

REACHING CLIMATE GOALS WITH NATURAL GAS AND LNG

Through bold steps and technological innovation, natural gas and LNG are working to enable a clean energy future for all. **THIS IS WHAT THE PATH FORWARD LOOKS LIKE, DECADE BY DECADE.**

THE 2020s

PLEDGING TO LIMIT EMISSIONS.

- ExxonMobil plans to **reduce operated upstream emissions by 30%** as well as flaring and methane emissions by **40-50% by 2025**.¹
- Mitsubishi Corporation targets **25% emissions reductions by 2030**.²
- bp **targets 30-35%** reduction in operated GHG emissions on an absolute basis **by 2030**.³
- Shell targets **20% reduction** in carbon intensity **by 2030**.

PLEDGING TO ELIMINATE ROUTINE FLARING.

- All producing CLNG members have pledged to eliminate routine flaring, as defined by the World Bank,⁴ by 2030.**^{5,6}
- bp aims for **zero routine flaring** in US onshore operations **by 2025**.⁷

IMPROVING OUR ABILITY TO RESPOND TO AND REDUCE EMISSIONS WITH DRONES, INFRARED CAMERAS, WASTE HEAT RECOVERY SYSTEMS (WHR)⁸ AND REAL-TIME MONITORING.⁹

- Shell expands drone use to enhance their existing **methane leak detection and repair** program.¹⁰
- ExxonMobil expands the use of aerial LiDARTM imaging¹¹ and SOOFIE¹² fixed continuous **methane detection technologies**.
- bp aims to **install methane measurement** at all existing major oil and gas processing sites globally by **2023**.¹³
- Cheniere's WHR system is estimated to **save over 600,000 metric tons of CO₂ per year**.¹⁴
- As a direct result of its methane leak detection programs, Berkshire Hathaway Energy had a **combined leak rate of only 0.037% in 2020**.¹⁵
- Freeport LNG implements an all-electric motor drive facility, **reducing its liquefaction plant emissions by over 90%**.¹⁶

INVESTING BILLIONS IN RENEWABLE TECHNOLOGIES AND LOW-CARBON SOLUTIONS.

- bp invested **\$750 million in 2020**¹⁷ and aims to increase its **annual low-carbon investment** to around **\$5 billion per year by 2030**.¹⁸
- Berkshire Hathaway Energy **invested \$34 billion in 2020**, with plans to spend **approximately \$3 billion more through 2022**.¹⁹

INCREASING RESEARCH INTO AND BEGINNING TO UTILIZE CARBON CAPTURE AND STORAGE (CCS) TECHNOLOGIES.²⁰

- The CCS process at NextDecade's Rio Grande LNG facility expects to **capture and permanently store more than 5 million metric tonnes of CO₂ per year**.²¹

CARGO EMISSIONS TAGS AND CARBON NEUTRAL LNG CARGOS HIT THE MARKET.²²

- bp and Sempra LNG sign a contract for the delivery and receipt of the companies' **first carbon offset LNG cargo**.²³
- Cheniere intends to provide customers with **Cargo Emissions Tags** that detail the estimated **GHG emissions associated with each LNG cargo**, from the wellhead to the delivery point.²⁴

ESG-BASED CERTIFICATION PROGRAMS FOR NATURAL GAS BEGIN.

- Cheniere collaborates with natural gas suppliers on an R&D project to **assess emissions performance, and scale up relevant quantification, monitoring, reporting, and verification (QMRV) methods and technologies**.²⁵
- NextDecade announces a pilot project to assess **environmental performance across the energy value chain**.²⁶
- ExxonMobil pursues **certification of natural gas in the Permian Basin** and evaluates potential **expansion to other areas**.²⁷

THE 2030s

ONGOING INVESTMENTS IN RENEWABLES AND LOW-CARBON SOLUTIONS REAP REWARDS.

- Shell expects to provide enough **renewable electricity for 50 million homes** and **reduce its carbon intensity by 45%**.²⁸
- bp aims to grow its net renewable generating capacity from **2.5GW in 2019** to **20GW by 2025** and to around **50GW by 2030**.²⁹

CCUS TECH TAKES HOLD AND HELPS REDUCE U.S. EMISSIONS.

- ExxonMobil's CCUS Hub in Houston expects to capture and store **100MMT of CO₂ a year by 2040**.³⁰
- Shell is seeking access to an additional **25 million tonnes/year of CCS capacity by 2035**—equal to 25 CCS facilities.³¹

THE 2040s

EFFICIENCY AND EMISSIONS INTENSITY REDUCTIONS IN OIL AND NATURAL GAS ARE EXPECTED TO SUPPORT A NEARLY 45% DECLINE IN CARBON INTENSITY OF THE GLOBAL ECONOMY.³²

CREATING HYDROGEN FROM NATURAL GAS HELPS DECARBONIZE ENERGY-INTENSIVE INDUSTRIES.³³

- bp expects **hydrogen** to have more than a **15% share** in total global energy consumption by **2050**.³⁴

REDUCTIONS IN GHG EMISSIONS AND CARBON INTENSITY HELP THE WORLD ACHIEVE A CLEANER FUTURE.

- bp pledges to **cut the carbon intensity** of its products by **50% by 2050**—and its scope 1, 2 and 3 emissions to be at **net-zero by 2050 or sooner**.³⁵
- Shell aims to **reduce its carbon intensity by 100% by 2050**.

DESTINATION: 2050

AMBITION OF NET ZERO EMISSIONS.^{36,37,38}