

THE LIKELY IMPACT OF GLOBAL OIL PEAK ON THE UNITED STATES

Richard Heinberg

New College of California, Santa Rosa CA, USA
rheinberg@igc.org

Throughout most of the late 19th and early 20th centuries the US was the world's foremost oil producing and exporting nation; it was also the first important producing nation to pass its all-time oil production peak, which occurred in 1971. The impacts on the US of its own oil peak for the nation's economy and foreign policy are rarely discussed in that country, but they have been considerable. Thus America is emblematic for understanding world oil history and the approaching global extraction peak.

Each nation will be impacted differently by global oil peak. While the types of impacts that are likely to be seen in the US can be extrapolated elsewhere, effects in this instance will be more pronounced because of America's extreme and arguably unmatched economic dependence on petroleum.

America's original endowment of recoverable oil is estimated at somewhat less than 200 billion barrels, of which 170 billion (or about 90 percent) have been extracted (ASPO, 2002). Current production of conventional oil, including from offshore areas and Alaska, is about 5.5 million barrels per day; non-conventional sources yield a little more than 2 million barrels per day. Present US consumption stands at 21 million barrels per day, imports accounting for nearly 60 percent of usage. (EIA, 2005) The US has the highest per-capita consumption rate of oil for any large country, and is the world's foremost oil user and importer. Well over 97 percent of US transportation energy comes from petroleum, and Americans are the most mobile people on the planet: there are more autos in the country than there are licensed drivers - about 210 million total.

Petroleum dependency has been systematically encouraged through car-centered urban design and the failure to provide public transportation alternatives to the private automobile. The peak of per-capita public transportation usage occurred in the 1940s; following this, the nation invested hundreds of billions of dollars in its Interstate Highway Sys-

tem, effectively a subsidy to the auto and oil companies; simultaneously, it invested heavily in civilian air transport while systematically dismantling its interurban rail and urban light rail systems. Often this dismantling proceeded by way of illegal collusion between an auto manufacturer (General Motors), an oil company (Standard Oil of California) and a tire company (Firestone), which acted together to buy up and destroy urban trolley lines.

The US was also the center of modern agricultural developments - the widespread deployment of petrochemical fertilizers, pesticides, herbicides, and powered farm machinery - that have made the nation's food system overwhelmingly oil-dependent.

Oil currently accounts for 40 percent of total US energy usage, making it the nation's primary energy source. Domestic production of natural gas, the nation's second most important energy source, is also in decline, though heroic rates of drilling in recent years have helped stave off a crisis. The US has large domestic coal reserves; however quality is highly variable and a recent Hubbert curve analysis suggests a domestic production peak in as few as 20 years (Vaux, 2004). The nation derives 8 percent of its energy from nuclear power; that amount could be increased substantially, but the cost and development time would be considerable. Only 6.7 percent of US energy production is from renewable sources, most of that being hydroelectricity and the burning of biomass, with solar, wind, tidal, and wave energy combined contributing less than one quarter of one percent. None of these alternative energy sources is capable of fueling America's auto or airline fleets, without an expensive and protracted changeover of transport technologies.

All of this is well known. What is less often discussed is the challenge that will be presented by global oil peak. The US was able to make up for its domestic oil peak by means of four primary strategies:

1. Importing more oil from other nations,
2. Relying on the global denomination of sales of oil in US dollars to bolster the value of the dollar and therefore to make imports artificially cheap,
3. Using military power to maintain access to oil-producing regions and to enforce stability in those regions,
4. Implementing efforts to increase energy efficiency—though these efforts have to some degree been abandoned.

When global oil production peaks, some of these strategies will likely begin to fail.

Imports will become more expensive, in both absolute and relative terms. Of course, prices for oil itself will be much higher, but so will prices for nearly everything else, due to rising energy costs for manufacturing and transportation; thus consumer purchasing power will be strained, making higher fuel costs harder to absorb. At the same time, the continued declining relative value of the dollar measured against other currencies will add to the real cost of fuel.

