Chapter 4

ENVIRONMENTAL CRISES

During recent centuries the world has begun to suffer a variety of assaults on its ecology, but in recent decades these have become acute. The likely results of the current terrible abuses of our planet can be compared to those which overtook the world 65m years ago when the dinosaurs vanished, except that those extinctions took place over thousands of years and these are happening at a breakneck speed. 'Just as canary deaths once alerted miners to the threat of gas underground, so the current world-wide extinction of amphibians could be a warning that rising pollution is beginning to take serious effect; today the toad, tomorrow mankind, runs the reasoning.'[1] A poll of 400 climate scientists by Greenpeace found almost half believe a 'runaway' greenhouse effect to be possible, with global warming feeding back on itself, melting the ice caps and the tundra beyond a point of no return and freeing even more carbon dioxide and methane trapped in frozen ground, further accelerating world warming. The poll also found more than 10 percent of the scientists believed the runaway scenario to be probable.[2]

In an unprecedented step, the two most prestigious scientific bodies in Britain and the US, the Royal Society and the National Academy of Sciences, issued a joint warning of the catastrophic outcomes of population growth, consumption of natural resources and destruction of the environment, stating: 'the future of our planet is in the balance, the next 30 years may be crucial.'[3] Two main reasons stand out for this traumatic threat hanging over humanity: first, the insatiable, mindless selfishness of the monied members of the First World, particularly in the US where around 3% of mankind produces nearly 25% of all carbon dioxide through their profligate use of cars, heating, air conditioning and the myriad other appurtenances of de-luxe living. The US Government has refused even to consider cutting carbon dioxide emissions, whereas Germany has actually put such cuts into effect. Second, that same chronic, shortsighted selfishness translates into totally distorted economic attitudes to the crisis.

For example, Maurice Strong (secretary of the UN conference on Environment and Development) has estimated that the total cost of correcting the world's environmental problems would be about $625bn pa, a mere 3% of the world's total GNP! Yet no contributions have been made, nor even appear likely. Kevin Watkins points out that, in essence, the World Bank/Gatt view is that the environment is just a mass of raw material to be processed and marketed, preferably through the international trading system, to increase GNP. In their view, all trade is, by definition, good trade and any obstacle to its expansion an unmitigated evil. However, some economists are now revealing the total inadequacy of conventional national income accounting, which records changes in wealth only when they pass through the market. In this distorting prism, a forest left standing, providing food and employment for its inhabitants and a defence against flooding and soil erosion, has no value whatever. But if it is cut down and sold as timber, the country appears to grow richer. In fact, over time, the annual market value of its edible fruits, cocoa and rubber exports would be worth six times as much per hectare as if the entire forest were felled in a single year.[4]

Of the following eight sub-headed issues, the first four are seen as being almost equally vital to mankind's survival.

Wanton destruction of forests

The great rainforests of Latin America, Africa and Asia are arguably one of the world's most precious assets. They are home to around a half of the earth's genetic her-

itage and provide irreplaceable resistance to global warming by generating oxygen and absorbing carbon dioxide. Yet they have been allowed to fall victims of the pernicious free market system resulting in their mindless decimation for short term gain. Apart from the destruction of around one million species of plant and animal life, in Brazil for example, the indigenous Indian population has been reduced from around 8 million to under 0.5m. Devastation results from loggers extracting only the 15 or 20 species of commercial value, and leaving 90% of the trees to rot in tangled wasteland. Replacement planting amounts, at very best, to one sapling for every 12 trees felled; natural regeneration time is estimated at 400 years. Felling removes the vital shield between tropical rains and fragile soils which results in erosion and landslides, and endangers water supplies for many millions.

George Monbiot reports that there is no ecologically sustainable timber operation in the Brazilian Amazon. The great majority do not replant at all, preferring to exploit the forests until they are exhausted, then reinvest in another industry, such as mining. Because of the haste and carelessness with which wood is removed from the forests, damage caused is out of all proportion to the amount of timber taken. When just 2% of trees are taken, over 50% of the canopy is destroyed, resulting in the forest floor becoming exposed to sunlight. After six days without rain, the leaf litter may be dry enough to burn, thus generating conditions for massive forest fires.[5]

