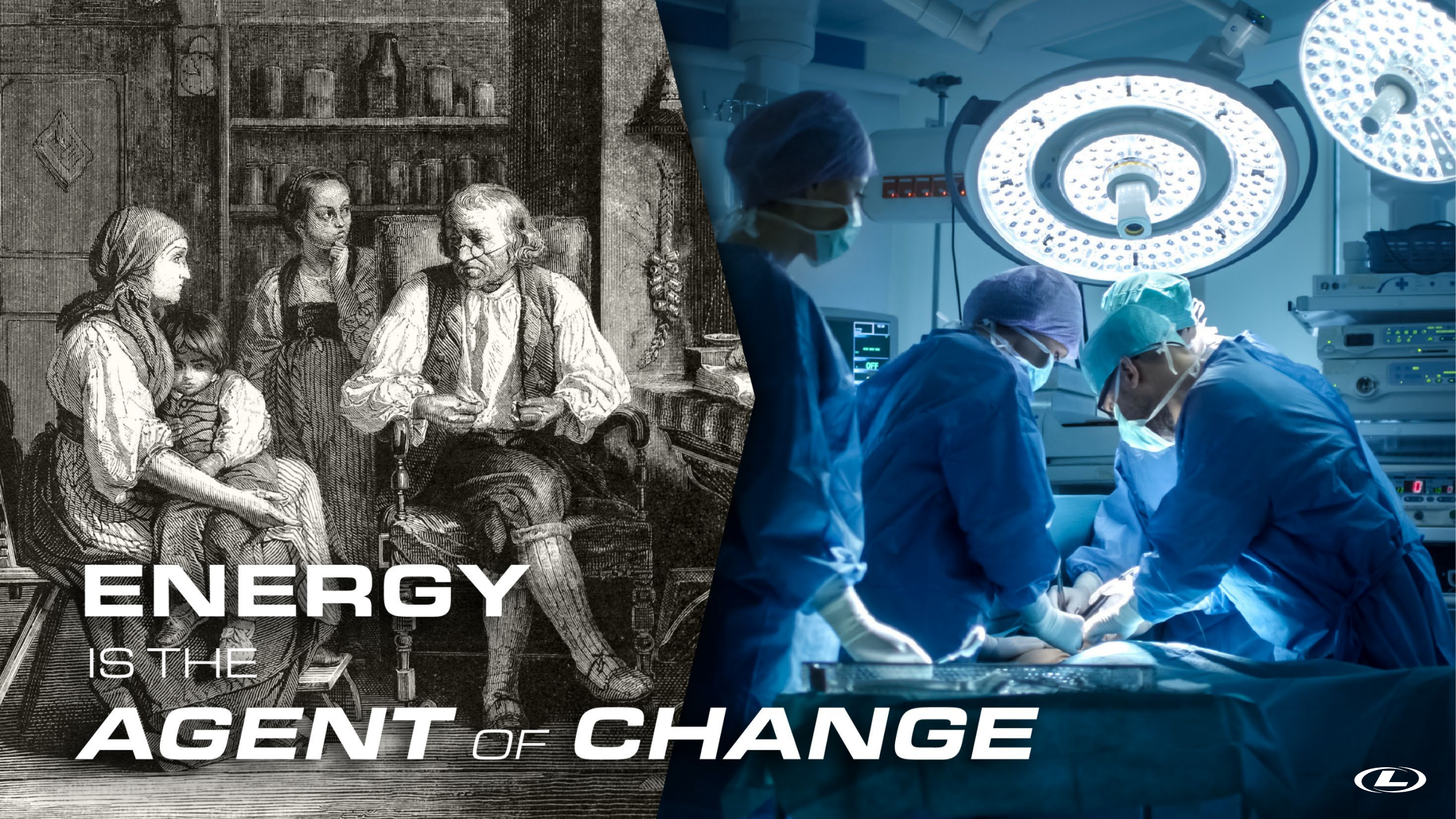




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# Three Global Energy Challenges



