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Our Nuclear Lifeline

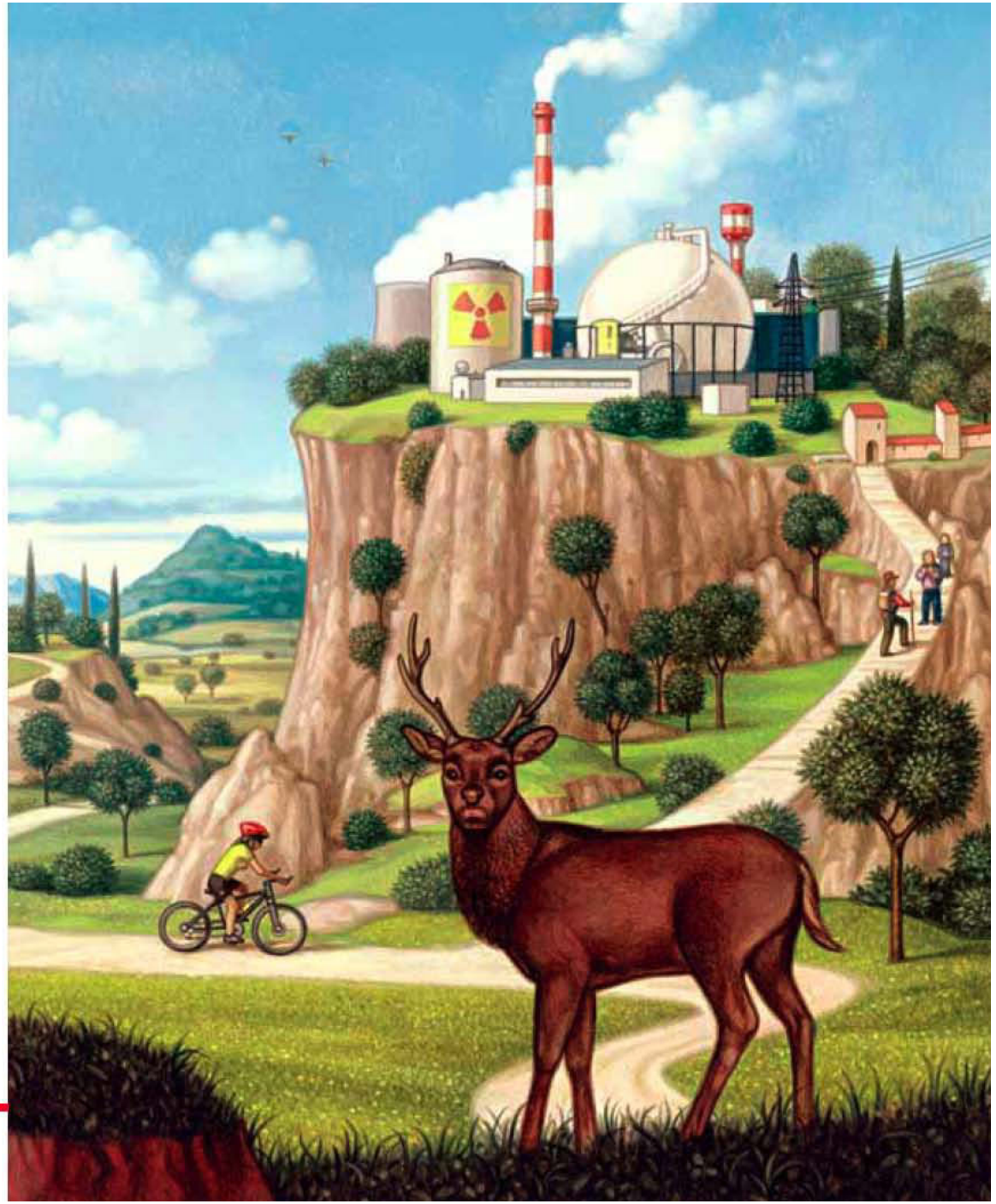
Go nuclear? A leading environmentalist says the Greens are plain wrong to oppose it.

BY JAMES LOVELOCK/EFN

I HAVE BEEN 'GREEN' ALL MY LIFE. I love the natural world and have devoted my scientific career to understanding how it all works.