The driving force behind all this mayhem is of course, as usual, money. The world uses 3bn cubic metres of timber annually, of which 55% is hardwood, mostly taken from the rain forests; the total value of timber trading is around $7bn pa. Polly Ghazi reports that negotiations to save the rain forests are in deadlock over the First World's refusal to provide aid for the countries concerned, who need compensation if they are to curb the loggers. Further, the 27 countries which contain 97% of the remaining rainforests, owe $630bn, half the Third World's total debt and are under tremendous pressure to sacrifice their hardwoods to satisfy Western bankers. This deplorable scenario is even being underpinned by the World Bank itself, which is planning to fund logging operations in the world's second largest rainforest, making a mockery of its 'green' forestry policy. The UN lending institution pledged in 1991 not to finance commercial logging in the vanishing jungles 'under any circumstances'. But confidential internal documents reveal that the bank has been offering loans to the Congo, which owes huge debts to the West, to boost its foreign earnings through an increase in timber exports. [6]

Beside the plunder of mahogany and other hardwoods, other forms of forest felling take place. First, vast areas are cleared to make way for crops or livestock - mostly cattle to satisfy the popular demand for beefburgers. In the process, half a million tons of good timber annually are lost simply by burning. After clearance, the soil may support cattle for up to a maximum of ten years, but soon becomes eroded, dusty and invaded by uncontrollable weeds; thus enormous areas become unuseable and worthless. Second, around 12% of all timber felled is used to cure tobacco. Third, of all timber felled worldwide, including soft woods, half is used as fuel, the great majority for cooking in the Third World, where approximately one ton pa per person is used, and supplies are fast running out.

The total area of rainforests has been decimated to around one-sixth of the earth's surface, from about one-quarter before mega-scale logging began, and an area bigger than Scotland is still being destroyed each year. Clearly there is a desperate need to pressure those First World elites who are well able to put a stop to this devastating destruction. If it is allowed to continue at the present rate, then it is estimated that by the year 2000, Malaysia, Nigeria, the Ivory Coast and Central America will be stripped bare, *that by 2020 total destruction of Brazilian rainforests will be complete, and that by 2025 all accessible forests throughout the Third World will be extinct.*

World-wide soil erosion

A nihilist might argue that mankind could manage without rainforests, but man could definitely not exist without topsoil, the most basic resource of all, being vital for food production. Yet the world now faces the appalling threat of the near extinction of top soil by roughly the same doomsday as the forests, 2025, unless steps are taken to reverse current trends. The 1984 Worldwatch Report pointed out that, unlike earthquakes, eruptions or other natural disasters, this man-made disaster is unfolding quietly but persistently, and concluded 'what is at stake is not merely the degradation of the soil, but the degradation of life itself.' That that is no exaggeration, but the terrible truth is underlined by the fact that nature requires 100 to 400 years to regenerate one centimetre of top-soil, or 3000 years to renew a spade's depth.

Topsoil is carried away by both wind and water, both hazards having been seriously magnified by man's interferences with the natural covering and binding properties of trees, shrubs and grasses. Without trees, a single tropical rain storm can strip 75 tons of precious soil from one acre. But men have also been guilty of what amounts to rape of the earth, by turning away from well-tried husbandry to large-scale, intensive, monocrop agriculture, spurred on by various financial inducements such as market upturns or subsidies, and pressured by salesmen of machinery, fertilisers and pesticides. In 1988, Worldwatch President Lester Brown presented a strategic report on the state of world farming, pointing out that increases in food outputs had ground to a halt largely because of soil erosion.

Following the doubling of grain prices in the early 1970s, US farmers expanded grain areas by nearly 25%, by ploughing millions of highly erodible acres, resulting in the loss of six tons of topsoil for every ton of grain produced. World wide, farmers were losing around 24bn tons of top soil yearly, roughly the amount covering all the wheatlands of Australia.[7]

Throughout North America and Europe in particular, intensive farming has resulted in a 7% depletion of world topsoil each decade. In the US alone, some 3bn tons of soil are lost annually and an area of farmland twice the size of California has been ruined. One third of India's farmland has been lost through erosion, water-logging or salinity, and another third degraded due chiefly to deforestation. Apart from it stealing away the nutritious top soil, the additional curse of erosion is that the displaced earth inevitably finishes up at the lowest points, silting up irrigation ditches, canals, estuaries, harbours and reservoirs. For example, sedimentation has halved the useful life of the Ambuk Lao dam in the Philippines, restricted entry for larger ships into the Panama Canal and impaired hydro-electric power output in many instances.

In its final, all-but irreversible form, soil erosion becomes desertification. Africa is particularly badly affected, having poor soil to start with, erosion rates have increased twenty-fold over recent decades and one quarter of the continent suffers moderate to severe desertification. Annually, world-wide, an area of originally productive land equivalent to the size of Ireland, is said to become desert. *At a time when 50% of humanity is either starving or malnourished, over half the earth's land is believed to be in possible danger.*

Fertility of soil depends not only on rainfall, but also on microbes within it, which are lost when topsoil disappears owing to excessive ploughing or stocking of herds. Thus begins the desertification process, which is already affecting China, central Asia, and about 10% of all US land, besides Africa.

