

Priority Title

Energy

Issue Statement

Energy is consumed in all Indian Nations by households (food, heating, electricity & transportation) and firms (goods and services). Sources of energy are derived from, and dependent on, the natural and built environments of Indian Nations. Fossil fuel, nuclear, and renewable sources ultimately affect the ecological health of biological populations primarily with: physical changes in biological systems converted to energy production sites (mines, wind turbines, dams) and wastes produced during the extraction, processing, delivery and consumption of energy (greenhouse gases, nuclear waste, mine tailings) . Energy flows can be inventoried, measured, and responded to at any scale, from the small (installing a solar panel on a tribal home) to the large (tribal investments in global carbon sequestration or wind farms)

Explanation of the Issue

Indian Nations are currently: assessing energy development impacts on their people and lands; evaluating technologies used to meet future energy demands; understanding energy relationships between transportation, food, heat, and electricity; training tribal personnel to build effective tribal energy programs; and finding ways to use energy resources consistent with traditional knowledge, law and customs. At Tuscarora, like many other Indian Nations, the people have acknowledged the energy crises and are actively seeking ways to reduce energy consumption (and costs) and replace the business as usual models currently in place. The Environmental Program is assisting this effort by developing ways to utilize traditional knowledge in the creation of new environmental and energy policy. One example is a three step process the framing of energy issues according to a traditional Haudenosaunee worldview called the Thanksgiving Address; the application of weighted criteria identified in traditional Haudenosaunee teachings to determine culturally-appropriate energy development; and, the use of traditional indicators to determine the efficacy of a selected energy development scenario. This model requires an analysis of the biophysical

What do Tribes and Alaska Villages Specifically Need from EPA to Address the Issue?

Indian Nations need the tools and expertise to understand energy flows through their communities and find ways to reduce negative environmental and human health impacts. Indian Nations need interventions by local state federal agencies for energy development activities which threaten or degrade tribal lifeways. Industry and government need to make renewable energy technologies available and affordable to Indian Nations.

Proposed Implementation Strategy and Potential Measures of Success

Implementation at the community level includes: inventorying tribal energy demand and supply cycles; increasing energy efficiency and conservation; understanding and effectively

The Oil Age

World Oil Production 1859 - 2050

Oil is created from the remains of plants and animals that died over millions of years. The source of most oil today can be traced to two land periods of global warming some 90 and 150 million years ago, and to the shallow seas bearing with them that covered much of the earth at that time. As generations of shells settled to the bottom, a unique combination of sedimentary rock was formed. Over time, some of the rock sank to just the right depth, where the warmth and heat gently cooked the shells' organic matter, transforming it into a dark liquid. This liquid—basically "rock oil"—was born.

After its creation, oil can migrate great distances, and rock is a naturally seepage to the surface. Petroleum has been gathered from crude from pools and seeped out of rocks and flowing to water bodies. Seeps of tar seeps create natural asphalt roads, seeps of bitumen in asphalt. The "Crude and refined natural materials from petroleum, which are defined "crack" is used for an industrial fuel.

The Oil Age began in earnest in 1859, when Edwin Drake drilled the world's first commercial well in Titusville, Pennsylvania. Although not intended to tap the immense stores of oil—some two billion barrels—drilling was a step toward the work under the rock. In the early decades of the Oil Age, petroleum was used in lamps for illuminating homes and businesses of a rapidly industrializing world.

Oil proved more effective than coal in running the world's economy, trains and shipping networks. The rise of the

automobile propelled demand for a new type of motor oil—gasoline—that separated because its total production by 1920. Oil revolutionized war, leading to new generations of motorized tanks, airplanes and submarines. Oil powered the rapid industrialization of America in the 1930s, and 1940s, as well as took to the road and air travel took off. Innumerable everyday products—like pharmaceuticals to clothing to computers—depend on oil and its refining into complex chemicals and plastics. Modern industrial farming, which feeds much of the world, would not exist without oil. It was dispersed throughout modern, oil and gasoline led to the growth and spread of cars, and all kinds of products, packages and ships led to international trade. Indeed, with cheap oil, the world's population has skyrocketed from 1.2 billion in the start of the Oil Age to now from a billion in 2005.

Oil is an incredibly dense energy source. A gallon of crude weighing 2.1 kilos generates as much energy as the kilowatt of a 100-watt light bulb, or the work of 50 people taking all day. Oil supplies about 40% of the industrial world's total energy needs and 60% of the fuel used to transport people and goods. Uniquely portable, oil can be shipped anywhere in the world in tankers, trains and barges. In industrial societies, as witnessed during the 1970s and 1970s of the Oil Age.

Oil is finite and nonrenewable. Of the world's total endowment of conventional crude, we've consumed about half so far. Discovery of oil peaked in the mid 1970s and by

the early 1980s we began consuming more of than we found. Today experts say we consume about four to six barrels of oil for each one discovered, a trend that is leading the world to an inevitable tipping point: the peak and then decline of global oil production.