I was raised as a countryman. Now my wife and I live in rural Devon, in south-west England. Our few acres of woodland with a river running through it are a nature reserve.

It was an invention of mine that kick-started the environmental movement. As a young scientist in the 1950s, I devised a simple instrument to help our medical research into air cleanliness, the Electron Capture Detector, which awoke us to the extent of



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global pollution. It showed, for instance, that DDT had spread everywhere in the world, and later that chemicals called CFCs were accumulating and damaging ozone in the atmosphere.

Working with NASA, the US space programme, in the 1960s to discover whether life existed on Mars, I learned much about our own planet. I realised that it behaves as if it were a living being, adjusting itself to make conditions comfortable for life. We humans are part of this system. Everything we do affects it.

I called these complex ideas "Gaia" after the Greek name for mother earth. The theory is now widely accepted but known as earth system science.

Mother Earth is in trouble. Every time we click a light switch or start a car, something sinister happens. From power station chimneys and car tail-pipes, immense volumes of gases such as carbon dioxide (CO2) are pumped into the sky where they pollute the environment and act like a greenhouse, over-heating the globe.

The ever-rising temperature is nearing the threshold beyond which the Earth will be in crisis. The physical changes taking place—rising sea levels flooding coastal cities and landscapes, for instance—will be irreversible.

But there's a lot we can still do to forestall disaster. Global warming stems from our dependence on carbon fuels such as coal, oil and natural gas. If only we could avoid burning these "fossil" fuels, global warming would lose momentum. But how could we possibly do that?

A lifeline does exist and it's dangling in front of us. By grasping it now we can rescue the world from both the consequences of global warming and our looming energy shortages. It's safe, proven, practical and cheap.

Our lifeline is nuclear energy.

Imagine you were a government minister required to decide what fuel to use for a new power station being built to supply half a large city like Paris. Every year, these will be the consequences:

Coal: Requires a 1,000km line of railway trucks filled with expensive coal, emits billions of cubic feet of gas that over-heats the globe, creates dust and more than 500,000 tonnes of toxic ash.

Oil: Needs four or five super-tanker-loads of heavy oil imported from unstable parts of the world, emits nearly as much greenhouse gas as coal plus huge volumes of sulphur and other deadly com-pounds that turn into acid rain.

Natural gas: Imported over long distances by ships and pipelines prone to accidents and leaks; emissions are highly polluting and the gas supply is vulnerable to terrorists.

Nuclear: Feeds on about two truck-loads of cheap and plentiful uranium imported from stable countries like Canada or Australia. Gas and acid emissions: zero. Toxic ash and dust: none. High-level radio-active waste produced: a few bucketfuls.

The benefits of using nuclear energy instead of fossil fuels are overwhelming. We know nuclear energy is safe, clean and effective because, right now, 137 nuclear reactors are generating more than one-third of Western Europe's electricity and 440 in all are supplying one-seventh of the world's.

Yet most countries that already have nuclear power in Western Europe—Belgium, Germany, Netherlands, Sweden, the UK—are hell-bent on shutting it down (or, at the least, are not renewing ageing power stations) although a Eurobarometer poll in 2002 showed that two in every three Europeans broadly support nuclear energy.

Even the U.S is equivocal. Only Finland, France and some Central European countries, such as Bulgaria and Romania, are building new plants. Denmark, Italy and Austria are determined not to have nuclear generators at any price, yet happily rely on nuclear power imported from neighbours.

To phase out nuclear energy just when we need it most to combat global warming is madness. Rational concerns for safety are not the issue. The anti-nuclear agenda is pushed by groups like Greenpeace and Friends of the Earth, and by Green Party politicians. They are pursuing goals in which neither environmental good sense nor science play a part—a strange way to

