

Our Finite World

Exploring how oil limits affect the economy

Reaching Limits to Growth: What Should our Response Be?

Posted on [February 17, 2014](#)

Oil limits seem to be pushing us toward a permanent downturn, including a crash in credit availability, loss of jobs, and even possible government collapse. In this process, we are likely to lose access to both fossil fuels and grid electricity. Supply chains will likely need to be very short, because of the lack of credit. This will lead to a need for the use of local materials.

The time-period is not entirely clear. Some countries, such as Greece and Syria, will be seeing these effects quite soon. Other countries may not see the full effects for perhaps ten or twenty years. What should our response be?

It seems to me that there are many different answers, depending on who we are and what our goals are. The various options are not mutually exclusive.

Option 1. Make the most of the time we have available.

If there are things that are important to you, do them now. If you have been meaning to reconnect ties with family members or old friends, now is the time to do it. If there are things you would like to accomplish that require today's transportation and services, do them now. If you want to support local charities, now would be a good time to do it.

Appreciate what you have now. We have been privileged to live in a society where transportation is readily available and where most of us can live in homes that are comfortably heated and cooled. At the same time, we can still enjoy many of the benefits of nature—clear skies and plants and animals around us. Life expectancies in the past were generally [35 years or less](#). Most of us have already lived longer than we could have expected to live in the past.

Develop stronger relationships with family and community. This is likely to be a difficult transition. It is likely to be helpful to have as many allies as possible in transition. It may be helpful to move closer to other family members. Another approach is to form or join community groups, such as a church group or a group interested in common goals. The ties a person can form are likely to be helpful regardless of what path lies ahead.

Option 2. Prepare at least a little for the future

Learn to bounce back from downturns. When I was an editor at The Oil Drum, I was editor for a [letter from a man who grew up in Kenya](#) and returned there practically every year. He told that the people in Kenya were very happy, even though they had little material goods and mortality was high. One thing he mentioned was that if things went wrong—the death of a child for example—people were able to mourn for a day, and then move on. They also rejoiced in things we take for granted, such as being able to obtain enough food for the current day.

Do what you can to improve your health. In the United States, we have been used to a combination of practices that lead to overweight: (1) much too large food portions, (2) much processed food including much sugar and (3) lack of exercise. If we can change our eating and exercise practices, it is likely that we can improve our health. If healthcare goes downhill, fixing our personal health somewhat protects us.

Learn what you can about first aid. Injuries are likely to be more of an issue, as we work outside more.

We will need some specialists as well. As long as we eat grains, we will need dentists. As long as babies are born, we will need helpers of some type—doctors or midwives.

If circumstances permit, plant a garden and fruit or nut trees. Eventually, all food production will need to be local. Getting from our current industrialized agricultural model to a model with local food production with little (if any) fossil fuel inputs is likely to be a difficult transition. One approach is to learn what local plants, animals, and insects are edible. Another is to attempt to grow your own. Doing the latter will generally require considerable learning about what plants grow in your area, approaches to building and maintaining soil fertility, methods of preventing erosion, and a variety of related topics.

Find alternative water supplies. We currently are dependent on a water supply chain that can be broken in a variety of ways—drought, loss of electricity, storm damage, or pollution problems. If the long-term water supply seems questionable, it may be helpful to move to another location, sooner rather than later. Alternatively, we can figure out how to bridge a gap in water supplies, such as through access to a creek or lake. For the very short-term, a water barrel of stored water might be helpful.

Figure out alternative cooking arrangements. We humans are dependent on cooking for purifying water, for allowing us to eat a wider variety of food, and for allowing us to obtain greater nutrition from the food we eat, without chewing literally half of the day. We now depend primarily on electricity or natural gas for cooking. Determine what alternative cooking arrangements can be made in your area, in the event current cooking arrangements become unavailable. An example might be an outdoor fireplace with locally gathered sticks for fuel, perhaps supplemented by a solar cooker with reflective sides.

Store up a little food to bridge a temporary supply interruption. We have troubles today with wind storms and snow storms. There are any number of other types of interruptions that could happen if businesses encounter credit problems that lead to supply chain interruptions. It doesn't hurt to be prepared.