Desertification already affects a quarter of the earth's land surface and puts well over one billion people at risk. The *Guardian* (10/6/92) reported that an inter-governmental panel of 300 scientists at the Rio de Janeiro conference concluded that, as the result of

climatic changes, ‘the Sahara desert could extend across the Mediterranean to Spain, Sicily and Greece and encompass the Middle East’.

In his excellent *Dictionary of Environment and Development*, Andy Crump provides invaluable data on this and other issues touched on in this chapter.[8]

Climatic horrors

Those in command of the world, notably US Presidential entourages, have a notorious capacity for ignoring scientific warnings. Perhaps they think, if they think about it at all, that if crops requiring soil become extinct, then mankind could subsist on fish. But food of any kind is superfluous if the world’s atmosphere is inimical to life. Not surprisingly, calculations and forecasts about the exact extent of climatic changes and their effects continue to fluctuate, but what is never in doubt is the terrible reality of terminal dangers to humanity, even within many existing lifetimes. Over the last two centuries or more, world-wide, man has been pouring poisons with total abandon into the air, the rivers and the earth, for the same old familiar reason - cheapness. Because of the throttle-grip that the money culture has on humanity, it has been almost universally accepted that it is ‘too expensive’ to curb pollution.

For quantitative scientific details of atmospheric pollutants it is necessary to refer to sources such as the Dictionary[8] already mentioned. The three main horror groups, all susceptible to human restraints are: (1) Carbon Dioxide, from fossil fuel emissions by generating station and factory chimneys, now nearing double the concentration of the 19th century. (2) CFCs, from Aerosol sprays, refrigerators and air conditioners (less in quantity but 20,000 times more damaging).[3] Carbon and Nitrous Oxides, from rockets, super- and sub-sonic planes, lorries and, above all, continually increasing numbers of cars which are responsible for 20% of CO_2 emissions, 40% of acid rain and 90% of

airborne lead. Car engines, capable of 80 m.p.h., spend many, many hours pouring out exhaust gases in city traffic jams world-wide, averaging 10 mph, a leisurely cycling pace. These various pollutants have already seriously damaged our atmospheric environment in two main ways: First, they have created an invisible ‘ceiling’ over the earth which prevents cooling and thus creates the ‘greenhouse effect’; this is forecast to produce average world temperature increases of 1 degree centigrade by 2030 and 3 degrees centigrade by 2070, resulting in the hottest conditions ever known. Second, they have punctured the ‘ozone layer’, a shield some 15 to 30 km above us which protects earth against ultra-violet radiation from the sun; each flight by the US space shuttle destroys 10 tons of ozone and 300 more flights would destroy the entire protective shield.

Although both earth and skies have shown incredible resilience, they have clearly been grossly overloaded, possibly beyond their point of no return. For example, for many years observations of the ozone layer over Antartica showed no changes, then suddenly a threshold was reached and it snapped. A disastrous 20% rupturing of the ozone layer occurred also, for the first time, over Northern Europe in early 1992, as reported in the *Guardian* (8/4/92), leading to a 40% increase in ultraviolet radiation.

Dr Farman reports that ‘the atmosphere is in such a sensitive, critical condition that it will not take much to cause catastrophic damage.’[9] Those air-borne pollutants which do not reach as high as the ozone layer, also wreak terrible havoc world-wide as ‘acid rain’, by poisoning forests, lakes, and flora and fauna generally.

The most potentially deadly outcome of the ‘greenhouse effect’ is the inevitable rise in the level of the oceans due to thermal expansion and the melting of polar and glacial ice following quite modest temperature rises. Estimates of possible sea rises have gone as high as 4 metres by 2100, *but even a 1m rise would inundate one quarter of Egypt*,

one third of Bangladesh and make 300m homeless; up to 60% of the world's population could be at risk. Polly Ghazi reports on research at the US University of Maryland, pinpointing Alexandria, Shanghai, Bangkok, Hong Kong, Tokyo and Rio de Janeiro as being at high risk of submersion. They warn that for several cities, subsidence caused by coastal development and the draining of underground water supplies are likely to more than double the effects of predicted sea level rises from increasing temperatures alone. These nightmare scenarios are certain to be exacerbated by the increasing numbers of typhoons, cyclones, hurricanes and floods which have already, in the 1990s, increased sixfold over the 1980s, according to the Worldwatch Institute.

