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## [Oil Peak and the Renewable Abiotic Petroleum](#)

### *Are we saved from the "post industrial stone age"?*

We are living in a civilization based on oil. It is an issue that makes us extremely vulnerable. That's because of the global "Peak Oil." The oil production follows a bell curve. Its peak is the moment when oil has been 50% depleted. After the peak, oil production decreases while its price starts to go up.

Many scientists, bankers and investors consider that 2005 was the year of global Peak Oil. US domestic oil production reached its peak in the '70s. The bell of the oil production shows that by 2030, the global production will be the same as in 1980.

With one difference: the world's population in 2030 will be double and much more oil-consuming than in the '80s. Think only in the ascend of China. The demand for oil will significantly overcome production, and the oil dependent economies will fall apart, while oil wars will intensify. Simulations show that a drop of just 10-15% in the oil supply is enough to throw oil dependent economies into poverty. In the '70s, production fall of just 5% boosted by four times the oil price. That was temporary and the result of political events. In 1973, OPEC dropped its production in retaliation for US support of Israel. In 1979, Iran did the same attempting to cripple "the great Satan." US could turn to other oil producing nations like Venezuela.

But the after Oil Peak will be a permanent condition. There will be a continuous gradual decline of 3 to 13 % annually (depending on the geopolitical factors). This, in a moment when the demand increases by 2% annually. During the '60s, humans consumed about six billion barrels per year while discovering about 30-60 billion per year. Now, people consume close to 30 billion barrels per year, but discover less than four billion annually.

Could you imagine the effect of a 75% drop in production in ten years? Just a 15% lower production can mean a higher oil price by 550%. Some people talk about a "post industrial stone age" Dark Age and the oil industrial age seems to be just a blink in humans' history.

At first, gasoline will simply not be available to individual drivers, the priorities being heating oil, critical government and commercial use, public transportation, transport of food and goods, etc. This could lower the demand for new vehicles, but 10% of the jobs in the US, directly or indirectly, are connected to the manufacture of new cars. Reduced air travel will also collapse aviation, a \$400 billion dollar industry that indirectly generates \$1.3 trillion dollars. Severe economic dislocations will trigger massive social unrest.

Imagine a future without street light and air-conditioning systems, no heating, with massive industrial shut downs and catastrophic breakdowns in public services. Our civilization will start tumbling like a domino. Food and water reserves would dwindle, and poor people are easy to turn into adepts of fascism or other types of repressive doctrines. The crime rate and war will soar in a world of beggars.

People associate oil with cars, but we are surrounded by petrochemicals (plastics), from components of your car to water bottles. Ten calories coming from oil produce one calory of what you eat if you consider pesticides, fertilizers, and oil powered tractors, refrigerators, trailers, and food transportation. 20% of the oil production is consumed in these processes.

In the US, food is transported 1,500 mi (2,400 km) before reaching the consumer; in Canada, this distance is almost three times longer.

Oil does not restrict to transportation, agriculture and plastics; modern medicine, water distribution, and national defense rely on it. Making an average car consumes 20 barrels (840 gallons) of oil, twice the car's weight. A computer consumes ten times its weight in oil. Even the Internet is a great consumer of oil based energy. The infrastructure required to support the Internet represents 10% of all the electricity produced in the US.

You can imagine the huge amounts of oil consumed for developing and maintaining a modern city (concrete, asphalt, highways). For producing one ton of copper, 17.8 barrels of oil are consumed. Aluminum requires 20 times more energy.

Even alternative energy systems like solar panels, hydrogen fuel cells, biodiesel production facilities, nuclear power plants and wind turbines require oil in their production processes and energy-intensive types of metallurgy. Even soybeans and corn for biofuels are cultivated using oil-powered agricultural methods.

The banking system could collapse, as banks could lend more than they have on deposit, being confident that cheap oil-based energy covers up today's debt. Money means just usable energy.

### **Renewable oil**

By the moment, the crisis is alleviated by the discovery of the world's last "elephant" sized oil fields in the North Sea and Alaska and higher production from countries like Venezuela and Saudi Arabia.

