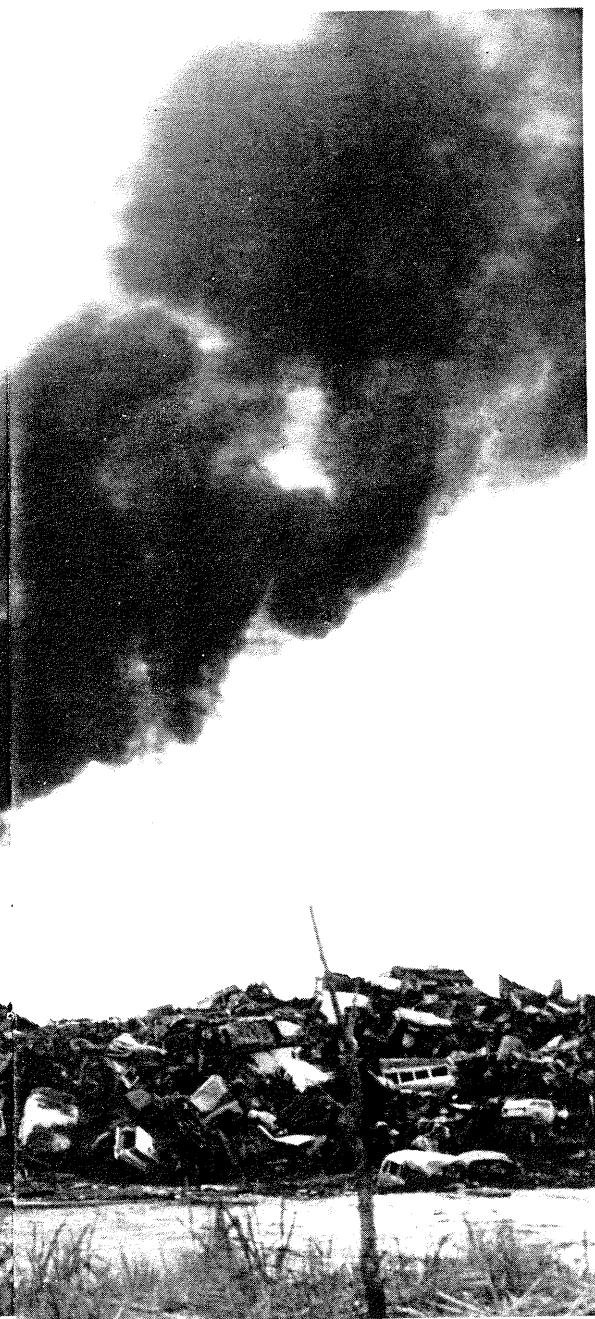


TOO MANY RICH FOLKS

by Paul R. Ehrlich and Anne H. Ehrlich



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There is a widespread misapprehension that the population problem centres in the poor countries.¹ In the popular view, the "population problem" is being caused by Indian peasants, African herders, macho Latin American men, and the like. And a casual glance at demographic statistics might easily persuade the unsophisticated that this is correct. The population growth rate in Kenya is over 4 per cent, which if unchanged would double the population in only 17 years. The average growth rate for the less developed world (excluding China) is 2.4 per cent (doubling time 29 years), and travelers virtually anywhere in the developing world are greeted by huge numbers of children under the age of fifteen, who make up roughly 40 to 50 per cent of the population.

In contrast, rich nations have either very slow growth rates (well under 1 per cent), have reached zero population growth (ZPG), or in some cases such as West Germany and Hungary actually have shrinking populations. So, one might assume that, if Bangladeshis and Rwandans would just learn to use condoms, everything would be just fine.

Of course, nothing could be further from the truth. Rapid population growth, and overpopulation itself, do

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An auto and tire dump in Panama. Of the more than 400 million motor vehicles in the world in 1980, 150 million were in the United States, 36 million in Japan, 24 million in Germany, 1.7 million each in India and China, and 0.18 million in Nigeria.

It is not crude numbers of people or population density *per se* that should concern us; it is *the impact* of people on the life support systems and resources of the planet. That impact can be conceived as the product of three factors: population size; some measure of affluence or consumption per capita; and an index of environmental damage done by the technologies used to supply each unit of affluence.

create serious problems for poor countries; indeed, they explain why most of them seem unable to escape poverty.

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It is not crude numbers of people or population density *per se* that should concern us; it is the *impact* of people on the life support systems and resources of the planet. That impact can be conceived as the product of three factors: population size (P); some measure of affluence or consumption per capita (A); and an index of the environmental damage done by the technologies used to supply each unit of affluence (T). The entire population-resource-environment crisis can be encapsulated in the equation:

$$I = P \times A \times T \quad (I = PAT)$$

The $I = PAT$ equation explains (in very simplified terms) why the industrialized nations, regardless of comparative population size or density (people per square kilometre), must be considered to have much more severe population problems than any poor nation. Unfortunately, nations do not even try to keep statistics on the average per capita environmental impact of their citizens; and it would be difficult to calculate precisely if they did.