## Energy Poverty



## Secure Supply of Reliable, Affordable, Clean Energy



## Climate Change

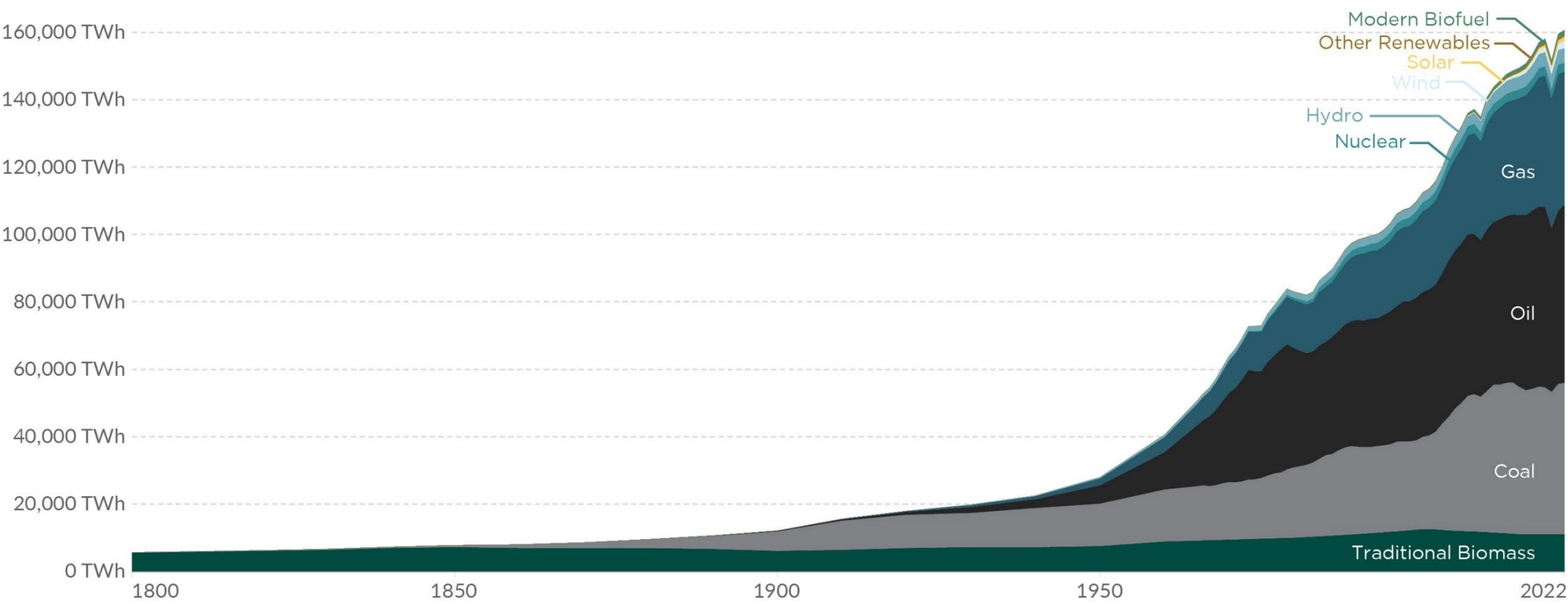


Source: AFP photo

# Where Our Energy Comes From



GLOBAL PRIMARY ENERGY CONSUMPTION 1800-2022



Source: Energy Institute Statistical Review of World Energy (2023); Vaclav Smil (2017)





- 5 billion people today – over half of humanity - wear hand-washed clothes
- 800 million have zero access to electricity
- Another one billion have low-wattage, intermittent access to electricity

- 1/3 of humanity still lacks access to basic modern energy and clean cooking fuel
- Women in Africa spend 1-5 hours per day gathering fuel wood and water
- **Over 3 million people die every year from indoor air pollution**

