

Community Survival During the Coming Energy Decline

By Jan Steinman and Diana Leafe Christian 4306 words

Imagine community life in a world with increasingly scarce and expensive fossil fuel—oil, coal, and natural gas. Imagine ever-scarce and expensive prices for everything—from food to manufactured goods to services—and imagine that we’re entering this period right now.

“Well, we’ve got off-grid power from solar panels and wind power,” a community might say, “and we’ve got wood stoves, too. No matter how high the price of gas goes, we’ll be fine.”

Perhaps, but does the community buy any food items they don’t grow themselves? While its members can certainly bicycle, car-pool, or use biodiesel to get to the local food co-op, are any of these food items grown, processed, or packaged in other regions? If so, they’ll pay for the ever-increasing cost of transporting these items into their area. The same is true if the community uses local suppliers for seeds, soil amendments, fencing, hand tools, or other gardening supplies that originate elsewhere, or building supplies from other regions—from lumber to cement blocks to electrical supplies and PVC pipe.

But this is only considering the rising price of *gasoline*. It’s harder to grasp, but equally true, that the cost of all manufactured goods *themselves* will steadily increase in price—because manufactured goods are tied to the price of oil. Why? First there’s the electricity used in factories to manufacture things: the electric power in most regions of the world is generated in power plants fueled by non-renewable fossil fuel such as oil and coal. Second, there’s the use of metal in manufactured items, which must be mined, smelted, and formed into parts—all of which requires electrical power. The same is true

of rubber, machine oil, glass, and other materials used in manufactured goods—not to mention the silicon used in items from solar panels to computer chips. Third, there's the plastic used in manufactured items themselves and the plastic used in the packaging and shipping of such items—since plastic itself is made from oil.

What happens when a community's wind turbine or inverter needs a new part? Most likely its members are used to picking up a mouse or a phone, finding the part hundreds or thousands of miles away, performing an electronic transaction that depends on the fossil-fuel-powered infrastructures of electricity, telecommunications, and banking, and then a large brown truck—powered by fossil fuel—brings the part in a week or so. But with the coming energy decline it won't be so easy.

And even if the community did happen to have an “Off-Grid Power Parts 'R Us” franchise nearby, does that store actually mine the copper, aluminum, iron, tin, cobalt, antimony, beryllium, niobium, and various other metals that they smelt, forge, and extrude into wind turbine or inverter parts? Do they have equally basic methods for obtaining any rubber, plastic, glass, or silicon required for these parts? And if they do happen to have such parts on hand, their seeming availability just masks the dependence on fossil-fuel-driven infrastructure that goes to the very core of our civilization.

Well, you get the picture. But there's more. Many rural communities are already growing at least some of their own food, but outside of the tiny percentage of food that's organically grown, the entire food industry (and thus, the world's burgeoning population) is totally dependent on fossil fuel. That's because most non-organic fertilizer is either made from the byproducts of refining oil or from natural gas. As a civilization, we are literally *eating* fossil fuel, from the natural gas that produces virtually all commercial fertilizer; to the diesel farm machinery that prepares the land, weeds the crops, and harvests and distributes the yield; to the energy-intensive processing, packaging, and distribution networks that get the food to us.

All told, about ten calories of fossil fuel goes into each single calorie of food we eat (not counting fuel used for cooking). And make that ratio at least 100:1 for heavily processed foods.

So agribiz-grown food (even though we communitarians don't eat it), heating oil for home furnaces (even though we choose renewable heating sources), manufactured goods (even though we eschew most of them), and transportation fuel (even though we car-pool or bicycle), all affect the greater economy. And most ecovillages and intentional communities are embedded to some degree in the greater economy—whether we intend it or not—and the greater economy is completely driven by fossil fuel. And it's not just the economy—it's almost everything we take for granted in our lives: modern medicine (antibiotics, anesthetics, insulin, glasses, hearing aids); holistic medicine (nutritional supplements, Chinese herbs); communications (telephone lines, electronic switching equipment, satellite dishes, satellites themselves, computers, networks, modems, servers); law and order (police cars, police communication systems, police officers' salaries), the ability to govern—these are but a few examples of non-obvious things we take for granted that are totally dependent on fossil fuel.

