Resurgence

FRIENDLY FIRE

From Resurgence
Nov - Dec 2006, Issue 239

http://www.resurgence.org/2006/ehrenfeld239.htm
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THERE IS A critical issue in the energy debate which has not received the attention it deserves: the problem of 'friendly fire'. Friendly fire is the euphemism our military and press use to sugar-coat the presumably accidental killing of soldiers in battle by their own comrades.

The first time I saw the term 'friendly fire' used in a non-military context was in the book The Argumentative Indian, by the brilliant Nobel laureate economist, philosopher and historian Amartya Sen. In Sen's words: "Sometimes the very institutions that were created to overcome disparities and barriers have tended to act as reactionary influences in reinforcing inequity." One example he gives is the contrast between the immense government stockpiles of food in India alongside the largest undernourished population in the world. He states: "The positive hopes of equity through high support prices of food and payment of subsidies have ... tended to produce exactly the opposite effect." This is friendly fire.

What does the idea of friendly fire have to do with the problems, especially the environmental problems, related to the energy crisis in the US? This becomes clear if we look at possible solutions to the energy crisis. I group them in two categories.

The first category includes all technological solutions. There is no need to describe them in detail: nuclear power, biofuels, hydrogen, efficiency gains in transforming, transporting and using energy, non-biological renewable energy, and others. Each has major advantages and serious limitations. Most have the same drawback: they are much more expensive than sticking a pipe in the ground and letting the oil flow out of a tap. Nevertheless, it is clear that some combination of these technologies will allow us to stretch our energy supply a good deal farther than current practice allows.

The second category of proposed solutions to the energy crisis includes the various methods of conservation of energy based on a simple lifestyle. It means, for North Americans, consuming less and reusing more.

The US has opted for the first category: technology. It's easy to see why. Our present economy is geared to constantly increasing consumption, and dependence on goods and services we no longer provide for ourselves. There is a deadly combination of a sense that we are entitled to all these goods and services, and a fear that we need them and that we can't survive without them. We don't worry about the ultimate cost, because we haven't the faintest idea what it is. In fact, we act as if there will be no cost. Thus, in the US most of those advocating the new energy technologies are not suggesting any reduction in overall energy consumption.

Indeed, the opposite is likely to be true – continuing low prices encourage us to use still more energy. But there are two hitches: first, even taken together, all of the new energy technologies will probably not be up to the job of replacing cheap oil in running a high-consumption, high-waste society (although – and you can see where I'm heading – they will be critically important in running a responsible-consumption, low-waste society).

The second hitch is more serious, and here is where the friendly fire idea comes into play. If we use the gains from our new energy technologies to continue to increase our consumption and waste, we will find ourselves in a vicious spiral that decreases resources and increases environmental damage – even as our energy technology improves.

THE GREAT GRAIN ROBBERY
An example of 'friendly fire'.

Written by Lester R. Brown of the Earth Policy Institute. For further information visit www.earthpolicy.org.

Cars, not people, will claim most of the increase in world grain consumption this year. The US Department of Agriculture projects that world grain use will grow by twenty million tons in 2006. Of this, fourteen million tons will be used to produce fuel for cars in the US, leaving only six million tons to satisfy the world's growing food needs.

In agricultural terms, the world appetite for automotive fuel is insatiable. The grain required to fill a twenty-five gallon SUV tank with ethanol would feed one person for a year. The amount of corn used in US ethanol distilleries has tripled in five years to fifty-five million tons in 2006. With so many new distilleries being built, livestock and poultry producers fear there may not be enough corn to produce meat, milk and eggs.

Since almost everything we eat can be converted into fuel for automobiles, including wheat, corn, rice, soybeans and sugarcane, the line between the food and energy economies is disappearing.

As the price of oil climbs, it becomes increasingly profitable to convert farm commodities into automotive fuel – either ethanol or biodiesel. In effect, the price of oil becomes the support price for food commodities. Whenever the food value of a commodity drops below its fuel value, the market will convert it into fuel.

Put simply, the stage is being set for a head-on collision between the world's 800 million affluent automobile owners and food consumers. The only question is, when food prices will rise, and by how much. In recent months, corn prices have risen by one fifth. For the two billion poorest people in the world, many of whom spend over half of their income on food, rising grain prices can quickly become life-threatening.

There are alternatives to using food-based fuels. The equivalent of the 3% grain in automotive fuel supplies from ethanol could be achieved several times over and at a fraction of the cost, simply by raising auto fuel efficiency standards by 20%. There are no alternatives to food for people.

Marine fisheries are a good example of this kind of friendly fire. Fossil fuels are the major energy inputs to the world's fishing industry. In the year 2000, 50 billion litres of fuel, mostly diesel, were burned to land a little more than 80 million metric tons of marine fish and invertebrates – this amounted to 1.2% of global oil consumption, about the same as used by the Netherlands, with an annual emission of 130 million tons of CO2 into the atmosphere. The energy content of the fuel is about 12.5 times the protein energy content of the catch. Fleets catching luxury species – shrimp, tuna, swordfish – for the US, Japanese and similar markets have the highest energy consumption: 2,000 litres of fuel per ton of catch. But the energy efficiency of the fishing fleet has been declining steadily over time, because every year the boats need to fish longer hours and deeper in offshore waters as the over-exploited fish populations progressively fail. So even if we improve the efficiency of diesel and gasoline engines by 10% or 20%, which is conceivable, and if our new technologies make more cheap fuel available, energy consumption will continue to rise in most fisheries until one by one they collapse, like the North Atlantic cod fishery. Abundant energy in the absence of scientifically regulated fishing strategies is killing the fisheries.