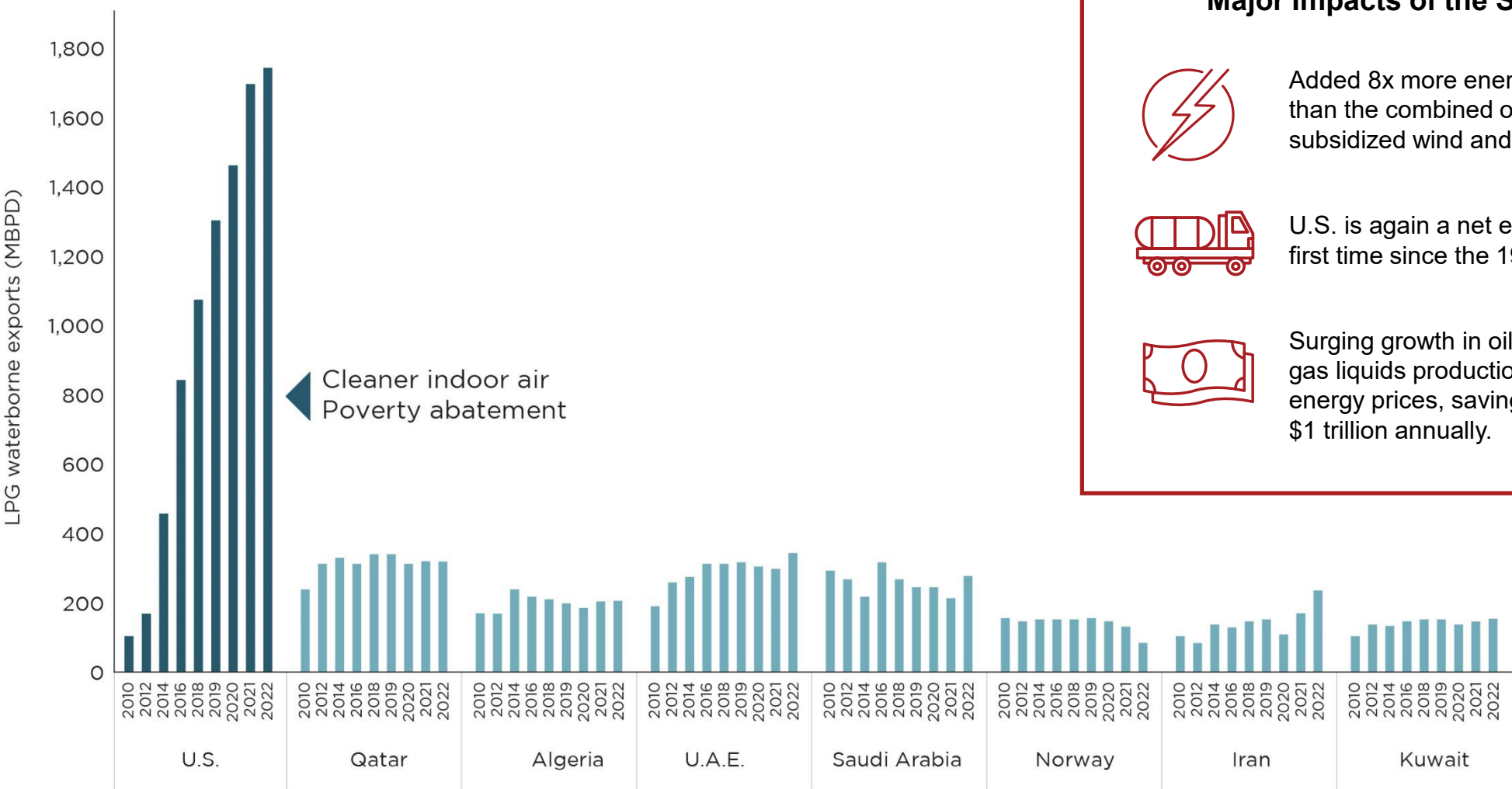




# Natural Gas Liquids Exports



## U.S. RESPONSIBLE FOR VIRTUALLY ALL GLOBAL LPG EXPORT GROWTH



## Major Impacts of the Shale Revolution



Added 8x more energy production in the U.S. than the combined output of heavily subsidized wind and solar.