Option 3. Figure out what options might work for a few years for taking care of yourself and your family

We have a lot of goods made with fossil fuels that probably will work for a while, but likely won't be available for the long term. Examples include solar PV, batteries, power saws, electric pumps, electric fences, bicycles, light bulbs, and many other devices that we take for granted today. Of course, as soon as any part breaks and can't be replaced, we are likely to be "up a creek, without a paddle."

I expect that quite a few of the permaculture solutions and organic gardening solutions are temporary solutions. They work for now, but whether they will work for the long term is less clear. We are not going to be able to make and transport organic sprays for fruit for very long and irrigation systems will need to be very simple to be resilient. Plastic wears out and even metal tools will be hard to replace.

Purchasing land for agriculture can perhaps be a partial solution for some individuals, with sufficient skills and tools. Ideally, a person will want to be part of a larger group of people using a larger piece of land, rather than a smaller group, using a smaller piece of land, because of the problem that occurs if one worker gets sick or injured. It may be helpful to have multiple non-contiguous pieces of land, to help even out impacts of bad weather and pests. Ideally, the land should be large enough so that part of the land can remain fallow, or be used for feeding animals, and can be rotated with crop-producing land.

Security is likely to be a problem, especially if a single home is distant from other homes. Ideally, a family will be part of a larger group in order to provide security.

Other issues include inability to pay taxes and the government taking over property. Because of the many issues involved, any solution is, at best, temporary. Unfortunately, that may be the best we can do. As parts of the system fail, a local group may be able to support fewer people. Then the group will need to deal with how to handle this situation—everyone starve, or kick out a few members from the group, or attack another group, with the hope of obtaining control of their resources.

Option 4. Work on trying to solve the long-term problem.

There are many studies of how pre-industrial societies operated without fossil fuels and without electricity. For example, Jared Diamond gives his view of how some very early societies functioned in [The World Until Yesterday](#). [The Merchant of Prato](#) by Iris Origo documents the life of one particular 14th century merchant, based on old letters and other documents.

Through studies of how past societies behaved, it might be possible for today's people to develop a civilization that could be operated using only renewable resources of the types used in pre-industrial times, such as wood, water wheels, and sail boats. Such groups would probably not be able to use much metal or concrete because of the problem with deforestation when wood is used for energy-intensive operations. (Today's so-called "renewables," such as hydro-electric, wind turbines and solar PV require fossil fuels for manufacture and upkeep, so likely will not be available for very long.) Heating of homes will need to be very limited as well, to prevent deforestation.

As a practical matter, the groups best equipped to make such a change are ones that have recently been hunter-gatherers and still have some memory of how they operated in the past. Perhaps some former hunter-gatherers could give instruction to others in sort of a reverse [Peace Corps](#) operation.

We do know some approaches that have been used in the past. Dogs have been used to help with herding animals, for hunting, and for warmth. Animals of various types have been used for transportation and for plowing. The downside is that animals require the use of a lot of land to produce the food needed for them to eat.

Traditional societies have used the [giving of gifts](#) and the requirement of reciprocal gift giving to increase the strength of relationships and as a substitute for our money-based financial system. With such an approach, a person gains status not by what he has, but by what he gives away.

Storytelling has been a way of passing on knowledge and entertainment for generations. Songs, games, and simple musical instruments are also part of many traditions. These are approaches that can be used in the future as well.

Option 5. Take steps toward getting population in line with likely long-term energy availability.

The world is now overfilled with people and with the many animals that people raise for food or as pets. Without fossil fuels and network electricity, we probably will not be able to feed more than a fraction of the current population of humans and domesticated animals.

Some steps we might take:

Keep family sizes small. Encourage one-child families. When a family pet dies, don't replace it (or replace it with a smaller animal).

Eat much less meat. This could be started even now.

Option 6. Rearrange personal finances.

Paper investments are, in general, not going to be worth much, regardless of how we rearrange them, if resource availability drops greatly. Ultimately, paper investments allow us to buy goods available in the marketplace. But if there isn't much to buy in the marketplace, they are likely to be much less helpful than we assume. Precious metals have the same difficulty—they can't buy what is not available.

Purchasing land is theoretically better, but even land can be taken away from us by taxes or by appropriation. There is also a possibility that we may need to move, if conditions change, regardless of what property ownership conditions seem to be.