The prevailing global denomination of oil sales in US dollars may soon cease, due to the erosion of the dollar's value, which ensues from bloated US trade deficits, which are themselves at least partly attributable to the high rate of US oil imports. If oil does come to be sold more frequently for other currencies, this will merely add to the downward pressure on the dollar's value, creating a reinforcing feedback loop.

America's military strategy in Iraq - which appears to have originated as part of a larger design to dominate oil-producing regions globally - is already significantly challenged by armed resistance in that nation. Attempts by the US to pursue a similar aggressive strategy in other countries are likely to be resisted not only by the people of those countries but also by nations averse to the notion of a unipolar world. China, Russia, Venezuela, Brazil, and Iran appear to be forming economic and in some cases military alliances in an effort to counterbalance the US military presence in the Middle East, Central Asia, and Latin America, with the future of Africa also in dispute.

Meanwhile the consequences of America's lack of vigor and thoroughness in pursuing energy efficiency and conservation domestically over the past two decades will hamper its ability to adapt to a low-energy future. Already Germany, Spain, the Netherlands, and Japan have leapt far ahead of the US in

per-capita amounts of installed solar and wind generating capacity. Thus the US may find itself needing to invest heavily in new energy infrastructure at a time when its economy will be hard-pressed to maintain emergency services for its increasingly unemployed and desperate population. As Robert Hirsch told us this morning, the nation's relative success in its energy transition will thus hinge on whether the global peak occurs sooner or later, and whether leaders accept the energy transition as their immediate top priority and make maximum use of whatever time is left, or continue to postpone the effort (Hirsch et al., 2005).

In the more likely case that peak occurs soon so that few efforts at transition can be made prior to the event, there will be profound economic impacts, again as Dr. Hirsch underscored in the SAIC study he led.

If SAIC's first scenario is accurate and few efforts toward mitigation are undertaken prior to peak, the average American will soon have less opportunity, purchasing power, and mobility. As oil prices climb, the US will need to borrow more money from the rest of the world to pay its fuel bills, but the rest of the world may not wish to continue investing its wealth in America, for reasons I will detail shortly. During the 20th century, one of the main drivers of the US economy was the auto industry, headed by the "Big-Three" makers. However, American car companies have lagged behind their Japanese counterparts in developing hybrid gasoline-electric technology, and behind their European counterparts in developing fuel-efficient diesel engines. Instead, they have concentrated on producing some of the largest and most fuel-consumptive private passenger vehicles in the world. They are thus ill-prepared for the future fuel-constrained environment.

The US has also been at the center of the world aviation industry. There is currently no alternative to kerosene as an aviation fuel, and increasing fuel prices will therefore have consequences for aircraft manufacturing, the commercial airline industry, the tourism industry, and for industries that rely on air freight—including the computer and telecommunications hardware industries.

Moreover, the manufacturing of computer chips and other components is highly petroleum dependent, as is the chemicals industry.

The impacts for food and agriculture are especially worrisome. A superficial analysis holds that each dollar's hike in gasoline prices will translate to only pennies' increase in food prices. However, given America's current corporate-dominated food

system, it is likely that farmers will be forced to absorb a disproportionate share of the heightened costs of production. Therefore many more farmers will likely go bankrupt than have already done so over the past decades. In the past, as small farmers were forced out, giant machine-intensive corporate farms took their place. However, further mechanization of food production will be complicated by high fuel prices. This could result in a food production crisis affecting not only America itself, but also nations that rely on food imports from the US.

Consumer choice will be severely constrained in other respects as well, as imports of manufactured goods from China and other nations become more costly. America no longer makes many of the products it formerly did, and rebuilding that domestic production infrastructure will require considerable time and investment, if it is even possible at this point. Life expectancy may decline markedly with a decline in energy and investment capital for public health, and, with economic suffering widespread, America's cities will likely fall into decay.

While US policy makers have squandered opportunities to avert such consequences, even after the peak they will still face important choices, and their decisions will continue to be fateful both for US citizens and for the rest of the world.