In order to make reasonable comparisons of affluence per person, we have chosen a surrogate statistic: per capita use of commercial energy. This is a rather reasonable surrogate, since much environmental damage is done in the processes of extracting and mobilizing energy, and even more is done by its use. Per capita commercial energy use oversimplifies by combining the A and T factors into a single unit of per capita impact, but that cannot be avoided. Generally, there is no convenient way to separate A and T using national statistics.

But the legitimacy of using the surrogate can be seen by considering how societies handle energy. Hundreds of thousands of birds and sea mammals killed at Price William Sound in Alaska, the death of lakes and forests in eastern North America and northern Europe from acid precipitation, and roughly three-quarters of the contribution to

global warming that is due to carbon dioxide released in burning fossil fuels, all follow from the mobilization of energy to power overdeveloped societies. Global warming, entrained by huge releases of carbon dioxide, the acidification of ecosystems resulting from emissions of sulphur and nitrogen oxides from factories, power plants, and automobile exhausts, are examples of damage caused by energy use. That damage is no respecter of wealth or national boundaries; its consequences are visited on the poor as much as the rich who enjoy the benefits of using the energy.

Energy is also used in paving over natural ecosystems to create super-highways and parking lots to serve

automobiles; energy is required to produce the plastic and paper and aluminium cans that clog landfills and festoon highways and seashores; energy powers the boats that slaughter whales and deplete fisheries; energy is used to produce pesticides and cool the offices of Arizona developers as they plan the further unsustainable suburbanization of the American desert Southwest; energy warms the offices of oil company officials in Anchorage as they plan the "development" of the Alaskan National Wildlife Refuge.

Fishermen at their sport in a detergent-clogged Seine River in Paris.



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Energy is being used to pump aquifers dry around the world to support a temporary increase in grain production, and energy lets us fly in jet aircraft 30,000 feet above the circular irrigation patterns created by the pumping—energy that caused environmental damage when oil was pumped out of the ground and now is causing environmental damage as jet exhausts are spewed into the atmosphere. And, of course, energy damages when used to mine ores, win metals from those ores, and use those metals and other energy-intensive materials to manufacture automobiles, aircraft, TVs, refrigerators, and all the other paraphernalia of civilization.

Poor people don't use much energy, so they don't contribute much to the damage caused by mobilizing it. The average Bangladeshi is not surrounded by plastic gadgets, the average Bolivian doesn't fly in jet aircraft, the average Kenyan farmer doesn't have a tractor or a pickup, the average Chinese does not have air-conditioning or central heating in his apartment. Of slightly over 400

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JERRY COOKE

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million motor vehicles in the world in 1980, 150 million were in the United States, 36 million in Japan, 24 million in Germany, 1.7 million each in India and China, and 0.18 million in Nigeria.

So statistics on per capita commercial energy use are a reasonable index of the responsibility for damage to the environment and the consumption of resources by an average citizen of a nation. By that measure, a baby born in the United States represents twice the disaster for Earth as one born in Sweden or the USSR, three times one born in Italy, 13 times one born in Brazil, 35 times one in India, 140 times one in Bangladesh or Kenya, and 280 times one in Chad, Rwanda, Haiti, or Nepal.

These numbers can be somewhat misleading in several respects. Both Sweden and the Soviet Union use about half as much energy per capita as Americans. But the Swedes use it much more efficiently to produce a roughly equal standard of living, whereas Soviet energy use is much less efficient, and their standard of living is considerably less than half that of the United States (and much more pollution is produced).

In most developing countries, including the last six named above, people overwhelmingly depend for energy on locally cut fuelwood, not commercially sold fossil fuels, hydropower, or charcoal, so their actual energy consumption is understated. The average Indian is certainly not eight times richer than a citizen of Chad or Haiti!

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Nevertheless, as a rule of thumb, the concept is useful. There are more than three times as many Indians as Americans, so, as a rough estimate, the United States contributes about 10 times as much to the deterioration of Earth's life support systems as does India. By the same standard, the United States has 300 times the negative impact on the world's environment and resources as Bangladesh, and Sweden is 25 times more dangerous to our future than Kenya. These statistics should lay to rest once and for all the myth that population pressures are generated principally by rapid population growth in poor nations.

There is another way to look at the disproportionate negative impact of rich nations on civilization's future. The entire planet is now grossly overpopulated by a very simple standard. The present 5.3 billion people could not be supported if humanity were living on its income—primarily solar energy, whether captured by plants in the process of photosynthesis or by human-made devices such as solar heat collectors, solar electric cells, dams, or windmills.

