

After Oil Production Peaks

We are nearing the time when world oil production will peak and then begin to fall about as rapidly as it has risen in the past.

Some experts predict that world production will peak before the end of the first decade of the twenty-first century. Others say that Russia's increasing capacity will delay the peak of world production until the second decade of the century.

The world's oil reserves have been declining for decades: production has exceeded discovery of new reserves every year except one since 1980. Recently, Saudi Arabia's largest fields reached their peak production. In the past, Saudi Arabia has been able to increase production to stop sharp price increases that would disrupt the world economy, but it can no longer do this, and prices have already begun to rise and to become unstable.

United States oil production peaked during the 1970s, causing economic disruption and deep recessions. Before then, the United States had been able to increase production to keep down world prices. After our production peaked, OPEC was able to raise prices dramatically, but in the 1980s, increased production in other parts of the world began to bring prices down again.

There will be much worse economic disruption after world oil production peaks, a depression worse than the Great Depression of the 1930s. There will be negative economic growth world-wide for fifteen or twenty years before alternative fuels come on line.

During this crucial period, we will either shift to a sustainable economy or develop substitute fuels that accelerate global warming and ultimately lead to environmental collapse.

We will either shift to a sustainable economy or develop substitute fuels that accelerate global warming.

Not All Fossil Fuels Will Peak

Many environmentalists exaggerate the effect of the oil peak, predicting that it will force us to cut back dramatically on consumption and move to an economy based on local production, permanently abandoning the industrial economy.

One environmentalist has even said that corporations who are building high-rise offices will be surprised, in a decade, to find that there is no electricity to power their buildings' elevators. In reality, the most common fuel used in power plants is coal, which emits about twice as much carbon dioxide as natural gas and 50 percent more carbon dioxide than oil to produce the same amount of electricity. There is no immediate prospect of coal

shortages, so as oil becomes scarce, there will be pressure to convert all our oil-burning power plants to coal, with unpleasant environmental consequences.

We must remember that only conventional petroleum production is predicted to peak during this decade or the next. Natural gas production is predicted to peak about a decade later.

Other fossil fuels will be available as substitutes for oil and natural gas, but they will be much more expensive and much more environmentally destructive. During the 1970s, the resources that were most widely discussed as a substitute for petroleum were:

- **Tar Sands:** Sand mixed with about 10 to 15 percent bitumen, a viscous crude oil. World reserves are estimated to have three times as much energy as known world oil reserves.
- **Oil Shale:** Inorganic rock that contains about 1 percent kerogen, an organic material that has not been exposed to high enough temperatures to convert it to oil. Two-thirds of the world's known reserves are in the United States, and they are estimated to have five times as much energy as the United States' oil reserves.
- **Coal and Synfuels:** Coal is far more abundant than the other two alternatives: world reserves are estimated to last 200 to 300 years at the current rate of consumption, and over one-quarter of the world's reserves are in the United States. Liquid fuels made from coal are called synfuels. Gas made from coal powered the gaslights of the nineteenth century.

During the 1970s, pilot plants were built to process these resources, but they were all abandoned when oil prices went down during the 1980s, except for plants processing Canadian tar sands, which are currently producing energy at a cost competitive with oil. According to the lowest cost estimates, using these resources as substitutes for oil would roughly double energy costs, but actual costs are likely to be higher.

Because so much energy is required to process them, these fuels will cause far more carbon dioxide emissions than petroleum. In fact, because so much energy is required to process them, these resources will be exhausted much more quickly than the absolute size of the reserves seems to imply – but there is no doubt that they will last for many decades.

The Critical Decade

When world petroleum production peaks, energy prices will go up dramatically. There will be a recession similar to the recessions that followed the energy price increases of 1974 and 1979, but with one important difference: the Federal Reserve Bank is much more active in setting economic policy than it was then, and its main focus is fighting inflation, so we can expect much lower inflation and much higher unemployment than in the 1970s. As interest rates soar, housing prices will fall and the stock market will collapse.

The oil companies will realize that we have reached the physical limits of petroleum supplies and will begin to work on developing new sources of energy – and they will not limit themselves to sources that are environmentally benign. Tar sands, oil shale, and coal will be the most feasible to develop in the short term. Clean fuels, such as hydrogen produced using solar energy, will take longer to develop.

Other fossil fuels will be available as substitutes for oil and natural gas, but they will be much more expensive and much more environmentally destructive.

There will be a political debate about what new energy sources the federal government should support. It is likely that, in less than a decade, decisions will be made to provide massive federal subsidies for new energy sources. There will be intense pressure to develop new energy sources quickly, so it is very possible that the federal government will fund research needed to develop clean energy delivered using hydrogen in the long term and will fund a crash program to develop new fossil fuels in the short term.