Both the direct and indirect effects of atmospheric pollution on human health are already horrendous and will inevitably worsen. Millions of lives will be at stake from ultra-violet radiation, including 200,000 deaths expected in the next 50 years in the US alone. In Chile, skin cancers never seen before illustrate the grim reality that Third World countries, too, are inevitably going to suffer from sins committed almost exclusively by the First World. A February 1992 report from the UN predicts that damage already done to the ozone layer will cause 300,000 more skin cancers world-wide. It also suggests, for the first time, that ozone decay may help the spread of the Aids virus by damaging human immune systems, as well as causing massive damage to agriculture and fisheries.[11]

Over 20% of the world's population are already breathing air which is so polluted that it breaches internationally accepted safety limits. City conditions are naturally worst; breathing in Athens, Mexico City, London, Madrid or Bombay has been compared to smoking ten cigarettes daily. Poison-laden air is estimated to cause 50,000 deaths and cost $40bn in health care and lost output annually in the US. The UK has seen a startling increase in asthma, which has risen to 1 in 7 children, the most vulnerable section of the population. At the University of South California, scientists performed autopsies on 100 youths who had died as a result of violence, accident or other non-medical causes. Their discovery was shocking: 80% had 'notable abnormality in lung tissue', 27% had 'severe lesions'. The pathologist concerned, Dr Sherwin, said the youths were 'running out of lung'. In fact, by the age of ten, thousands of Los Angeles children have already suffered permanent lung damage. Of Los Angeles' airborne toxins, 14% are carcinogenic, 27% destroy reproduction ability, 11% cause acute disorders (many fatal) and 48% cause chronic disorders. Without improvements, air quality is projected to lead to 100,000 deaths pa in Los Angeles alone.[12]

An indication of the desperate gravity of the situation is provided by a February 1992 warning from leading scientist, Professor Schneider, who said that 'risky, impractical and unethical schemes' to interfere with the earth's atmosphere might be needed to counter global warming if carbon dioxide pollution is not stopped very soon. He confessed to having taken part in studies of 'Jules Verne-like' schemes he would rather have ridiculed, intended as 'quick-fixes' to cool the planet. These included 50,000 100-kilometre mirrors in space, choking the stratosphere with soot from deliberately inefficient aircraft engines, using lasers to break up chlorofluorocarbons in the atmosphere, and dumping iron filings in the oceans to stimulate the growth of plankton which absorbs carbon dioxide.[13]

If any such, or similar measures ever had to be adopted as a desperate last resort, at least their incalculable, astronomical costs would bring it home to all concerned how much more preferable it would have been to have prevented the emissions in the first place.

Techniques do exist, for example, for alternatives to CFCs and for minimising chimney emissions of CO_2 by using 'scrubbers'.

Hitherto, First World countries have been extremely slow to introduce them them-

selves, and have also quibbled about paying into a fund to promote ozone-friendly technology in the Third World. For example, the US Government reluctantly agreed to contribute $20m, which represents a mere 2% of the $1bn revenue it had received in taxes levied on chemicals involved in pollution.[8] The extraordinary extent to which the money system has distorted priorities worldwide, is illustrated by the proposal tabled by some Third World countries for 'tradeable emissions'.[14] Their need for finance is so desperate that the proposal, in effect, condones the continuation of pollution by suggesting that those in the First World who 'over-pollute' should pay compensation to those who, pro rata, 'under- pollute', instead of insisting that all avoidable pollution, everywhere, be stopped. For example, in early 1992, 'environmental pricing' has led to countries with vast forest areas, such as Brazil and Indonesia, demanding payments for 'carbon absorption services'.[4]

Water crises

Men and women may survive for weeks without food, but without water, the metabolism falters in hours, and minds and bodies collapse. Humans need about 5 litres per day to survive, and about 80 litres per day for tolerable lives. Currently, daily personal consumption varies from 5 litres in the poorest parts of the Third World to 500 litres in the US. Globally, water use proportions are approximately 70% agricultural, 20% industrial and 10% domestic, with ever-increasing demands from the first two sectors pressuring the third. Approximately 2bn people lack adequate, permanent and pure water supplies, and 3bn lack sanitation completely. The situation is particularly acute in rural areas, and at least ten African countries face virtually total water loss by the year 2000. Third World city-dwellers commonly need to spend from 10% to 50% of their incomes buying water. One hospital bed out of four is occupied by patients suffering from water poisoning, which accounts for 10m deaths annually. Meanwhile, in the First World, 100,000 gallons are used to produce a car, 1,000 gallons to produce one pound of beef, and each household flushes 100 gallons to waste daily.