Far from living on its income, however, civilization is increasingly dependent on its capital, a one-time bonanza of nonrenewable resources inherited from the planet. These resources include the fossil fuels, high-grade mineral ores, and most importantly, rich agricultural soils, underground stores of "ice-age" water, and biotic diversity—all the other species of plants, animals, and microorganisms—with which human beings share Earth.

In the process of depleting this capital,

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humanity is rapidly destroying the very systems that supply us with income. And people in industrial countries use a vastly disproportionate share of the capital. They are the principal depleters of fossil fuels and high-grade mineral ores. With less than a quarter of the world's population, citizens of rich nations control some four-fifths of its resources. They and the technologies they have spread around the world are responsible for more than their share of the depletion of soils and groundwater, and they have played a major role in causing the destruction of biodiversity, both within their national territories and elsewhere.

Overpopulation in industrial nations obviously represents a much greater

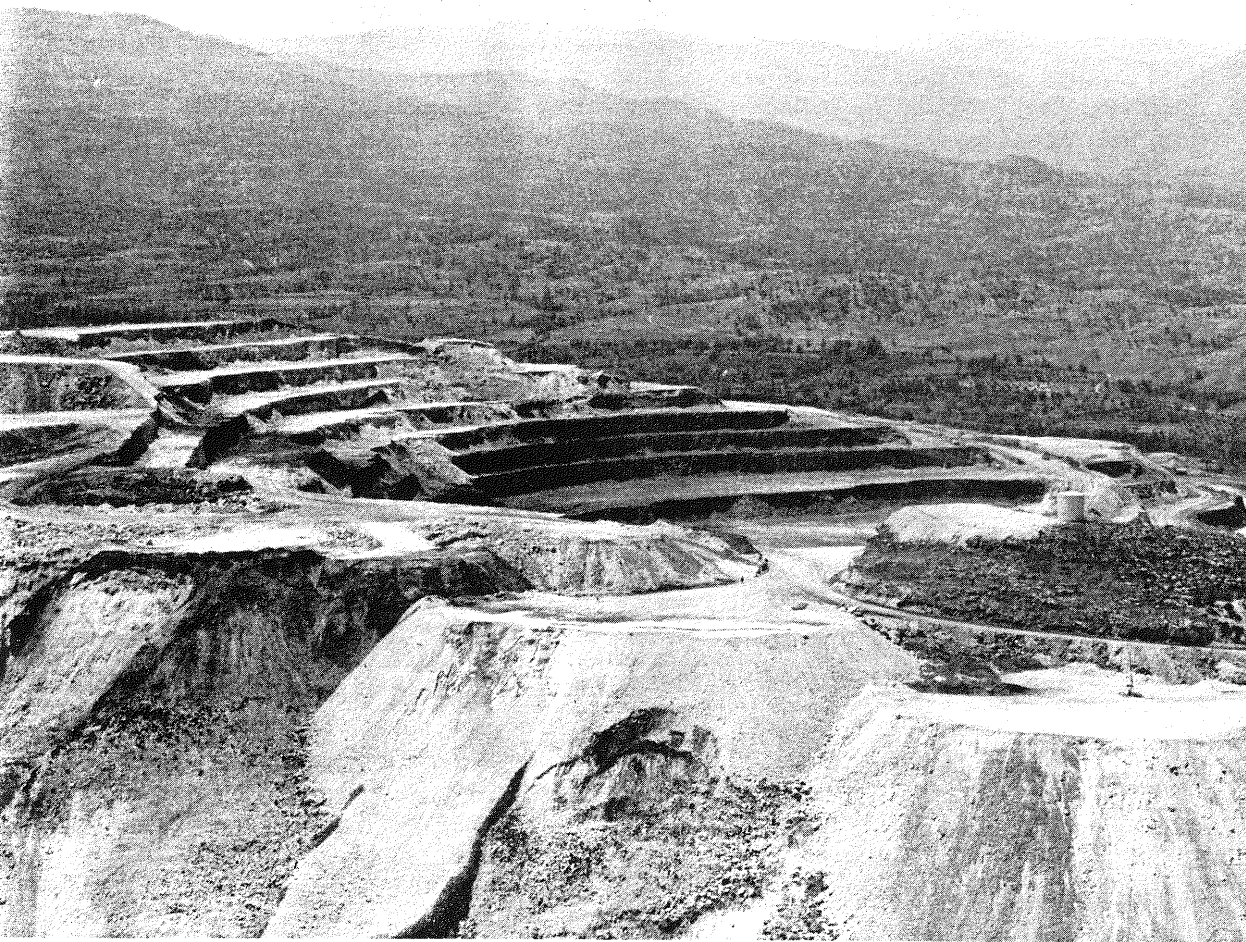
threat to the health of ecosystems than does population growth in developing nations. The 1.2 billion people in the developed world contribute disproportionately to global warming, being responsible for about four-fifths of the injection of carbon dioxide into the atmosphere caused by burning fossil fuels. Most of the responsibility for ozone depletion, acid precipitation, and oceanic pollution can be laid at the doorstep of industrial nations. So can the environmental consequences of much cash-crop agriculture, mining operations, and oil drilling and shipping worldwide. And industrialized nations share responsibility with developing countries for the roughly one-quarter of atmospheric CO₂ buildup caused by tropical deforestation.

