

## The Revenge of Gaia

**MANKIND HAS GONE** so far in its neglect of Mother Earth that only drastic and immediate action can save us as she seeks her revenge. Talk of sustainable development, renewables and other concepts like the 'hydrogen economy' are, frankly, fanciful, according to James Lovelock's *The Revenge of Gaia*. We are now trapped in a vicious cycle of 'positive feedback' - where what happens in one place soon affects what happens in others, such is the sheer scale of man's domination and use of Earth.

The world currently emits 27,000 million tons of CO<sub>2</sub> per annum: the largest, but by no means the most lethal of the greenhouse gases (GHGs). If this CO<sub>2</sub> were frozen into a solid block (at -80°C) it would create a mountain one mile high and twelve miles in circumference. And the sum total of all our pollutions has already added half a million million tons of carbon to the atmosphere.

But just as important as curbing GHG emissions is our need to recognise and understand that the Earth's natural ecosystems regulate its climate and chemistry. Attempts to replace these with farmland or forestry are no good and constitute "man's hubris in its most extreme."

The great Earth system - Gaia - is a metaphor named after the Greek goddess of the Earth, and Lovelock is proud to use it, even when it irritates some of his scientific friends and foe alike. Gaia describes the infinite and intricate balance of systems keeping the Earth alive - a dynamic physiological system that has kept our planet relatively fit for 3 billion years. But we are now approaching a tipping point - one from which irreconcilable change will lead to man's extinction or a severe cull in numbers. Earth controls its temperature and composition so as to always be 'comfortable' according to Gaia. But we have now riled her to the extent that even if we stopped immediately all further seizing of Gaia's land and water for food and fuel production and stopped poisoning the air, it would take the Earth more than a thousand years to recover.

"Our goal should be the cessation of fossil fuel consumption as quickly as possible, and there must be no more natural habitat destruction anywhere," says Lovelock. We have, in effect, stumbled into a war that we have no hope of winning: all we can do now is try to make peace while we are still strong enough. No, this isn't Al-Qaeda. It's much, much worse.

Lovelock recognises the impossibility of turning off our energy-intensive, fossil-fuel powered civilisation without

crashing. What we need is a soft landing, but with a *powered* decent. But it's got to be quick.

We are coming close to catastrophe and the concept of sustainable development - regenerative development, solar panels, wind farms and all the rest - are virtually useless. But technology, and nuclear energy in particular, could save us or at least postpone the inevitable.

Nuclear power is the only source of energy that will satisfy our demands and yet *not* be a hazard to Gaia and interfere with her capacity to sustain a comfortable climate and atmospheric composition, according to Lovelock. This is because nuclear reactions are many millions of times more energetic than chemical ones.

"We could use nuclear fission and fusion for quite some time before we ran into the kind of problems we are having with fossil fuels." Provided engineering prob-

> ... nuclear reactions are many millions of times more energetic than chemical ones <

lems do not prevent the building of practical and efficient fusion power stations, "I think these will be the future source of electricity," he insists

Moreover, nuclear fusion promises the production of harmless non-radioactive gas helium and no long-term radioactive wastes, together with manageable disposal problems on decommissioning. Meanwhile, the carcinogenic risks of nuclear fission energy - like our fears about cancer itself - are hysterical and ill informed. And he spares no criticism for the 'urban environmentalists' who eat air-freighted organic food, want to ban everything chemical or suspicious, yet do not comprehend the complex inter-relationships between the natural world and our needs for energy and food.

As things stand, we have nuclear fission to come to our aid. The same quantity of energy produced from such reactions generates two million times less waste (to occupy a two metre cube). To produce the same amount of electricity requires a million times more oil and gas than uranium.

But it gets even better. Lovelock explains, no doubt controversially to some, that the preference of wildlife for nuclear waste sites suggests that the best ones for the future are the tropical forests and other habitats in need of a reliable guardian against destruction by hun-

MERCHANDISER

• NICKEL • ELECTRICITY • COCOA • OIL • PULSES • SOYBEANS • NATURAL GAS • GRAINS • FUTURES • VAR • OPTIONS • COFFEE • SOFTWARE  
ALUMINIUM • HEDGE • EXCHANGES • SILVER • OTC • BANKS • TRADING • RESEARCH • COAL • ANALYSIS • GOLD • SUGAR • FORWARDS  
TIN • INDEX • PLATINUM • TEA • LEAD • EMISSIONS • RUBBER • MINING • CLEARING • SWAPS • PALLADIUM • CONCENTRATES • WEATHER  
RENEWABLES • DEREGULATION • ZINC • DIAMONDS • ONLINE TRADING • RISK MANAGEMENT • BUY • INTERNET • MARKETS • CONFERENCES  
CLIMATE CHANGE • STEEL • REGULATION • ASSOCIATIONS • TRADING SYSTEMS • SELL • WAREHOUSING • NUCLEAR • RHODIUM • ENERGY  
STRATEGIES • GREEN CERTIFICATES • CO<sub>2</sub> • CONTRACTS • PORTFOLIO • TRANSMISSION • ASSET VALUATION • TECHNOLOGY • GOVERNMENTS  
ELECTRONIC MARKETS • CARBON TRADING • INVESTING • FEEDS • PRIVATISATION • MANAGERS • AUTOMATION • DERIVATIVES • FORECASTS •