A significant proportion of demand is met from groundwater, but supplies worldwide are being exhausted at very alarming rates. For example, in India, the water table has dropped 30 metres over the last decade; in China, 50 cities face acute shortages with the Beijing water table dropping 1 to 2 metres pa and one third of the city's wells already dry; in Mexico City pumping exceeds natural re-charge by 40%. Further, groundwater is being increasingly poisoned by industrial, agricultural and sewage pollutants which sink through inexorably and are extremely difficult to purify out.

Most of the balance of water demand is met from rivers, and again, horrendous problems are involved. First, chiefly because of massive deforestation, river flows have become erratic, resulting in flooding, silting, and sedimentation which seriously deplete supplies for humans, crops and livestock.

Second, weakened rivers need to supply vastly increased populations; for example, the Ganges must now support over 500m people, as against 200m in 1950. Third, nationalism rears its ugly head again, because, as some 200 great rivers are shared by two or more countries, so anarchy will inevitably result in many regions, as people divert water for their own use. Supplies taken from the Ganges, Brahmaputra, Euphrates and Zambesi have already caused serious conflicts. Egypt's 55m people depend entirely on agriculture irrigated by the Nile which is being increasingly depleted by Ethiopia, where it originates. In 1985 Egyptian foreign minister Ghali forecast that 'the next war in our region will be over the waters of the Nile'.[15]

Since the lion's share of the world's water is used for agriculture, it is critically important that irrigation should be efficient. In many parts of the world, care of the land has not been improved by the introduction of 'Western' methods, as, for instance, the mag-

nificent irrigation systems of the Incas, in South America, were rejected by the incoming Spaniards. Of the world's 1.5bn hectares of cropland, about 250m (one-sixth) are irrigated, but 500m (one-third) could be. Around 35% of all water drawn off for irrigation is wasted in storage or distribution. Further, bad design and poor management result in large areas of irrigated land becoming waterlogged or excessively salinised. Again, use commonly exceeds supplies; for example, in the US 20% of all water withdrawals for irrigation are in excess of aquifer re-charge.

Finally, for better, or more usually for worse, rivers mean dams. In keeping, regrettably, with so many ill-conceived progeny of the money system, huge dams have been built worldwide, far too impulsively, before their full impact could be assessed. Their construction has stemmed from pressures from the big banks to invest their surpluses, from governments and investors expecting massive returns and prestige, and from civil engineering firms and foreign suppliers, anxious for the lucrative contracts involved. In the early 1980s, hydro-electric projects sponsored by the World Bank resulted in the uprooting of nearly 500,000 people, often left to themselves without compensation.[16] An October 1991 report states that some 300 dams over 15 metres high, are completed every year, and of dams 50 metres high or higher, the truly big ones, 70 are under construction, and some 85 are planned. The World Bank, the largest single international funding source for dams, is behind 25% of the biggest dams, but even the smallest projects pit the people affected against some of the world's most powerful funding institutions.[17]

The same report describes the severe ecological and other problems caused by the indiscriminate spawning of these huge structures.

> Water impounded in reservoirs does more than flood productive and sensitive lands; by pressing down heavily on those lands, it can create seismic hazards. And, slowed in its passage, it stagnates, breeds algae and interacts with submerged vegetation and soils to produce toxins that infect the food chain. Subsurface decomposition of plants also releases copious amounts of greenhouse gases. And slowed river flow drops silt into permanent tottering waterfalls: the muddier the river, the sooner the dam is disabled. Acidification and algae growth corrode and foul both dams and turbines and then move on to damage fisheries, estuaries and deltas.

In spite of the now well-understood dangers, disadvantages and inevitable displacements of hundreds of thousands of powerless people, dam projects continue worldwide. In Brazil, the first Carajas project, which has involved the destruction by deforesting and flooding of an immense area in order to supply Europe with cheap iron ore, has been described as 'one of the greatest man-made ecological disasters this century'. Not to be outdone, the even bigger 'Grande Carajas' project is costing over $62bn, covers an area of 900,000 sq km and flooded an area equivalent to that of Europe.[18] In India, the Narmada project would be the biggest ever, involving 30 major, 135 medium and 3,000 lesser dams, displace one million people and submerge 2,000 square kms of fertile land and 1,500 square kms of forest. Hundreds of small, local irrigation schemes could achieve the same objectives with minimum disturbance, while the mega-project will enable the rich farmers to intensify cash-crop production while impoverishing the up-stream farmers, who will get less water than ever. In China, a proposal to inundate the world-famous 'Three Gorges' of the Yangtze at a cost of £6bn and displacing one million people is arousing heated controversy.