While people in rich nations must shoulder responsibility for civilization's resource depletion and environmental deterioration, they are also in a better position to lead the way in making the necessary changes to improve the human predicament. Still-growing populations, after decades of slackening growth, could soon achieve zero population growth and begin shrinking. Rather than lament the shift to an "older" population, people in developed countries could celebrate and encourage the trend. The smaller the population (P), if per-capita consumption or affluence (A) and technologies (T) remain the same, the less the environmental impact (I).

But the affluence and technology factors also can be more easily reduced in rich countries than in poor ones. Energy consumption could be substantially lowered through conservation in virtually all developed nations. Considerable progress in that direction was made in the United States, one of the world's more energy-wasteful nations, between 1977 and 1987, largely as a response to higher petroleum prices and growing dependency on imported oil. Unfortunately, the Reagan administration terminated or phased out most of the governmental incentives to conserve energy or develop alternative sources that had been put in place during the 1970s. By the late 1980s, Americans were reverting to their old bad habits, although the possibilities for energy con-



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servation had only begun to be tapped. Far from lowering the standard of living, the changes that were implemented, as well as those that remain possible, reduce energy costs to consumers and substantially lessen pollution.

Beyond conservation, many fairly painless changes could be made in the energy mix of most developed nations that would markedly reduce the release of CO₂ to the atmosphere. By substituting natural gas for coal, for instance, CO₂ emissions could be cut by about 50 per cent for the same energy benefit—and, again, less pollution. And renewable energy sources, especially solar-generated electricity, are increasingly practical substitutes for fossil fuels.

A copper mine. At 0.6 per cent "recovery" rate, a common grade of copper ore yields 12 pounds of red metal per ton extracted. The remaining 1,988 pounds of waste must be disposed of usually in massive, sometimes dangerous, and often polluting "trailing" piles near processing plants.

Apart from energy, most developed nations have ample room to shift to more environmentally benign technologies (thus reducing T). What is needed are economic incentives for manufacturers to take account of the costs of transport, distribution, use, and disposal of products, not just production costs, in making decisions. This could prove tricky, as corporations increasingly shift manufac-

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turing processes to poor countries to avoid higher labor costs and environmental restrictions in the home countries. As the global economy becomes more and more integrated, international standardization of environmental regulations may become necessary.

If the overdeveloped nations of the world fail to reduce their environmental impacts, working as far as possible on all three factors—population, consumption, and technology—they can hardly expect the developing world to do so. And without reductions in CO₂ and other greenhouse emissions by the rich, growing energy use by the poor nations will accelerate the greenhouse buildup. The sheer size and growth rates of populations in developing nations, along with their altogether reasonable aspirations and plans for development, virtually guarantee such an acceleration.

To illustrate, suppose that China halted its population growth at about 1.2 billion (unlikely as that seems) and only doubled its per capita energy consumption, using its abundant supplies of coal. At that, its per capita consumption of energy would still be only 14 per cent of the average American's; yet that apparently modest increase would cancel the benefits of Americans giving up all use of coal (currently supplying about 20 per cent of US energy) and not replacing it with a carbon-based fuel. Similarly, if India achieved success in ending its population growth at 2 billion, and doubled its per capita energy use to about 7 per cent of present US consumption, it too would offset the foregoing of US coal. Unfortunately, Americans can

only give up coal-burning once.

So, while the rich nations today are the primary culprits in generating global warming (and numerous other environmental problems), an alarming potential for greatly increasing these problems resides in the poor countries, largely because the P factor is both so large and still growing so fast. If poor nations are to have any chance at all to end their population growth humanely and to develop their economies, the rich must scale back their assaults on the planet's life-support systems.

Viewed in this light, the situation clearly requires co-operation among all nations in implementing solutions to the human predicament. If the habitability of Earth is to be preserved for all our descendants, we have no choice but to end and reverse population growth, limit our consumption of resources, replace damaging technologies with gentler ones, and attempt to design a better, more sustainable civilization.

Having pioneered in today's destructive development, it seems only appropriate for the rich countries to lead in setting things right—by moving toward population shrinkage. □

NOTE

1. Based in part on material from P.R. Ehrlich and A.H. Ehrlich, *The Population Explosion*, to be published in February 1990 by Simon and Schuster, New York.