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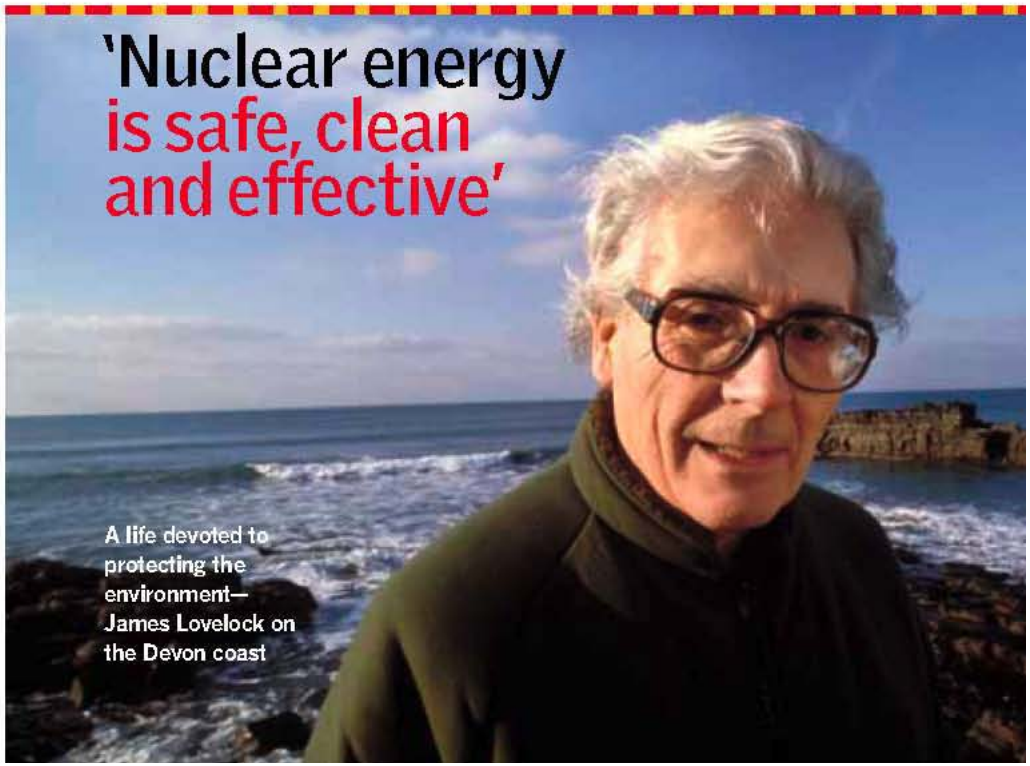

defend the Earth.

The Green idea that renewable energy can fill the gap left by retired nuclear power stations—and also meet the constantly rising demand for power—is romantic nonsense. Wind farms are monstrously ineffi-cient and still need fossil-fuel back-up for the three days in four when the wind doesn't blow. Solar energy is a ridiculous dream for northern Europe. Energy on a large scale from waves and tidal currents is far off.

The figures show that many people's fears of nuclear energy are unreasonable

RADIATION IS PART of our natural environment and we can live with it. All of us are exposed to natural radioactivity every minute, mostly from rocks and soil. The radiation bombarding us goes up 10 percent when we sleep next to another hu-man. A weekend at a beach with granite rocks in Brittany or Cornwall increases it three-fold, a skiing holiday ten-fold.

How do nuclear power stations compare? The radiation from a re-actor is tiny: about as much as that from our own bodies. According to the UK's National Radiation Pro-tection Board, doses from the entire nuclear industry amount to less than one percent of our total exposure. Medical uses such as X-rays account for 14 percent and the remainder is natural. Compared with known cancer risks such as smoking and poor diet, it reports, the risk from non-medical, man-made radiation is about 1/100th of one percent.

The figures show that many people's instinctive fears of nuclear energy are unreasonable. The few accidents to occur are vastly exaggerated.

The Chernobyl accident is painted as one of the great industrial disasters of the twentieth century. The reactor near Kiev, in the Ukraine, caught fire in 1986 as a result of design faults and gross operating errors carried out with safety systems switched off. It is still reported in terms of thousands of deaths and long-lasting pollution. In fact, only 42 people died and they were mostly firemen and plant workers.

Since the explosion, UN experts have found no evidence of birth defects, cancers or other health effects, with one exception. Some 1,800 non-fatal thyroid cancers have been found in people who were children at the time. It is not even clear that they were triggered by the accident and they could have been avoided had the authorities issued warnings to stay inside for 24 hours and issued iodine tablets.