Misused resources

World consumption of natural resources continues to be profligate in the extreme. So long as profit is to be gained from extraction or use, consumption careers on as if there were no tomorrow. The US, for example, has already used up more minerals and fossil fuels during the past 50 years than all the rest of humanity since history began. On

average, every single US citizen personally owns over 10 tons of steel in cars or households. Oil is arguably the world's most precious resource since it currently provides for 40% of all energy. It is estimated that at the present, increasing, rates of consumption, known oil reserves will be exhausted by around 2030, yet it is unusual to hear even a mention of this potentially catastrophic event.

Transport accounts for one-third of all energy used, most of it in the world's 400 million cars which pump 25bn tons of pollutants into the air, and kill one-quarter of a million people annually. In the US alone, road transport vehicles annually consume 20m tons of steel, 2m tons of rubber, 1m tons of plastics and paints, half a million tons of glass, half a million tons of lead and nearly one quarter of a million tons of copper. Just one motorway interchange uses 25,000 tons of steel and 250,000 tons of concrete. Traffic jams involving huge fuel losses cost £10bn pa in London alone; at any one time in the US around 2m horse-power is idling at traffic lights.

Sending goods by road rather than rail uses vastly more fuel and results in 25 times more accidents; roads occupy three times more land than railways. In 1929 there were 20,000 trains in the US making daily intercity runs; in 1990 there were barely 200. Killington, Vermont in the US boasts the world's largest artificial snow system, using water pumps and compressors; to cover its ski runs it uses 20,000 kilowatts of electricity, or considerably more than the energy used to heat and light the entire town in the valley below.20 World-wide, paper consumption represents a further drastic waste of natural resources; US demand for newsprint amounts to 6m tons and the felling of around 3,000 square miles of forest annually. Weight for weight, a US citizen's demand for paper uses as much timber as a Third World person's firewood.

Flora and fauna losses

At least 140 plant and animal species are being exterminated daily throughout the world; one in ten in every species could disappear in fifty years. Tropical forests contain over 80,000 edible plants, none of them as yet cultivated. At present, just 16 plants provide 90% of the world's food, and any one of those 80,000 might provide much needed substitutes. Also, the forests contain untold numbers of medicinal species and others with potential industrial applications. At the present rate of destruction, 10% of the 250,000 flowering plants will be extinct by 2000.

A 1991 report tells us that scientists have discovered that from Brazil to Australia, and from Europe to the Rocky Mountains, millions of frogs and toads are vanishing. Animals that have been around since the dinosaur era are now threatened with extinction or already have become extinct. Apart from the risk of losing dozens of precious amphibian species, their demise could also be the first sign of a wider, more pernicious ecological threat to the globe. In the past three years, in the UK, the populations of the common frog have plummetted to below 30% of their former levels. *Dr Mary Swan, amphibian expert, explained: 'Frogs are not in fact sensitive indicators of environmental problems, they are insensitive ones, being quite hardy. If they are suffering, and they are, something very serious is happening to our environment.*[21]

In the run-up to the Rio conference, the *Guardian* (6/6/92) provided some basic 'biodiversity' statistics. In the decades ahead, species are likely to become extinct at an accelerating rate; only about 1.8m have been described and named, yet there may be from 8m to 80m altogether and half of them could have disappeared before we even knew of their existence. By 2000, one million animals and plants are expected to be extinct, and by 2050 half of all species alive today could be lost forever.

The loss of one plant species can cause the loss of 30 animal and insect species that depend on it. Only about 1% of all the world's plants have so far been assessed for their medicinal potential. An indication of the wonderful possibilities of that potential

is provided by two examples: a chemical extracted from the skin of an Ecuadorian frog proved to be 200 times more powerful than morphine as a painkiller, and the Madagascan rosy periwinkle was found to provide two different anti-cancer drugs.

Numerous 'non-governmental' bodies world-wide, supported only by donations, such as Greenpeace and the Worldwide Fund for Nature, struggle to stave off these and all the other environmental crises mentioned in this chapter. The only official body concerned is the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). Although 112 governments have signed the convention, fewer than 30% of them have legislation which would give protection to endangered animals and plants. The convention either bans or severely restricts trade in no less than 2,500 animal and 35,000 plant species. Yet world wildlife trade is worth $5bn pa and CITES has a secretariat of a mere 10 staff to monitor it.