U.S. is again a net energy exporter for the first time since the 1950s.



Surging growth in oil, natural gas, and natural gas liquids production has driven down global energy prices, saving energy consumers over \$1 trillion annually.

Source: IEA and IHS Waterborne





- 10% of Americans received a utility disconnection notice over the last 12 months
- Over 10% of Americans report keeping their homes at an unsafe temperature

### Last Winter:

- 24% of Britons were unable to warm their home to a safe temperature
- 68,000 excess deaths in the European Union due to insufficient heat

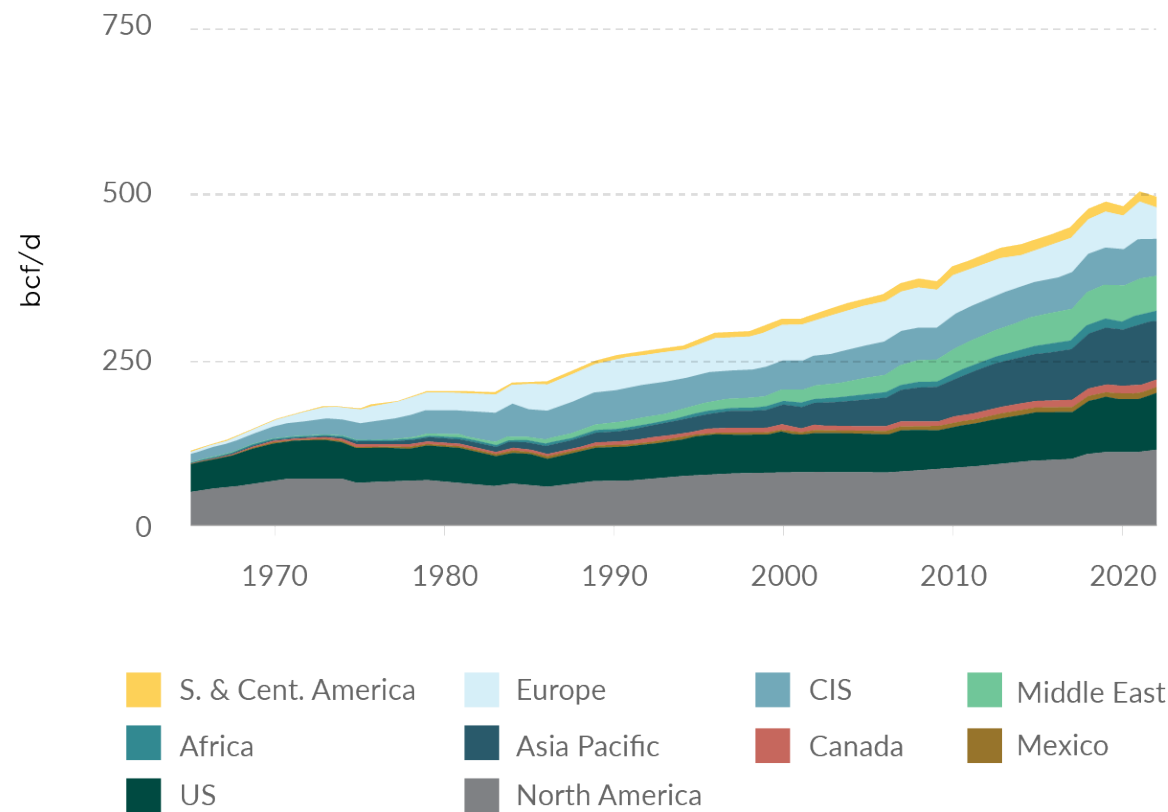
Globally, **8X** more people die of the cold than of heat



