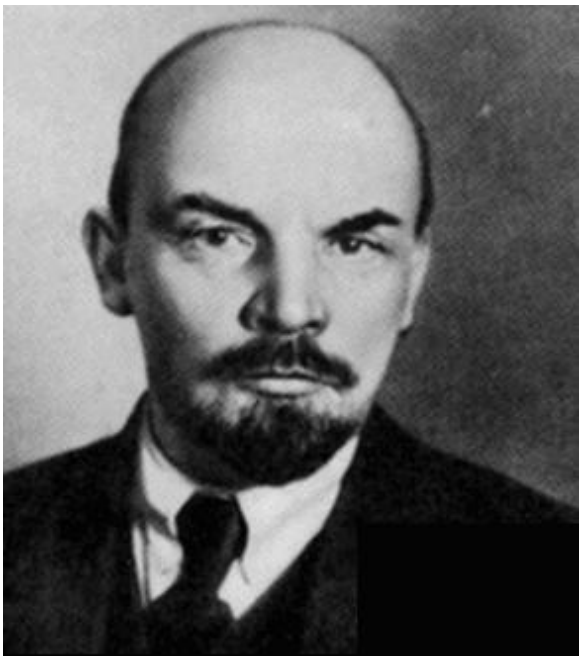
The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

# EROEI Short #2: Lenin & Lohan

Posted by jeffvail on August 28, 2007 - 10:00am
Topic: Alternative energy
Tags: eroei, eroi, net energy [list all tags]

Picking up where we left off, where can we draw the line in EROEI calculation? Where can we say that either 1) a given energy expenditure is not a prerequisite of the energy produced, or that 2) a given energy input is too minor to be worth accounting for? This short article will address the first of those questions.



*"Vladimir Lenin"*

*"Lindsay Lohan"*

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Clearly, some energy inputs are prerequisites to a given process of energy production. The energy required to lift oil from its reservoir to the surface is a good example—this energy expenditure is a prerequisite to producing the resulting energy from the oil well. What about the marginal energy input used to create the earth mover that leveled the site for the drill pad? Assume, for the moment, that we can account for the percentage of its useful life expectancy that will be committed to leveling this one site. It seems clear that the marginal energy requirement, represented by [total embodied energy in earthmover] * [percent of earthmover life leveling this drill pad], must be included in the energy accounting of the oil produced from that well. After all, a level site for the drill pad is a prerequisite for production from that well, no? What about the marginal energy required to build a Ford F250 to transport the machinist from home to factory to build the earthmover?

What about Lindsay Lohan? [1]

OK, I'll admit, that one probably came out of left field. I'm stretching for an example of the most inane, most unnecessary, most unproductive manifestation of our consumer economy. Lindsay Lohan can't possibly be a prerequisite to oil production from a well in the Peance Basin of Colorado, right? Wherever we draw the boundary for energy inputs that are prerequisites to that oil production, we can safely exclude the "energy input" required to "create and maintain" Lindsay Lohan, right? Not so fast.

I'll admit, this is an extreme example. In the end, we need to address what society does with its "surplus" energy. After all, we could all live in homogenized concrete apartment blocs, wear one brand of clothing, watch one news channel, and read one newspaper. That would be a vastly more efficient form of energy usage than our current consumer economy. Through a well-run command economy, we could greatly increase the level of "surplus" energy available to invest in wind or rail infrastructure. But, as countless socialist and communist command-economies have found, it doesn't quite work like that. Lenin abandoned a classical "command economy" in 1921 after only three years, assessing it a dismal failure. [2] Much of the surplus energy that our economy so voraciously consumes in the form of "idiotic" entertainment, "redundant" brand choices, and "unnecessary" consumerism does play a very real role in the performance of that economy. The exact causation is unclear—does it motivate the workers? Unleash creative spirits? Who knows—economic philosophy has devoted small libraries to this discussion. That debate does not change the clear correlation (at least in the 20th Century) between economies that tend to waste their surplus energy on "frivolous concerns" and economies that prospered. My intent here is not to flesh out a thorough refutation of the command economy. Rather, my hope is to point the reader to this question: can we really discount any portion of our frivolous consumption as definitively NOT a prerequisite of energy production? Can we prove that at no level, no matter how marginal, the economic phenomenon that is Lindsay Lohan doesn't somehow motivate a roughneck to work harder, perhaps under the theory that Lohan's visibility acts as a PR campaign for the capitalist fantasy-world that said roughneck is striving for? Perhaps that's too simplistic. But look at the example of the factory worker commuting via a Ford F250 from above. A command economy would recognize the inherent inefficiency there, and demand car-pooling in a Lada or Trabant instead—we all know how that turned out…

Surely I've pressed this argument too far, but only to make a point. Take a look at the illustration below, from Cutler Cleveland:

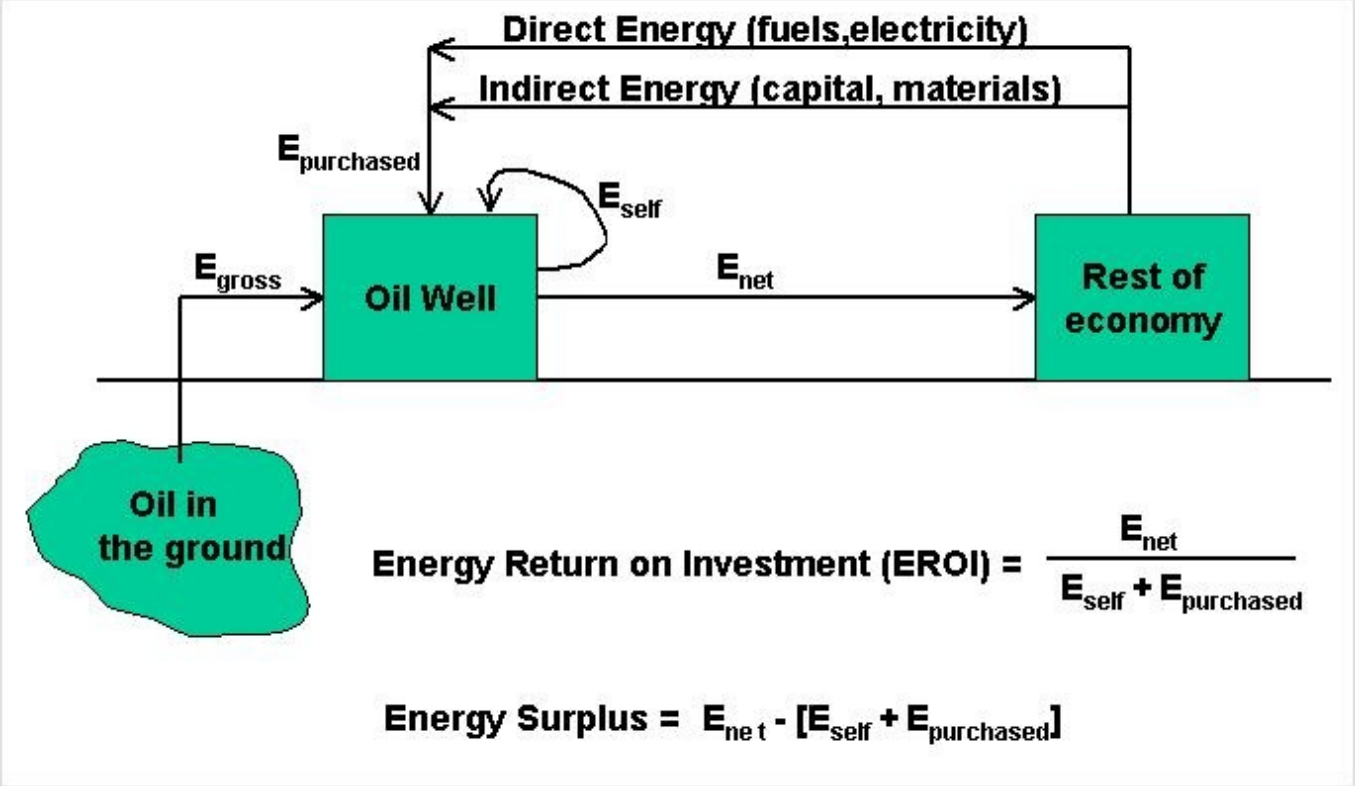


Figure 1. Energy Return on Investment (EROI)

Source

If I may, there should be a third arrow pointing back from "Rest of Economy" to "Oil Well." There are some inputs—however fuzzy and difficult to quantify—that are neither "fuels, electricity . . . capital, [nor] materials," yet are every bit a prerequisite to oil production. Or, at a minimum, these extras are a prerequisite to oil production at the level of efficiency currently enjoyed. This arrow could be labeled "societal support to motivation of workers," or something similar. Perhaps it could be labeled "societal energy burden," that energy required to support all the societal structures that in some way act as a prerequisite to oil production from Well X. It certainly isn't all as silly as Lindsay Lohan: police, fire, orderly government regulation, healthcare, education, etc. All of these ephemera of society most certainly demand energy, and most certainly act as a prerequisite to the attraction, employment, and maintenance of highly skilled and motivated workers.

So where do we draw the boundary of included energy inputs? If you still insist on placing Lindsay Lohan outside that line, I won't argue, but I maintain that ALMOST all of society belongs inside. If you think otherwise, that you know better than the market how best to allocate capital through some enlightened command economy, then there is probably a Lenin fan-club out there just waiting for your leadership.

What is the *aggregate* societal EROEI where virtually every aspect of society is a prerequisite to that society's energy production? Well, it's right about 1:1. Which is exactly what we will see next time in our discussion of price-estimated EROEI.

[1] http://en.wikipedia.org/wiki/Lindsay_Lohan
[2] http://en.wikipedia.org/wiki/New_Economic_Policy