Concrete jungles

The physical development of built environments around the globe during the 20th century has been, with some honourable exceptions, a catastrophic disgrace to humanity. Passing through towns and cities in both First and Third Worlds, it is difficult to believe that such widespread ugliness can co-exist with the great architectural heritage models to be found the world over. The disastrous situation has been compounded by several factors: *private ownership of land has inhibited controls, developments have too often been motivated by profit-seeking, and the unregulated whirlwind pace of building has been too fast for the planners to gather breath, assuming that they or any plans existed at all*. In the Third World particularly, failure to maintain vitality in rural areas has led to dramatic demographic changes: in Peru, for example, the ratio of 70% rural to 30% urban population in 1940 had been reversed by 1980. By 2000 it is expected there will be over 60 cities with populations exceeding 4m. Annually, over 10,000 square kms of prime agricultural land is being lost to development. Worldwide, roads and other car demands have become major land users; in the US as a whole nearly half of all urban areas are occupied by roads or parking spaces and in Los Angeles it is two-thirds.

A further negative feature of so much of 20th century developments is that reinforced concrete is so terribly permanent; at least unsatisfactory brick buildings could always be readily demolished. However, when eventually Third World families can be offered proper housing, demolition of their existing dwellings, if any, will present no problems. The anarchic nature of Third World settlements is highlighted by the fact that one-third of all shelter - inevitably lightweight and shoddy - is put up illegally on seized sites, and around 50% of rural and up to 80% of urban families have just one room. In cities such as Bombay, up to half a million people are born, live and die on the pavements without ever seeing the inside of a dwelling. Multi-storey blocks and highways give an impression of sophistication to many Third World cities, but within their infrastructure there is a woeful lack of drainage systems; three-quarters of Third World populations have no sanitation. In Mexico City, where 60% of the inhabitants live in illegal shanty areas, three million people lack sanitation and pollution kills 1,000 people daily.

The earth's integrity is not only being violated by the very obvious concrete jungles. Increasingly today, First Worlders, with money to spare and the itch for travel and sport, are leaving their marks worldwide in hitherto totally unspoilt rural and mountainous areas. In the Alps, fast becoming one of the world's foremost ecological disaster areas, farmers are abandoning their fields, and landslides and avalanches are increasing under the impact of 50 million tourists each year.

For the winter Olympic Games in 1992, massive environmental damage was done,

amongst other things, by carving an artificial ‘piste’ in a mountainside, and building a ski jump in unnecessarily massive, inevitably permanent reinforced concrete, when a lightweight removable steel structure would have served perfectly well.[23] Similar reports of depredations of the natural world by tourists, propelled by the ever profit-hungry travel agencies, are heard from West to East and from the Himalayas to the Antartic.

Toxic and other wastes

Up to the 20th century, waste disposal was never a major problem because nature looked after the residues of natural products. But in the 1930s, scientists discovered synthetic alternatives to natural products which were cheaper and more convenient for production processes, and thus their output increased at breakneck pace, so that there are now over 60,000 of these artificial compounds world-wide. Because of the distorted values of the money system decreeing that initial cheapness is the only criterion, little if any thought was given to the Frankenstein being created in terms of the problems of disposal of the innumerable resulting toxic wastes, already amounting to over 400m tonnes pa worldwide, and increasing.

Naturally, these poisonous wastes originate almost exclusively from industries in the First World, where their dumping is highly unpopular, so instinctive reactions turn to offloading them onto the unsuspecting Third World. Thus the US, Germany, Holland, Switzerland and Scandinavia are now exporting millions of tonnes a year of hazardous wastes to countries with weak laws or administrations that are unable to monitor or tell the difference between raw materials and toxic waste. Further, they are ill-equipped to handle the waste safely, leading to long-term health and ecological problems, so that the whole process can only be described accurately as ‘waste colonialism’.

The whole disreputable, high-handed process of taking advantage of Third World countries in this way has received the blessing of the World Bank. A report in March 1992 tells us World Bank Vice-President and chief economist Lawrence Summers said ‘I think the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable’. A Harvard econocrat, Summers believes religiously that money is the final measure of value, that happiness is a growing GNP, that legal issues can be solved as competing economic claims, and ethical decisions can be translated into dollar terms, with the cheaper alternative always preferred. He was applying ‘cost-benefit analysis’ which measures human life by the stream of wages remaining to it. Summers continued ‘health-impairing pollution should be done in the country with the lowest wages…if a pollutant is likely to cause prostate cancer, a disease of old age, why not dump in countries where people aren’t likely to live long enough to get it?’. Following the inadvertent leaking of Summers’ frank opinions, he offered to resign. The report continues:

> It makes no sense for him to resign; he expressed his bank’s logic perfectly. It’s a bank and acts like one. It may preside over a steady erosion of Third World incomes relative to First World ones, but it makes big money. Last year, after paying $7bn in interest and fees to investors and bankers, the World Bank had a $1.2bn surplus and a rate of return that commercial banks would envy.[25]