With regard to foreign policy, decision makers must choose whether to seek military solutions to what is essentially an economic and ecological problem. If US leaders pursue militarism, this could initiate a chain of violence throughout western Asia, Africa, and South America. The ultimate consequences are frightening to contemplate.

With regard to domestic policy, decision makers must choose whether and how to intervene in the economy. Economic contraction will occur, whether planned and coordinated or forced and improvised. If the government takes a hands-off approach, the suffering of the citizenry will likely be acute and will eventually lead to organized protests on a massive scale. Yet if the government chooses active strategies - rationing transport fuels, creating employment in the agricultural sector, subsidizing energy alternatives, and mandating radical conservation measures - its efforts will still be subject to harsh criticism. Hence in either case it is likely that decision makers will respond by curtailing civil rights and expanding police powers.

The latter course of action - that of government-led conservation measures - which Vice President Dick Cheney derided only two years ago when he said that conservation is personally laudable but no

sound basis for energy policy, is now being advocated by a vocal wing of the ruling neo-conservative movement. These "geo-greens" - "geo" as in "geopolitics"- have been sobered by the failure of the Iraq occupation, and see a powered-down energy policy as a strategic necessity. Hence Mr. Bush's apparent conversion experience over the past few days.

From an international perspective, it would be shortsighted to discuss US oil usage without also considering the subject of energy and equity. People in other nations tended to regard Americans' profligate energy usage with bemusement and envy during the 20th century because they were led to believe that this was the emblem of what they themselves could hope to achieve. In the 21st century, as ultimate limits to energy resources and therefore to conventional economic growth are becoming apparent to some if not yet most, the US example is perceived differently. Increasingly the US is seen as soaking up global resources that will never be available to be used by other nations in their own patterns of development. Therefore, and especially if it seeks to solve its problems militarily, the US may encounter little sympathy from other nations.

Having just spent the past two weeks in Africa, I can report that global oil peak looks very different there than it does in the US. In South Africa, I stayed the night in one of the poor townships and rode into Cape Town the following morning - as tens of thousands do - in a small Toyota van crammed with twenty people on their way to low-wage jobs. I could not help but speculate about how American SUVs might be pressed into similar service in the years ahead, as suburban commuters encounter escalating price-shock at the gas pump.

In South Africa I found extraordinary openness among many decision-makers in industry and government to considering the likely impacts of peak oil. This has not been the case in my country. At least some African corporate and government leaders appeared ready to consider demand-side and supply-side strategies to deal with the inevitable petroleum decline. But I encountered deep concern that whatever efforts poorer countries do or do not undertake will be swamped by the effects of US policies. If the US leads the way toward a reduction in oil dependence, much of the rest of the world will follow. But if the US decides to attempt to maintain its inequitable use of resources, the rest of the world may feel compelled to compete for whatever oil and gas can still be had. In this regard, it will be fascinating to see how seriously the neoconservatives will

take their new-found “geo-green” conservation doctrine.

In the US, most of the discussion about peak oil currently appears to be taking place among activist groups and in local communities. Much of this discussion is now being orchestrated through the efforts of the Post-Carbon Institute, an organization founded by Julian Darley and Celine Rich-Darley, which has fostered numerous “post-carbon outposts” around the nation and around the world.

These efforts are encouraging; however, clearly, if the US is to weather the energy transition in a coordinated and peaceful way, it can do so only by adopting the oil depletion protocol which we have discussed at this conference. This would itself imply strong leadership invoking incentives and penalties to inspire cooperative efforts from the population as a whole. Immense investment would have to be put into developing not only alternative energy sources, but a vastly more efficient industrial and transportation infrastructure. Ultimately, economic activity would have to be thoroughly relocalized. But this latter project is one for which the geo-greens likely have little enthusiasm.

In summary: if the 20th century saw America’s economic and geopolitical ascendancy, one way or another the 21st will almost certainly see its decline. The problems created for the US by peak oil will no doubt eventually be resolved; however, and especially if current policies continue, there will probably be many casualties along the way. The process will entail profound changes at every level of American society, and the political and economic institutions that emerge from the transition may hardly resemble those of today.

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