This means, of course, that as the supplies of fossil fuel become more scarce, and the price of oil and natural gas goes up, *everything* will become more expensive. As the economy worsens, many businesses will severely downsize or even shut down because they can no longer afford parts, repairs, or needed services. Thousands of people, then tens of thousands, then hundreds of thousands, will lose their jobs. Thus while living in an ecovillage or other kind of intentional community or a sustainably organized neighborhood may make us less reliant on the typical energy sources and commercial products of mainstream life, it is not automatic protection from the coming energy decline. The Great Depression of the 1930s and the gasoline shortages of the 1970s were just warm-up acts for what is coming—the permanent, irrevocable decline of fossil fuel.

And it will impact those of us living in intentional communities—whether or now we grow our own food or are off the grid.

Now, let's take a look at what is meant by the concept of “Peak Oil” itself.

“Peak Oil”

“But I heard that there is at least as much oil available as we've used

already—we’ve only used about half,” you might say. “Things can’t be so dire.”

You’re right—we aren’t “running out of oil” just yet. But it is not so simple as that. People think of petroleum like they think of their car’s gas tank, with an “E” on the left, an “F” on the right, and a pointer that is currently somewhere near the middle. But the way fossil energy *really* works is that it follows a classic bell-shaped curve: a small amount of available energy starts out being fairly cheap, then we figure out how to make use of the most easily available, cheapest sources, and quickly use them up. Then at the mid-point, all the cheap energy is gone and the “second half” takes increasingly more effort to produce, even as the total amount produced declines year after year.

We are very near—if not already past—that crucial mid-point for petroleum. We are at Peak Oil.

The concept of peak resource depletion means that energy will continue to get increasingly expensive, and at a fairly rapid rate. Post-peak oil shortage estimates, *at current consumption levels*, range from four percent to eight percent annually—this means that the available fossil fuel will be reduced *by half* every 10 to 20 years. Thus the cost of oil will continue increasing at a rate that is much greater than the rate of decline, since there are so many more of us living now than there were during the 150 years in which we’ve used up the first half our fossil-fuel supply. When demand outpaces supply for something so essential, chaotic swings in prices will make simple price prediction impossible. These huge swings will bankrupt many people—and make some oil companies very rich.

Plus, demand *is* rising. Not only are people in the Western world demanding more oil, but China and India are developing voracious appetites for energy. They want the lifestyle that cheap energy has given so-called developed nations for the past 50 or so years. Modern civilization’s existence is predicated upon ever-increasing economic growth—and such growth simply cannot continue indefinitely in a system with finite fossil fuel and timber resources, like Planet Earth.

“But there’s a 200-year supply of coal, at today’s consumption levels!” There’s

that bugbear: *at today's consumption level*. We need to look at the rate of total energy *recovered* over the amount of energy *used up* to make reasonable predictions. For example, it originally took one barrel of oil to create the equivalent of 100 barrels of oil worth of energy, but currently it takes about 20 barrels of oil to create the same amount of energy—and the ratio is steadily getting worse. When petroleum and natural gas go into decline, there will be pressure to make up for their missing energy, and there's talk of coal gasification and liquefaction to replace the gas and oil, so coal will be consumed much faster than it is today. So even if using coal gets us over the crisis of Peak Oil and Peak Gas, a child born today will still have to endure Peak Coal in her lifetime (not to mention the ghastly environmental impacts of burning coal on such an enormous scale). Humanity will eventually have to learn to live within the planet's energy budget: i.e., the energy falling on the Earth's surface from the Sun.

Likewise, none of the renewable sources available can allow us to continue our energy gluttony *at today's consumption level*. You can't just pave the entire desert Southwest with solar cells, or turn several Midwest states and provinces into biofuel farms, or clutter every inch of our coastlines with huge wind turbines—the energy input to do so is too great. We're measuring the ratio of the total energy recovered to the total energy we're using up—you have to get more out of it than you put into it. For example, Cornell University has studied current ethanol production, and determined that each unit of ethanol energy requires 117 percent of fossil fuel energy to produce. So using ethanol fuel doesn't really help anything—in fact, it hurts.

This isn't to say that we should not try to use any and all renewable energy sources in a responsible way; it's simply that *nothing* can maintain our current energy gluttony, and the future is one of increasingly expensive and precious energy—no matter the source.