The Nuclear Generation Game

	% of Nuclear Electricity Generation 2003	REACTORS Operable / Under Const. Nov 04		% of Nuclear Electricity Generation 2003	REACTORS Operable / Under Const. Nov 04
Argentina	8.6	2/0	Lithuania	80	2/0
Armenia	35	1/0	Mexico	5.2	2/0
Belgium	55	7/0	Netherlands	4.5	1/0
Brazil	3.7	2/0	Pakistan	2.4	2/0
Bulgaria	38	4/0	Romania	9.3	1/1
Canada	12.5	17/1	Russia	17	30/5
China	2.2	15/4	Slovakia	57	6/0
Czech. Rep.	31	6/0	Slovenia	40	1/0
Finland	27	4/0	South Africa	6.1	2/0
France	78	59/0	Spain	24	9/0
Germany	28	18/0	Sweden	50	11/0
Hungary	33	4/0	Switzerland	40	5/0
India	3.3	14/9	Taiwan	22	6/2
Iran	0	0/1	Ukraine	46	15/0
Japan	25	53/3	U. Kingdom	24	23/0
Korea (N)	0	0/1	USA	19.9	103/1
Korea (S)	40	19/1			

Sources: World Nuclear Association/International Atomic Energy Agency

The fall-out from the radioactive cloud that swept Western Europe was really nothing: only one-tenth of a chest x-ray or ten days on holiday in the Alps.

Yet 368 hill-farmers in the UK are still unable to move or sell sheep because radiation they absorb from the grass exceeds the official limits. What does this limit amount to? It's the same as the radioactivity of one kilogramme of coffee or 1/30th of a kitchen smoke detector.

WHY ARE WE SO FRIGHTENED? After all, if nuclear power were really as dan-

gerous as people believe, isn't France—with its 58 nuclear reactors making 78 percent of its power—grossly polluted and doomed? Far from it. The world's nuclear champion is safe and its health is among the world's best. According to Bruno Comby, a nuclear scientist who set up the Environmentalists for Nuclear Energy, with 7,000 supporters, France's cheap nuclear electricity reduces its CO2 pollution by 90%.

A Swiss study of deaths related to power generation came up with astonishing results. Nuclear turns out to be five times safer than oil, ten times safer than gas and 100 times safer than hydro-electric dams. According to the World Health Organisation, worldwide fossil-fuel pollution is responsible for three million deaths a year. This is not how the media perceives it, however.

When a steam pipe burst in a Japanese nuclear power station and killed four people in September 2004 it made headlines around the world as a "nuclear" accident, though nothing nuclear was involved. A few days earlier, 20 were killed and 200 injured when a gas pipeline exploded in Belgium, but outside the country the accident made little impact.

When nuclear fuel is burned in a reactor it creates radioactive waste which has to be safely handled. Storage and disposal need not be complicated. The whole point of nuclear energy is that it makes so little waste and Greens who fight nuclear energy on these grounds are not being sensible.

All the high-level (most highly radioactive) waste produced in the UK after 50 years of civil nuclear operations would fill a ten-metre cube, about the size of a small house. Why are we so worried about this tiny cube? It's nothing compared with the 13,700 cubic kilometres of CO2 gas produced by burning fossil fuels—enough to cover more than the entire British Isles ten metres deep every year.

It does indeed take a long time to decay but the radioactivity of some of its waste is lost within a few years, rather than the hundreds of thousands claimed by the Greens.

HOW DANGEROUS is it really? Even if you found yourself right alongside some unshielded fuel taken out of a reactor one day ago, you would still have two minutes to get away virtually unharmed; if it had been taken out a year ago you would have five hours.

Moreover, none of this material really counts as "waste" because only three percent of its power-generating potential has been used. If reprocessed, it can be turned back into useful fuel. The nuclear waste now dotted around the UK is said to contain the energy equivalent of all the oil in the North Sea. The total stockpile in the U.S. has five times the potential energy of all the oil in the Middle East. Is it waste—or energy for our future?

That terrorists will get their hands on nuclear material is an un-derstandable worry but this, too, is misplaced. Tests have shown that no aircraft could penetrate the concrete cladding of a modern reactor. Although nuclear energy is much cleaner and safer than fossil fuels— and also easily the cheapest, according to a recent European Commission study—we allow Greens to exploit our anxieties.

Unless we stop fretting over tiny statistical risks—even if they exist—and focus instead on protecting the planet we live on, our prospects look bleak. In this electric world, nuclear energy is our one spark of hope.

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About Environmentalists For Nuclear:
http://www.ecolo.org/