Less than a decade after federal support becomes available, new energy sources will come on line, and soon afterwards, they will become abundant enough that energy supply will begin to grow again.

Energy production could decline for fifteen or twenty years before it starts to grow again. Projections show that, during that time, oil production will decline by about 25 percent.

Perhaps half of this decline in oil production could be absorbed by increased energy efficiency. As soon as energy prices rise dramatically, people will start buying more energy efficient cars and more insulation for their homes, and businesses will start investing in energy conservation. We now use energy so wastefully that energy conservation could easily reduce our energy consumption by 10 or 15 percent over 15 or 20 years.

The rest of the decline in oil production would have to be absorbed by a prolonged economic depression. Whenever energy prices soar, the Fed will raise interest rates until they have slowed the economy enough to stop inflation. To keep the demand for energy from exceeding the physical supply, they might have to reduce the GDP by 10 or 15 percent over 15 or 20 years. That could mean unemployment over 20 percent – about as high as it was during the worst years of the Great Depression.

There is no predicting the political effect of this unemployment level. The Great Depression led to the rise of Fascism in Europe and then to World War II, and the coming depression could have equally drastic effects.

But assuming that we survive this economic disruption, fossil fuel production could begin to grow again after 15 or 20 years.

Energy will be expensive, but the cost alone will not be enough to choke off demand. Doubling the cost of gasoline cuts demand by about 20 percent. Assuming that synfuels cost four times as much as oil, demand for gasoline will go down by more than one-third. Most of that decline would come from abandoning SUVs in favor of hybrids, and some would come from driving shorter distances. But after gasoline prices stabilized at \$8 a gallon, demand could begin to climb again – just as it has always climbed in the past when prices were stable. Some European countries already have gasoline prices of \$5 a gallon, and since their demand is growing rapidly at that price, demand could also grow at \$8 per gallon.

If we make the wrong political decisions during the crucial decade after oil production peaks, our oil-based economy could be replaced by synfuels-based economy that supports the same wasteful consumerism and that is much more destructive to the environment.

By the time that the hydrogen economy arrived, decades later, we would have burned enough coal to cause drastic and irreversible global climate change.

Less than a decade after federal support becomes available, new energy sources will come on line.

The Choice Ahead

Environmentalists who predict that peak oil will inevitably end industrial society are reacting against the ugliness and wastefulness of our economy. Looking at our typical landscape of freeways, big box stores, and housing sprawl, it is hard to avoid hoping that energy shortages will force people to live in a way that is less destructive environmentally and more satisfying as a way of life.

But environmentalists are more likely to be successful if we are realistic. It is not inevitable which direction the world will go after oil peaks. If the nation makes the wrong choices, it can prolong the fossil fuel economy for decades, with a disastrous effect on the environment. If we want the nation to make the right choices, we have to develop a vision of a way of life that is more satisfying than suburban consumerism.

The new urbanists have already begun to do this by designing old-fashioned neighborhoods where people walk. This sort of design can cut the cost of housing by about 30 percent, primarily because it uses less land, and it can cut the cost of transportation by about 50 percent, because people travel shorter distances. But even though it involves much less consumption, this sort of neighborhood is more livable than sprawl.

The new urbanists have created a clear enough vision that, after oil production peaks, zoning laws will be changed all over the country to promote new urbanist development rather than sprawl. Today, conventional suburban zoning is the one obstacle slowing the spread of new urbanism, and this conventional zoning is only retained because of bureaucratic inertia. The crisis that follows peak oil production will overcome this inertia.

But urban design is not enough. We also need to develop economic policies that allow people to “downshift” – to consume less and work less in order to have more time for their families and for their own interests. Today’s Americans are time starved, so busy that they do not even have time to take care of their own pre-school children, which virtually everyone was able to do until a few decades ago. They would respond to policies that allow them to live more simply and have more time just as enthusiastically as they have responded to new urbanism.

This is the choice that is ahead of us. We can invest in a crash program to produce synthetic oil and keep the growth economy going for a while longer, until it is stopped by environmental collapse. Or we can build neighborhoods and redesign the economy to let people live simpler and more satisfying lives than they do today.

After the oil peak, there will be immense political pressure to make the wrong choice. Most Americans will say that they absolutely need gasoline, because they cannot leave their houses without driving. The unemployed will demand more energy to create more jobs. Many on the left will say that higher prices are just a plot by the energy companies to increase profits. Politicians from both parties will promise to bring gasoline prices down.

We can make the right choice only if environmentalists offer a strong positive vision of walkable neighborhoods that are more livable than suburban sprawl and of a simpler way of life that is more satisfying than overwork and consumerism.

We must offer a strong positive vision of walkable neighborhoods that are more livable than suburban sprawl and of a simpler way of life that is more satisfying than overwork and consumerism.