“But at least we've got our wood heat,” a community might say. “At least *that's* renewable!” Yes, but for how long, and at what cost? Throughout history, civilizations have gotten into deep trouble by “timber mining” at unsustainable levels. The Greeks, for example, once lived on fertile forested mountains and islands. After centuries of logging

their forests for homes, ship-building, and firewood, they used up their timber resources, and the forests did not grow back and Greece became the relatively arid landscape it still is today. It is only since the availability of fossil fuel in the mid-1850s that the population on every inhabited continent has been able to grow much larger without disastrous timber harvests.

If the price of the natural gas that heats many of the homes in North America goes up by a factor of ten, how many trees are going to be left standing when people start burning every tree in sight just to stay warm? (And, in such a case, who will be able to breathe the air?) Keep in mind that there are about ten times the number of people on the planet now as there were when humanity last depended entirely on wood for energy!

Although things look bleak for current generations, Peak Oil offers humanity an opportunity to learn and prepare for the inevitable Peak Coal that will impact generations to come. It's too late to hope for a pleasant decline from Peak Oil, but if we pay attention, humanity may choose to plan for a long and orderly Peak Coal.

Is Intentional Community the Answer?

Julian Darley, author of *High Noon for Natural Gas* and founder of the Post Carbon Institute, believes civilization is necessarily headed down the path of “re-localization”; that is, reversing the energy-fed globalization trend that has wracked the Earth for the past century or so. Those who already enjoy a measure of self-sufficiency, such as ecovillages and other kinds of sustainable intentional communities as well as sustainably organized neighborhoods, will already have the skills and experience needed for re-localization.

“This is a time of tremendous challenge,” says Richard Heinberg, author of *The Party’s Over* and *Powerdown*, “but also a time of great opportunity.” In *Powerdown*, Heinberg notes that small, self-sustaining communities may become cultural lifeboats in times to come. “Our society is going to change profoundly—those of us who understand this are in a position to steward that change. We are going to become popular, needed people in our communities.” When asked at a Peak Oil conference in 2005 about what can be done, Heinberg replied, “Start an ecovillage!”

These changes are not going to happen overnight. James Howard Kunstler, author of *The Long Emergency*, calls the coming energy decline a “long emergency” because it is occurring almost too gradually for most of us to register. The energy decline is often compared to the metaphor about boiling frog: if you want to cook frogs and you put them in boiling water, they will immediately hop out, but if you put frogs in room-temperature water and only gradually turn up the heat, the frogs will stay in the water—not noticing it’s gradually getting warmer—and slowly cook to death.

We could say this is happening to our civilization at large. Most of us have a vague feeling that things in general are getting worse, but from minute-to-minute, day-to-day, and even year-to-year, the worsening is not enough to get us to change our energy-consuming ways.

The Trends Research Institute, a network of interdisciplinary experts who forecast developing trends, echoes Darley’s prediction for “re-localization.” One of the hottest trends they see is a “rapidly growing desire of more people to be self-empowered, non-reliant, and ‘off the grid’,” in the broadest possible sense, as in “off the grid” of mainstream society. Such as, for example, ecovillages, sustainable intentional communities, and organized neighborhoods.

“It’s time to return to the community,” says Pat Murphy, executive director of The Community Solution, “to clean up the mess and get back on the right path.” Murphy ended his organization’s second annual conference on “Peak Oil and the Community Solution” by noting that the survivors of this crisis will be those who seek out a “low-energy, caring, community way of living.”

Humanity faces its biggest challenge since at least World Wars I and II, or perhaps even since the great plagues of the Middle Ages, or perhaps ever. No matter how prepared an intentional community or organized neighborhood may be, it will be adversely impacted in some way.

Is Intentional Community Enough?

Experts suggest numerous scenarios for the coming energy decline. These range from a “magical elixir” scenario—a totally unexpected technological fix, to a “power-down soft landing” scenario of everyone cooperating to reduce energy use by perhaps 90 percent or more, to a “Mad Max” scenario of anarchy and insurrection. Some even whisper the possibility of human extinction, since by most measures, we have overshoot our resource base, a situation that ecologists believe is often a cause of extinction. But the point is, any of these scenarios will present significant challenges for intentional communities.