The disposal of ordinary waste in chiefly First World, ‘throw away’ societies has also become a major problem impinging on natural environments. It has been estimated that an urban population of one million produces around 5,000 cubic feet of refuse in one day. In the US even in the 1970s, for example, household wastes amounted to about 200m tons annually, which, combined with industrial, commercial and agricultural wastes, totalled 3.5bn tons of paper, 48m cans and 26,000 bottles.[26]

Many US authorities already spend more on rubbish disposal than all other municipal

services combined. New York's possibly last landfill site extends to 3,000 acres and refuse will build up to 500 feet high; many NY districts are paying $100 per ton for carting rubbish several hundred miles away. Mention was made in Chapter 2 of the money being made out of waste disposal. Also, as long as the money system encourages profit-making from the manufacture of bottles, cans, packagings and so on, the incentive to promote 're-use', rather than 'throw-away' will be blunted. 'Re-cycling' of various containers is preferable to nothing, but in fact is an alibi for inefficient distribution and inevitably consumes energy.

Nuclear madness

No modern industry has proved more difficult to control than nuclear power. It began in secrecy, in the arms race that eventually lumbered the world with 50,000 nuclear warheads.

> Civil nuclear power to generate electricity only developed later, but in close parallel with the military programmes.
>
> Secrecy, inadequate accountability, distorted industrial priorities, profligate research, a misguided eagerness to reprocess reactor fuel that created a world surplus of plutonium, complacency about the resulting radioactive waste; they were all characteristics of the first three decades of civil nuclear power and they can all be traced back to the mentality of the bomb-makers.[27]

The threat of further diabolical disasters involving severe radioactive contamination of millions more human beings and their environments will persist until both nuclear installations and weapons have been de-commissioned world-wide, and all wastes successfully neutralised. A start has been made on destroying some of the vast stock-piles held by the major powers, but they show scant signs of abandoning nuclear weapons altogether and their proliferation among smaller countries continues alarmingly. In spite of the proven risks of nuclear power stations, whether caused by bad design, accident, sabotage or being targetted during warfare, ambivalence towards nuclear energy persists. In the US, the terror caused by the near melt-down at Three Mile Island was sufficient to put a stop to all further nuclear power projects. By contrast, the actual, appalling disaster at Chernobyl has hardly affected proliferation of nuclear generation elsewhere.

In common with all nuclear explosions, the terrible effects of the 1986 Chernobyl disaster will persist for years and years. To date, it has already caused around 10,000 deaths, 50,000 radiation sickness cases, and the need to monitor a further 340,000 people. The death rate is still rising, from cancer, asthma and diseases of the heart and blood vessels. The reproductive rate is falling and 2.2% of babies are deformed at birth. Half a million people had to be evacuated from an area of 1,000 square miles. Chernobyl's cloud passed over most of Europe and dispersed over the whole northern hemisphere. The over-all toll of suffering through illness, worry, abnormality and disruption of life and livelihood is beyond estimation.[28]

The nuclear energy saga should be a stern warning to mankind of the dire need to think through impetuous new ideas thoroughly before applying them. The originators of nuclear power, falling over themselves to satisfy First World greed for energy, announced that their electricity would be 'too cheap to meter'.

A few years later, construction and other costs were soaring from estimated millions to billions, and, after 'useful lives' of only 30 years, reactors are proving all-but impossible to de-commission. Seventeen US nuclear plants are so radioactive that estimates for closing them down amount to around $150bn.

In 1987, Lord Marshall, chairman of the UK Generating Board who had for long

ardently promoted nuclear energy, admitted that it was not, and never had been economic in comparison with other sources of electric power.[29] The routine waste products from nuclear generation remain radio-active for at least 25,000 years, and, to date, no totally fail-safe method of disposing of it has been developed which would guarantee it never entered water courses, nor the sea or land to poison the food chain.

The inevitable by-product of nuclear generation, plutonium, remains one of the deadliest known substances for half a million years; the 'tailings' from the original uranium mining operations will continue to emit deadly radon even after the sun has burned out. Nuclear plant explosions, fires, leaks and 'normal', apparently uncontrollable wastage of 2% to the ecosphere have already lodged some plutonium in every human body on earth. Because of the 20 to 30 years time lag in cancers manifesting themselves, the true horrors of what may be termed 'less direct' radiation are now evidenced by the plight of the US and UK servicemen who attended the early nuclear tests, as distinct from the direct effects on the tragic thousands still dying following the agonies of Hiroshima and Nagasaki.

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