

Energy

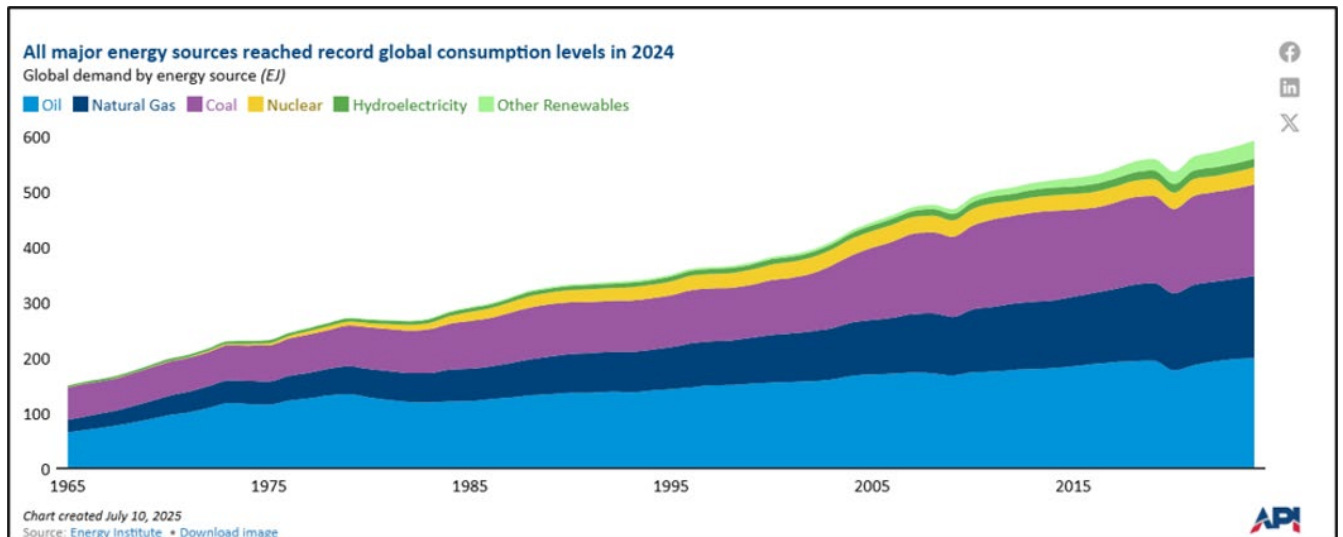
Why Oil & Gas Are So Important to Modern Society

Before a briefing on energy here is one fact to know. Petroleum is the crucial ingredient for 99% of all pharmaceutical feedstocks and reagents. In plain English that means that 99% of all medicines, antibiotics and pain killers cannot be manufactured without petroleum.

Oil is one of the most important natural resources in the world and remains a cornerstone of the global energy system. Oil continues to provide a significant share of the world's energy needs and supports transportation, manufacturing, agriculture, and economic development. Its widespread use has a direct impact on people's quality of life and overall well-being.

Oil and gas are the absolute vital ingredients to the manufacturing of the four most important products for human existence besides water and air. Without any one of these products – billions of people would either die or be destined to an inhuman existence. These four products are Cement, Steel, Plastics and Fertilizer.

One of the main reasons oil is so important is its role in meeting global energy demand. According to the International Energy Agency (IEA), oil accounts for approximately 30% of the world's total energy consumption, making it the single largest source of energy worldwide. Every day, the world consumes more than 100 million barrels of oil. This energy powers cars, trucks, airplanes, ships, factories and industrial machinery that keep economies moving and supply chains functioning. Oil and gas make sure the lights stay on all over the world.



The above chart shows that 3% of world's energy is from other renewables (wind, solar and geothermal)

Electricity

With windmills and solar panels creating new sources of energy for the world it must be remembered that these sources can only produce electricity. Electricity is only 20% of the world's energy demand. The other 80% of energy consumption is not electricity.