In the “soft landing” scenario, there will still be massive structural changes in society, with winners and losers. In this and other scenarios, being in debt may be the undoing of many. Let’s say a community is deeply in debt, for example, and is still paying off its property purchase or one or more construction loans. Let’s say the community loses its financial resource base—if many members lose their jobs, for example, or if a weak economy reduces the market for the goods and services the community produces—the group could default on its loan payments and may have its property seized by the bank or other creditors. Common advice among Peak Oil experts is to get out of debt! (Although a vocal minority say you should take on as much fixed-interest debt as possible, in the hope that escalating energy prices will inflate the debt away.)

A property-value crash may worsen the debt situation for intentional communities. During the last oil crisis, the market value of prime farmland fell by 30 percent or more. If a community’s property value falls below their equity in the property, they won’t be able to save themselves from defaulting on loans by selling off their land, which is typically the last resort of farmers in debt. (Again, a vocal minority claims that

as energy prices escalate, fertile farmland will also increase in value.)

All the shortages and systems failures that can affect mainstream culture can affect intentional communities and organized neighborhoods as well. Clearly just “living in community” will not confer any kind of immunity from this gradual but drastic change. A community in a mountain forest setting may have plenty of water and firewood, for example, but little flat, arable land for growing food. A community on the prairie may have plenty of fertile, arable land, but little firewood. A community in the Great Plains may have plenty of sunshine for passive solar heating and off-grid power from solar-panels, but not enough firewood or water for growing food. A rural community may have enough space to grow food but little help from local emergency food-distribution networks; an urban community or organized neighborhood may have little place to grow vegetables, but proximity to emergency food distribution networks and local government assistance. But any community may not have enough foresight, labor, tools, or funds to create alternatives to whatever their members use now for heating, lighting, cooking, refrigeration, water collection, water pumping, and disposing of graywater and human waste.

Then there’s the matter of community security—a subject many find “politically incorrect” even to consider. Many communities that embrace nonviolence may find it difficult to nonviolently defend their community in the face of anarchy or insurrection in the society around them. If the local government fails or if a local law and order system falls apart, there can be various kinds of dangerous consequences. Desperate, hungry people can loot and steal and take what they want from others. Vigilante groups can form to either deal with the lawlessness, or take what they want themselves. State or national government can declare martial law, rescind constitutional liberties, send in troops, and restore order or take what they want from others. Having supportive neighbors and good networking in the greater community may help. But in the worst-case, “Mad Max” scenario, it may not help much.

Embracing weaponry for self-defense may not be useful, either, as the presence of weapons and ammunition may simply make one a more attractive target of people who

want to get their hands on the community's weapons.

Another, much more basic and subtle challenge to preparing for the coming energy decline is even being able to, as Richard Heinberg advises, to “start an ecovillage” in the first place! It's really hard to start a new community in today's political, cultural, and financial environment. Land prices are exorbitant and getting more so every day. Zoning restrictions, designed to protect homeowners' property values, can severely limit a group's ability to create the community they want with the numbers of people they need. Building codes, designed to protect a county from lawsuits from approving unsafe buildings, and county and state health codes, designed to keep people safe from biological and other health hazards, can stop a community's sustainability plans faster than you can say, “That's illegal!” And the all-too-human tendency to bring habitual reactive and destructive behaviors to community settings—making it hard to get along well and resolve inevitable conflicts—can make cooperating with friends or neighbors, especially in frightening and desperate times, even more challenging than it normally is.

It is also difficult to radically change one's energy-consuming lifestyle. It may be easy to think, “I'd like to join an ecovillage some day” or “I'll stop depending so much on fossil fuels and live a more sustainable lifestyle soon,” yet it's easy to become inexorably distracted from that goal by the demands of jobs, family, and other responsibilities. Tearing oneself away from the status quo may be the most difficult thing we can ever do. Once we make the break, resisting the allure of today's cheap-energy lifestyle can be a constant effort.

Yet we must. The experts agree: the future will have more in common with the 18th century than it does with the 20th. Societal upheavals will favor those who have prepared over those who come to realization late, without building community and sustainability skills.

In just a century and a half, humanity has spent down about half of its “bank account” of formerly cheap energy that has taken millions of years to accumulate. This may be our species' greatest crisis ever, and there will be a very few winners, and

possibly billions of losers over the rest of our lives and longer. The winners will be either those with the power to hoard much of the remaining fossil energy, or those with the foresight, knowledge, resources, and will to live within the Earth's sustainable energy budget.