The increased placement of production and depletion was first applied by geophysicist M. King Hubbert, who in 1956 correctly predicted the 1970-1971 peak in U.S. production. Today, about two-thirds of the world's largest oil-producing countries have reached their peak and now follow into permanent decline. Indeed, if the projections of a growing number of experts prove correct, we are now seeing the second half of the Oil Age, an era characterized by a dwindling supply of oil, which is essential to modern society. Whether solutions can be developed soon enough to sustain modern energy-intensive societies is a question that looms large every day.

Abandon Oil Depletion Model
About 200 years of the Oil Age as depicted in the main chart, which combines historical oil production data with projections of future output published by the Association for the Study of Peak Oil (ASPO), to a network of scientists dedicated to studying the "rise and fall" of the peak and decline of world oil and gas production." Estimates of rates of output are based on public and private assessments of the world's ultimately recoverable oil supply and assumptions regarding the future rate of depletion for individual countries.

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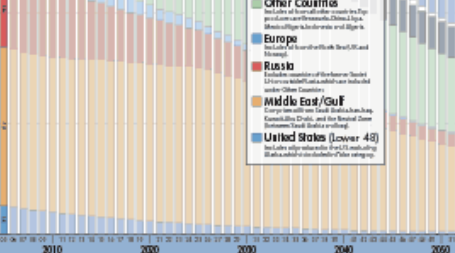
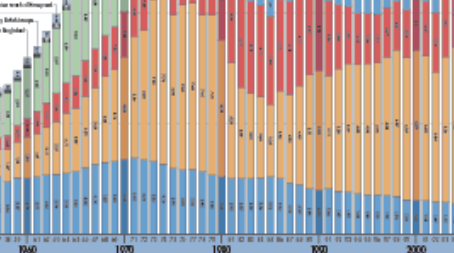
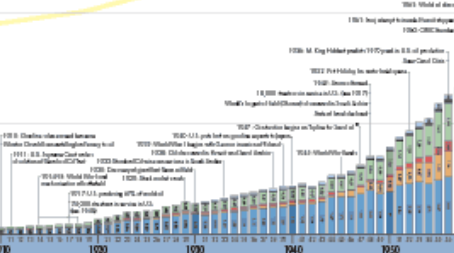
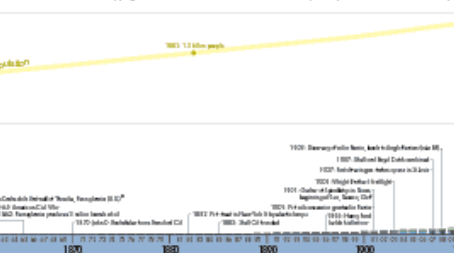
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Oil Demand (Bbl/d)



The Power of Oil

Transportation
About 95% of goods to power the world's economy, from food to medicine, from cars to computers, from planes to ships, from power to people, from oil to oil. Oil is the most important energy source in the world, and it is the most important energy source in the world.

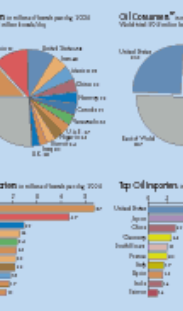
Peak
The world's oil production is expected to peak around 2010-2015, and then decline. This is because the world's oil reserves are finite, and the world's oil production is expected to peak around 2010-2015, and then decline.

Energy Reserves
The world's oil reserves are estimated to be around 1.5 trillion barrels. This is based on current estimates of the world's oil reserves, and it is expected to decline over time.

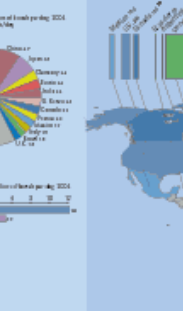
Production and Consumption



World Oil Reserves



The Growing Gap



Oil's Cousins: Coal and Natural Gas



Notes
This report is based on data from the Energy Information Administration (EIA) and the International Energy Agency (IEA). The data is subject to change as more information becomes available.

Disclaimer
This report is for informational purposes only and does not constitute an investment recommendation. The data is subject to change as more information becomes available.

Methodology
The data in this report is based on historical data and projections from the Energy Information Administration (EIA) and the International Energy Agency (IEA).

References
Energy Information Administration (EIA), International Energy Agency (IEA), and other sources.

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Peak Oil
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UNCONVENTIONAL OIL

- Natural Gas Liquids**
Natural gas liquids are produced from natural gas.
- Oil Shale**
Oil shale is a sedimentary rock that contains oil.
- Coal Seam Gas**
Coal seam gas is a type of natural gas that is found in coal seams.
- Heavy Oil**
Heavy oil is a type of oil that is thicker and darker than light oil.

CONVENTIONAL OIL

- Other Countries**
Other countries include Canada, Mexico, and the United States.
- Europe**
Europe includes the United Kingdom, France, and Germany.
- Russia**
Russia is a major oil-producing country.
- Middle East/Gulf**
The Middle East and Gulf region is a major oil-producing region.
- United States (Lower 48)**
The United States (Lower 48) is a major oil-producing region.

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TEK as Ecology

Thkenaksewahyaks

Thkenaks

“Red fox”

(‘its hide is always bad’)

ewah

“it eats”

yaks

“it’s berries”







TEK as an EIS



Tuscarora Nation Environmental Impact Statement

- Oral History used to quantify impacts
- 41 Elders interviewed (2005-2006)
- Digitization and Indexing
- Submitted to FERC