# Natural Gas is the Fastest Growing Energy Source



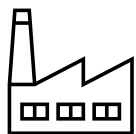
NATURAL GAS CONSUMPTION 1965-2022



## Key Uses of Natural Gas



Fertilizer



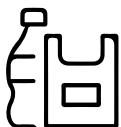
Manufacturing



Electricity Production



Home Heating & Cooking



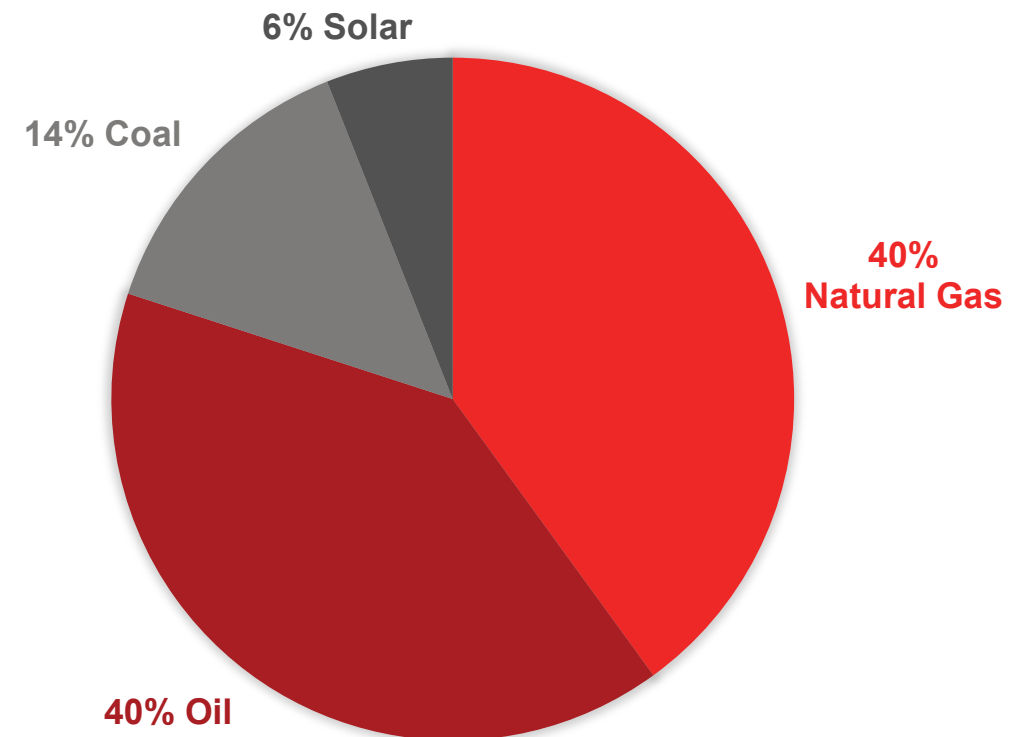
Petrochemicals



# Geopolitical Leviathan & Tamar Supply Natural Gas for 70% of Israel's Electricity and Exports



## Israeli Primary Energy





# Energy Access is Illuminating

The Stark Difference In Energy Access Between North And South Korea



## Energy Access is Illuminating



Only **52% of North Korea's population** has access to electricity as compared to 100% of South Koreans.



South Korea has **17 times higher per capita energy consumption** than North Korea, primarily sourced from fossil fuels.



**Higher energy consumption means healthy, longer lives.** South Koreans are born with a life expectancy 11 years longer than their northern neighbors.



Access to energy has far-reaching effects. **9.3% of North Korean children under the age of 5 are underweight** as compared to 0.9% of South Korean children the same age.



# Energy Access is Green

The Island Of Hispanola Is Shared By Haiti And The Dominican Republic



## Energy Access is Green



The national border can be seen in this photo **due to the severe deforestation** in Haiti as traditional biofuels are the primary energy source for much of the population.



The Dominican Republic, on the other hand, has **8 times higher per capita energy consumption** than Haiti, almost entirely from fossil fuels.



Higher energy consumption means **healthy, longer lives**



Far fewer people relying on traditional energy sources like wood means **thriving forests and a cleaner environment.**