The world consumes 31 trillion kilowatt hours of electricity each year. If just 30% of this demand were assigned to wind and solar it would take approximately \$200 trillion for just the battery backup for when the sun was not shining and the wind was not blowing. This cost does not include the cost of the solar and wind installations.

Feeding the world

“Simply stated: in 2020, nearly 4 billion people would not be alive today without synthetic ammonia....half of the world’s population could not be sustained without synthetic nitrogenous fertilizers.” Page 79. Vaclav Smil, *How the World Really Works*.

These fertilizers depend on natural gas. In the United States 37% of our gas comes from oil rich shale oil wells. Globally the gas production from oil wells is approximately 20%.

Global food production would also be inadequate without herbicides and pesticides derived from gas and petroleum. The production of fertilizers and pesticides that help increase crop yields are vital to a hungry world.

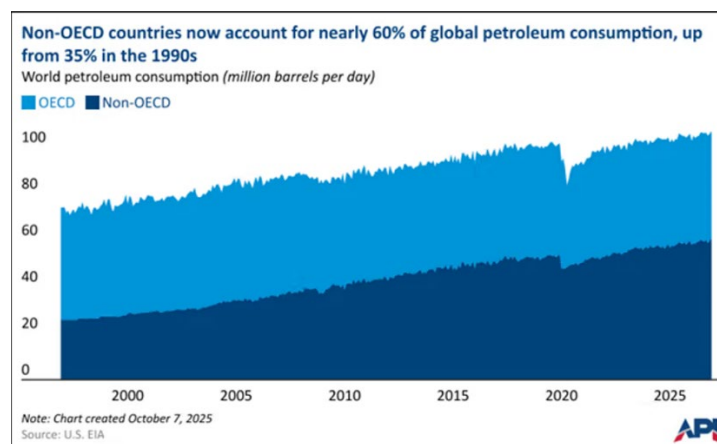
Modern farming equipment, including tractors and harvesters, runs primarily on diesel fuel. As a result, oil and gas play a major role in supporting global food production, transportation and refrigeration vital to feed a world population that now exceeds 8 billion people.

Transportation

Transportation is particularly dependent on oil. More than 90% of the energy used in global transportation comes from petroleum-based fuels such as gasoline, diesel, and jet fuel. Without oil, it would be impossible to transport food, medicine, consumer goods, and raw materials efficiently across countries and continents. The global aviation industry alone consumes millions of barrels of jet fuel each day, enabling international trade, tourism, and business travel.

Oil and gas also contribute significantly to economic growth and employment. The oil and gas industry supports tens of millions of jobs worldwide, including positions in exploration, production, refining, transportation, engineering, and manufacturing.

In the United States, the industry supports over 10.6 million jobs and contributes several trillion dollars to the U.S. GDP. Reliable access to oil helps businesses operate efficiently, lowering transportation and production costs and supporting economic development.



The graph above is showing that the developing world is now consuming more oil than the OECD (Organization for Economic Cooperation and Development....basically the top industrialized countries in the world). This very strong growth demand could be very difficult or maybe impossible to supply in the next 10-20 years. Another reason why low cost enhanced oil recovery is important.

Beyond energy, oil is a critical raw material for thousands of products used every day. Petroleum is used to manufacture plastics, synthetic fibers, packaging materials, electronics, medical equipment, and household goods. It is estimated that more than 6,000 everyday products contain petroleum-derived components. Items such as smartphones, computer parts, medical syringes, and food packaging all rely on materials produced from oil. Plastics used in thousands of dental and hospital supplies are crucial for maintaining antiseptic and sterile healthcare.

Oil's contribution to human well-being extends beyond economic benefits. Reliable energy supports hospitals, emergency services, transportation systems, and infrastructure that improve health, safety, and living standards.

Oil remains essential to modern society. It provides 30% of the world's energy, powers over 90% of transportation, and serves as a key ingredient in many products, that are so important to life itself on earth.