Some point to the Oil Sands in Canada as a salvation solution. But this oil is extremely financially and energetically intensive to extract. Conventional oil has a rate of "energy return on energy invested" (EROEI) of 30:1, while the oil sands of 1.5:1 (thus, they require spending 20 times more energy to generate the same amount). Even optimistic reports forecast a peak production of four million barrels daily of oil coming from the oil sands around 2020.

Others point to the Oil Shale in the American West. But this oil production will be very low by 2015. These oil sources would worsen the situation, as they will consume more energy than producing.

Some are desperate to show that oil is a renewable resource and thus, people will lose greatly, as oil companies are not interested on them powering down. The most popular theory is that of abiotic oil.

### **Abiotic oil**

Abiotic oil theory speaks about oil as actually a renewable resource continually produced by an "abiotic" process deep in the Earth. It may sound interesting, but no proof of it has come so far.

Mikhail Lomonosov was the first to emit in the 18th century the biotic (organic) theory of petroleum origin, considered to be the product of decomposition under certain anaerobic (oxygen free) conditions of pressure and temperature (60 to 120o C) of plant and animal corpses (mainly marine plankton, not large corpses of dinosaurs, how people would think)

along the geological eras (hence, the name fossil fuels), accumulating in exhaustible pouches... At temperatures of 120 °C to 220 °C, thermal cracking turned long chained hydrocarbons of oil into the short chained hydrocarbons of natural gas.

One century later, the Russian Dmitri Mendeleev, the creator of the periodic table of elements, and the French chemist Marcellin Berthelot, emitted their theory that the oil forms deep in the inner Earth, sipping constantly to the surface of the planet, like the magma of volcanoes. Lomonosov's theory was confirmed, Mendeleev remained with the merit of the table, but his theory has come so convenient for both oil producers and many people...

The partisans of the abiotic theory talk about world conspiracy, like in the case of astronauts seeing UFOs.

Some say that the biotic theory was accepted when detection and exploitation methods used backward technology at the beginning of the 20th century, which could drill only in sedimentary formations. Later, oil fields were also found in basins with crystalline rocks, where they were believed impossible to find, like White Tiger basin, off Vietnam shores, located on a granite bed, but also Athabasca Tar Sands (Canada), Orinoco Heavy Oil Belt (Venezuela) and the Ghawar Field (Saudi Arabia).

The abiogenic theory has a support in the ubiquity of hydrocarbons in the solar system, and oil may originate from carbon-bearing fluids which migrate upward from the mantle. But those space hydrocarbons are mainly short-chain non-organic molecules, like methane and ethane.

Oil would be located in the pores of the collecting rocks, like water in the pores of a sponge, and it would be all about the speed of extraction: a rapid and massive extraction would apparently exhaust the deposit, but in years, it would be refilled. Russian researchers say they have found oil fields believed to be exhausted after one century of exploitation, and actually soaked with fuel at the border between Georgia and Azerbaijan, but also one well in Grozny (the capital of Chechnya). Similar cases would have been signaled in the Carpathian area and South America.

Of course, American researchers, too, sustain the theory. They cite the Eugene Island 330 oilfield of Louisiana as proof that oil fields refill themselves (even if Google images of the site are not available...). Eugene Island 330's oil production has been in decline for the past 25 years, but tests made in the last decade would show that oil had comparable levels with those from the last decades.

The arguments are weak. Oil found in basement rocks can be located in the case of highly fractured source rocks, when liquid oil is poured in the depth. Thus, they are not the source, but a collector basin.

Another issue: the hydrocarbons from oil ignite and react to pressures tens of times lower than those found in the profound depths of the planet, at over 12 km (7.5 mi) downward (not the shallow depths where oil is extracted). And we have to add the extreme temperatures in the core of the planet. Long chain hydrocarbons could not stand those conditions, turning, as shown, into natural gas. Moreover, long chain hydrocarbons from oil can come only from organisms. The long chain is typical for living beings.

The refilling of the pouches is normal, as current technology can extract only 30-40% of the oil located in the reservoir rock, and this under the best conditions. In time, temperature and pressure may pump oil into the "emptied" part of the deposit, and the field can be exploited again. Even the most sophisticated methods cannot deplete completely a reserve, taking up

to 50-70% of its stock. Thus, oil deposits are not inexhaustible.

In the end, most researchers admit that there is no direct proof so far of abiogenic petroleum formed abiogenically within the crust.