Similar stories come from global forestry – one of many examples is the use of energy-guzzling helicopters to assist in the logging of steep slopes. Our insatiable demand for timber and timber products thus results in soil erosion and permanent deforestation in mountainous areas. The new energy technologies, in the absence of other moderating influences, remove a potential restraint on our ability to carry out destructive forestry. More friendly fire.

There are additional connections between increasing energy efficiency and accelerating environmental and social damage. Global trade, which is heavily energy-dependent, transmits introduced diseases of humans, plants and wildlife, and promotes the costly spread of exotic species. (The annual cost of fighting exotic species in the US is estimated at $120 billion.) And there are other side effects. For instance, the importation from Mexico into the US of luxury foods such as fresh green peppers, tomatoes and string beans in winter is subsidised by huge inputs of energy for industrial agriculture and transportation. The side effects, regardless of

whether the energy is sustainably produced or not, include the poisoning of Mexican workers by pesticides, chemical and mechanical impacts on Mexican soils, and the destruction of native Mexican cultures as community economies are disrupted by introduced subsidised commodities and the national demand for cheap, landless labour.

Here is another example of friendly fire: aquaculture is now providing a substantial amount of the fish consumed in the US. The aquaculture facilities themselves require large amounts of energy to run, especially in the case of carnivorous fish such as trout and salmon, whose animal protein is supplied by fish meal made from smaller fish caught by the same global fleets mentioned above.

There are many damaging side effects of aquaculture – these include genetic pollution of native fish stocks by escaped fish, global spread of diseases such as infectious salmon anaemia (which is caused by a virulent virus that has adapted itself to intensive aquaculture), the destruction of the marine sea floor by bottom trawling, and marine pollution by food and wastes from the farms.

Ecotourism, which is also dependent on cheap energy, is often a great boon to conservation. Yet ecotourism has its dark side. The problem of overuse of sensitive ecosystems is obvious – sensitive plants and soils react poorly to trampling even by friendly feet, and endangered animals do not always thrive when watched by large numbers of friendly people in Land Rovers and tour boats. Some negative effects are more subtle: it appears that ecotourism may be responsible for the first recorded introduction of a primary human pathogen, Mycobacterium tuberculosis, into free-ranging populations of wild animals: banded mongooses in Botswana and grey meerkats in South Africa.

And most of these consumptive uses of energy release greenhouse gases that work to alter global climate, which is raising sea level and appears to be increasing the frequency and intensity of large storms. Positive feedbacks add to the problem. Global warming itself is causing widespread melting of Arctic permafrost, with the release of methane, a powerful greenhouse gas, from saturated peat, and CO2 from unsaturated peat. These gases raise temperature still further.

AS LONG AS energy technology helps North Americans keep their same consumptive lifestyle, we have friendly fire on a massive scale. If energy were the only limiting factor we faced, perhaps our total faith in a technological fix would have some justification. But there are many limiting factors acting within the highly interconnected economic system that controls all of our lives. Forests, soils, fresh water, climate, ecosystem balances, emerging diseases, the growing gulf between rich and poor, and other environmental and social variables are all approaching critical limits. Even if we can maximise efficiency in production and use of energy, that does not necessarily solve the other problems – some, including the plight of environment and biodiversity, will be made worse by the continued availability of cheap energy. Like most enablers, energy technology is not a villain. We need it desperately, but we need it in a new and saner context of living.

What, then, is likely to happen? Ideally, the advances being made in energy technology could be employed in the US in concert with needed changes in lifestyle – lower consumption and waste.

This would have many positive environmental and social effects around the world, although it would admittedly cause at least short-term economic disruptions in our major suppliers of goods and services: China, India and others. But at the moment, a responsible change in lifestyle in the US seems a number of years away, although economic circumstances must inevitably force it to happen.

Perhaps India, despite present appearances, can be different. In India, the idea of a sustainable lifestyle has a long and honourable tradition, notably expressed in Mahatma Gandhi's thoughts about the vital relationship between ecology, sustainability and consumption patterns. Gandhi knew that the Western model of development – perpetual growth in consumption – was the wrong model to follow, not just in India, but in the West as well. Gandhi would not have liked some of the new energy technologies, but he might have approved of those that lend themselves to careful and gentle human use in a culture of moderation and restraint. Today, there are many dedicated environmental and social activists in India, North America and elsewhere who understand that technology and sustainability must go hand in hand, and are working hard to bring about the necessary changes to make it happen. We can only hope that their efforts will prevail, and that the Earth will be rescued from this deadly rain of friendly fire.

NOTE:
This article is based on the third annual Khoshoo Memorial Lecture, 'Energy and Conservation', delivered by David Ehrenfeld in June 2006 at the India International Centre, New Delhi. David Ehrenfeld is Professor of Biology in the School of Environmental and Biological Sciences, Rutgers University, New Jersey. He is the author of Swimming Lessons: Keeping Afloat in the Age of Technology.