# Gaia's Revenge cont'd

gry framers and developers - such is the scare-mongering surrounding the effects of radioactivity from the so-called 'Green' lobby. These false nuclear fears have arisen from our history and perception - from the nuclear bombs on Japan, the Cuban crisis, Chernobyl etc. Since the world's first nuclear power station was opened at Calder Hall in the UK in 1956, nuclear power has become the safest of all large-scale

energy sources. "So persistent have been the untruths about nuclear energy that we still regard taking energy from uranium in a reactor as more dangerous than burning carbon fuel in the oxygen of the air." For Gaia, the latter is now far more devastating.

Much of Lovelock's book is directed at his homeland - England - which, he suggests, should break with international or EU posturing about nuclear energy. Moving homes away from sea level and building nuclear are the key themes. More importantly, "I find it incredible

that our government and its advisers regard [this] abundant stock of nuclear fuel [plutonium] and our power stations as something to be decommissioned, written off; and they are prepared to pay £60 billion to do it." With oil at around US\$60 per barrel, the stock of plutonium fuel in the UK alone is worth over £100 bn in energy terms. Flawed too is the argument that uranium stocks are falling and will run out. There is an abundance of low-grade uranium or alternatives such as thorium (which will be used for nuclear stations in India).

Lovelock's venom is also directed at those governments, agencies, NGOs and others who think we can burn our way out of trouble until the earth is covered in 'renewables'. "We need emission-free energy sources immediately, and there is no serious contender to nuclear fission." For example, the UK would require 276,000 wind turbines 100 metres high to produce its current power requirements. And they don't work half the time (or less). Wind, according to Lovelock is, "a 3% solution," (although the ocean has more potential as it makes use of stored gravitational energy).

Burning large amounts of wood or crops for fuel - something falsely considered a renewable energy according to Lovelock - is potentially more destructive to the Earth than using fossil fuels (especially given the naive belief that fossil fuels are unnatural and non-renewable).

It is also the sheer scale of the world's population (today, never mind in the future) and our take-up of 45-50% of the world's land for human use that is the real cause for our current malaise. We have taken the land (or skin) of the Earth and over-populated it, leaving little to regulate the planet. "There are so many humans now aiming for a first-world lifestyle that we are displacing our partners on the planet, the other forms of life."

Nuclear fission is the only way to keep the electricity system working for modern developed economies whilst we change our habits. Lovelock does not believe that nuclear fission is the long-term panacea for our ailing planet or the answer to all our problems. Nor is he a nuclear power advocate. His message is that we have no alternative. Perhaps better alternatives will emerge (hopefully fusion energy in the next 20 years) but in the meantime we would be foolish to rely on wind power, biofuels and supply uncertainties from Russia, the Middle East and elsewhere. Renewables *do* have their place (albeit as limited energy providers). It's just that nuclear power is the only effective medicine we have right now. And there's no time left.

If cutting back on emissions was to make any difference it should be the great powers and emerging economies of the 21<sup>st</sup> Century - such as the USA, China and India - who should make the difference. The trouble is that nearly 50% of CO<sub>2</sub> produced globally comes from these three countries alone and they have no such plans on the scale required.

*The Revenge of Gaia* is as compelling as it is depressing. Lovelock has produced a good book, although by his own admission it needs a follow-up to help survivors of our impending disaster to learn from our mistakes. Without seeking to be apocalyptic, it is just that - as well as being a wake-up call to those who bother to be interested in their planet from a scientific perspective). If he is right, the effects of global warming are about to overtake us. The romantic, and well-meaning dream of clean renewable energy coupled with a misplaced fear of nuclear energy and no real empathy with Gaia or the natural world is the real and present danger.

For Lovelock, the most important job of government is to preserve its citizens. The great environmentalist E.F. Schumacher advised us to, "... think global and act local." *The Revenge of Gaia* proposes the opposite "act global but think local." So save yourselves and your country is the message for politicians, corporations, organic types and tree-huggers alike - even Tony Blair for his energy review. Forget sustainable development and all that new fancy terminology espoused by environmentalists and corporate advertising departments. This is our Carlsberg moment. It's too late (*probably*).

*The Revenge of Gaia* is published by Allen Lane  
(ISBN-13 978-0-713-99914-3)