We need to learn to take each day as it comes. If we find that our bank accounts aren't there, or that only a small fraction of the money can be withdrawn, or that the money in the bank doesn't buy much of anything, we need somehow to figure out a way around the situation. Very likely everyone else will be in the same boat. This is a major reason for working on substitute access to food and water supplies.

Option 7. Put more emphasis on relationships.

Studies show that [relationships are what bring happiness](#)—not the accumulation of goods. Starting to work now on developing additional strong relationships would seem to be a worthwhile goal. In traditional societies, extended family relationships were very important.

Religions can teach us how we treat our neighbors and thus about relationships. A version of the Golden Rule (Do unto others as you would have them do unto you) is found in several major religions. Many readers of this blog have given up on religions as hopelessly out of date, instead choosing such “wisdom” as, “He who dies with the most toys wins.” In fact, this latter wisdom is clearly nonsense. We can expect our fossil-fuel based “toys” to lose their usefulness before our very eyes in the not too distant future. Ben Bernanke and Janet Yellen are not gods, even if we are told that they are all-powerful.

Another aspect of keeping good relationships is finding ways to mend broken relationships. One such approach is forgiveness. Another is through reconciliation procedures aimed at returning broken relationships to wholeness. Such procedures are common in small societies, according to Diamond ([2012](#)).

Option 8. Find ways to deal with the stresses of a likely downturn ahead.

As much as we would like to take one day at a time, oftentimes it is easy to worry, even though this does no good.

Even though we think we know that outcome of our current difficulties, we really do not. The universe has many physical laws. Ultimately, the source of all of these physical laws is not clear—is there a Supreme Being behind them? The story of natural selection is in many ways a miracle. The story of human existence represents more miracles—learning to control fire; learning to control our environment through agriculture; learning to modify our environment further through the use of fossil fuels. In my own personal life, I see a pattern of circumstances working together in ways I could never have expected.

We are not the first to go through hard times. Because of my background, I find myself comforted by many Biblical passages. I am sure other religions have other passages that are also helpful.

Yea, though I walk through the valley of the shadow of death, I will fear no evil, for though art with me. Thy rod and thy staff they comfort me. . . Surely goodness and mercy will follow me all the days of my life. . . (Psalm 23: 4, 6)

. . . in all things God works for the good of those who love him . . . (Romans 8:28)

For me personally, more things have worked together for good than I would ever have dreamed possible. I will not rule out the possibility of this happening again in the future, regardless of what the external circumstances may look like.

Option 9. For those who are concerned about Climate Change

In my view, the changes we are encountering will bring a quick end to the use of fossil fuels. Thus, the concern that future fossil fuel use will cause rapid climate change is over-blown. If individuals would like to personally reduce their own fossil fuel use, I would suggest the following:

- Stop eating meat now, especially that raised in our current industrial system.
- Get rid of pets that are not providing support functions, such as hunting for food.
- Spend less of your wages. With more of the money left in the bank or in paper investments, this money will lose value and thus will reduce spending on fossil fuel-based goods and services. (While theoretically this money could be lent out and reinvested, lack of credit availability will put an end to this practice.)
- Use a bicycle for transport instead of a car, when possible. Or walk.
- Purchase a more fuel efficient car, if you need to replace a current vehicle.
- Turn down the heat in your home or apartment. Don't use air conditioning.

I would suggest quitting your job as well, but if you quit your job, the job is likely to go to someone else, resulting in the same fossil fuel use for someone else. Even stopping a business you own will not necessarily work, if another business will expand and take its place. If the business that ramps up is in a part of the world that uses coal as its primary fuel, stopping your local business may lead to an increase in world carbon dioxide emissions.

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About Gail Tverberg

My name is Gail Tverberg. I am an actuary interested in finite world issues - oil depletion, natural gas depletion, water shortages, and climate change. Oil limits look very different from what most expect, with high prices leading to recession, and low prices leading to inadequate supply.

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[666isMONEY](#) says:

February 17, 2014 at 11:35 am

A few days ago I became aware of the methane problem (arctic ocean warming up releasing massive amount of methane causing temperature to rise and mass extinction), the author of this article, Dr Guy McPherson, believed Peak Oil would stop