We certainly have no answers, solutions, or “magic bullets” for this dilemma. We both believe it's better to live cooperatively and sustainably with others, but we don't know what else is needed to truly be prepared for the inevitable energy decline. Is it better to be widely connected with one's neighbors and bioregion, or isolated and inaccessible? Is it better to grow all of one's own food and generate all of one's own energy, or to create a tight web of trade and barter relationships with one's friends and neighbors, supplying some of what they need and vice-versa? Our contributors to this issue offer various perspectives, and we hope you find them thought-provoking. We are sure of one thing though: people who understand what is happening, and act with others of like mind to build sustainable agriculture, culture, and energy systems—in right relationship with the Earth's finite energy resources—will have at least a chance to live fulfilling lives in these challenging times.

Jan Steinman has been a ski-instructor, electrical design engineer, software engineer, and fine-art photographer, among many other pursuits. He drives with biofuels, strives to be an alternative lifestyle pioneer, and is a founding member of EcoReality: www.EcoReality.org.

Diana Leaf Christian is editor of Communities magazine and author of Creating Life Together: Practical Tools to Grow Ecovillages and Intentional Communities, and was a speaker at Community Service, Inc.'s “Peak Oil and Community Solutions” conference in 2005. She lives at Earthaven Ecovillage in North Carolina.

Sidebar:

Resources for Learning More About Peak Oil

The End of Suburbia. This 78-minute video (on VHS or DVD), describes, with humor and fact, the energy crisis and how it happened, with testimony by leading petroleum engineers and Peak Oil researchers, including Richard Heinberg, James Howard Kunstler, and others. www.EndOfSuburbia.com.

The Power of Community: How Cuba Survived Peak Oil. Megan Quinn and The Community Solution organization. Hopeful, inspiring 60-minute documentary of Cuba's crisis and recovery when they lost 50 percent of their oil overnight 12 years ago when the Soviet Union withdrew. Their responses range from permaculture design and solar energy, to city gardening on rooftops and balconies, and organic farming with oxen. www.smallcommunity.org.

The Party's Over and ***Powerdown***, Richard Heinberg. Two of the most popular books that present this information in a readable way to lay people. New Society Publishers, 2003 and 2004, respectively.

High Noon for Natural Gas, Julian Darley. A hard-hitting look at an energy source that rapidly went from nuisance to crutch, and the implications of our increased dependence on a resource that will soon be in rapid decline. Chelsea Green Publishing, 2004.

Relocalize Now!: Getting Ready for Climate Change and the End of Cheap Oil, Julian Darley. Timely advice for re-creating local communities that can begin to build "parallel public infrastructures" for survival during the coming energy decline. New Society Publishers, 2006.

The Long Emergency, James Howard Kunstler. Kunstler's view of what life in the near future will be like, post Peak Oil. Grove Press, 2005.

The Oil Age is Over: What to Expect as the World Runs Out of Cheap Oil:

2005-2050, Matt Savinar. With a question and answer format, one of the easiest resources to understand what's happening and why; also one of the least optimistic (some would say "most realistic") perspectives of what's going to happen. Available mail order or paid download from the author's website: *www.LifeAfterTheOilCrash.net*.

- *www.CommunitySolution.org*. Website of Community Service, Inc., sponsors of the annual conference: "Peak Oil And Community Solutions." "Dedicated to the development, growth, and enhancement of small local communities ... that are sustainable, diverse, and culturally sophisticated." Next conference: Sept. 22-24, 2006.

- *www.EnergyBulletin.net*. "A clearinghouse for current information regarding the peak in global energy supply."

- *www.PostCarbon.org*. Julian Darley's website. "Our mission is to assist societies in their efforts to re-localize communities and adapt to an energy-constrained world."

- *www.MuseLetter.com*. Richard Heinberg's website. "A monthly exploration of cultural renewal."

- *www.Dieoff.com*. A massive collection of articles, assembled by Jay Hanson, regarding the relationship between resource depletion and population, including full text of many seminal scientific papers and published works.

- *www.TheLeadershipSchool.com*. "Committed to training the next generation in the sustainable skills of the 21st century."

- *www.TrendsResearch.com*. "Discover the future, see tomorrow's *trends* today."

—J. S. & D.L.C.

Pull quotes:

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