


Megatrends due to shape our everyday life in the near future



Global megatrends

The global population is projected to rise by over 25%¹ by 2050, and by over 40%¹ by 2100.

As the world seeks to meet its energy needs in a more sustainable manner, oil and gas will continue to play a critical role in enabling this transition.

Aramco is uniquely positioned to respond to these megatrends by adopting sustainable energy production technologies and practices that minimize environmental impact.



Rising global demand for essential resources

~40% Food production is expected to rise by 40% by 2050 to feed 9+ billion people²

By 2050, the world will need more food, housing, and medical support than ever before. These industries depend on fertilizers, energy-intensive manufacturing, and petrochemical products, which are largely dependent on oil and gas. Ensuring more sustainable and efficient production, while minimizing environmental impact, is key to meeting this demand.



A materials transition is essential for an effective energy transition towards net-zero

~10x Building solar and wind systems requires roughly a tenfold increase in common materials to deliver the same quantity of energy compared to building traditional energy systems (e.g., a natural gas plant)³


In pursuit of net-zero emissions, renewables alone cannot yet meet global energy demand. Additionally, wind turbines, solar panels, and electric vehicles (EVs) all require petrochemicals, lubricants, and advanced materials derived from oil and gas. These materials are essential for manufacturing turbine blades, battery components, insulation for power grids, and carbon fiber.



Energy demand continues to grow

~47% Global energy demand expected to grow by 47% by 2050⁴

Ongoing growth in the global population and improving living standards will see energy demand continue to rise, especially in developing countries, where economic progress will require greater energy and materials demand. Oil and gas remain essential to meet this growing global energy demand, with new sources of energy supplementing, rather than replacing, conventional energy sources.



Hard-to-abate sectors still rely on oil and gas

2x Aviation fuel demand expected to more than double by 2050⁵

While electrification is advancing, industries such as aviation, shipping, and heavy manufacturing cannot yet transition away from hydrocarbons. Oil and gas will continue to support these sectors through lower emission solutions such as lower-carbon aviation fuel (LCAF), advanced materials, and generating energy for heavy industrial processes.



AI and digitalization are creating a new energy demand boom

>3% Data centers will use over 3% of global electricity by 2030, compared to 1% of global energy demand in 2022⁶

The rise of AI, cloud computing, and automation is leading to a surge in electricity consumption. Data centers alone are projected to use over 3% of global electricity by 2030⁶. Gas provides a reliable energy source to support this rapidly growing sector.

Oil and gas: navigating megatrends for a more sustainable future

As global demand for lower-emission energy continues to grow, the oil and gas sector remains critical to enabling sustainability. From advancing carbon capture technologies to supporting the growth of renewables, the sector is evolving to meet future energy demands in a responsible way.

Supporting reliable energy supply, access, and economic growth

Oil and gas remain essential in ensuring access to affordable and reliable energy. This includes:

- Providing energy security and stability for both developed and emerging economies.
- Investing in infrastructure projects that drive industrial growth.

Enabling renewable energy growth

Renewables rely on hydrocarbons for key components and support. Oil and gas help:

- Provide essential materials for solar panels, wind turbines, and EV batteries.
- Stabilize grids by balancing energy supply when renewables fluctuate.

Advancing on carbon capture and circular economy solutions

Reducing emissions and improving efficiency are key to the future of energy. The sector is investing in:

- CCUS technologies to capture and store CO₂ from industrial operations; as well as potentially utilizing the captured carbon for enhanced oil recovery, and value adding products.
- Recycling and advanced petrochemical solutions to reduce waste.

Developing lower-carbon fuels and hydrogen innovation

New fuel technologies are helping reduce emissions across multiple industries. Oil and gas are driving:

- Blue hydrogen production: which provides a lower-emission fuel alternative.
- Synthetic fuels and biofuels: offering opportunities to be part of a lower-carbon fuel blend.
- LCAF: providing a practical, scalable pathway for reducing emissions from aviation.

Building sustainable operations and identifying efficiencies

As AI use grows, data center demand will rise everywhere. The oil and gas industry has a role to play, as an energy provider and an adopter of AI:

- Developing countries are likely to rely on gas for energy for data centers, before switching to alternatives.
- AI monitoring systems that enhance efficiency and identify sustainable opportunities in operations.

1. United Nations, 2024. In June 2024, the world population reached 7.6 billion people and is expected to reach 9.8 billion in 2050, and 11.2 billion in 2100.

2. World Economic Forum, 2022.

3. Issues in Science and Technology, Arizona State University, 2022.

4. S&P Global, 2021.

5. Institute for Energy Economics and Financial Analysis, 2024.

6. World Economic Forum, 2025.