Our planet is gripped by twin crises of the most fundamental nature — social (mass poverty, austerity, militarism, etc) and environmental. In this document, the Democratic Socialist Party argues that they spring from the same cause — the capitalist system which places the ruthless pursuit of profit by the few before the needs of the vast majority of humanity.

Environment, Capitalism & Socialism **provides a comprehensive overview of the environmental crisis, the various explanations advanced for it and the responses to it. The document argues strongly for the need to build a mass popular movement to fight the corporate planet wreckers and create a socialist order in which human beings will be in harmony with their environment.**

Included here as an appendix is editor Dick Nichols' thorough critique of so-called green taxation, often put forward as the answer to the crisis.

Resistance books

Index

For index see print edition.

302 For a detailed account see Peter Rosset and Medea Benjamin, *The Greening of the Revolution*, Ocean Press, Australia, 1994.

303 Women are prominent in the leadership of Cuban science and have played an active role in the development of agroecology. The president of the Academy of Sciences, the director of the Institute of Ecology and Systematics, half the department heads in the institute, the director of the citrus experiment station and several of its leaders are women (author's note).

304 I once attended a meeting of biologists called by a local party group to discuss what to present at a national meeting on ecology and development. They were concerned about prejudices among economists who tend to dismiss ecological arguments as "idealistic", and were developing the counter-argument that it is the height of idealism to imagine that we can make a plan and nature will have to obey (author's note).

305 Some struggles will be more difficult than others. For example, the desire of government to promote tourism for foreign exchange is encouraging development plans along the coast which could ruin the offshore cays. The dependence on imported oil makes arguments about nuclear energy more difficult. The economic role of sugar and its institutionalisation in a separate ministry will make the shift to multipurpose farming more traumatic (author's note).

306 Richard Levins, "The Struggle for Ecological Agriculture in Cuba", *Capitalism, Nature, Socialism* No. 5, October 1990, pp. 125-126.

307 Judith Rees, *op. cit.*, p. 289

308 Richard Levins, *op. cit.*, p. 138.

309 Richard Levins, *op. cit.*, page 140 (emphasis added).■

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295 The environmental crisis in the former Soviet Union and Eastern Europe is analysed in Chapter 2, Part 4. However, we should be careful not to be swept away by claims of Western superiority here. Tom Athanasiou notes: "The terms of the standard East-West comparisons are badly misleading. Poland and Slovakia are about as 'developed' as Turkey or Iran, and the Czech Republic and Hungary compare more fairly to Greece or Mexico than to the United States or Britain. This doesn't let the east off the hook for the damage its managers have done, but it does recast the issue: Greece, Turkey, and Mexico are no shining models of environment management. And if 'the West' is taken as a whole — to include its service areas in Latin America, Africa and Southeast Asia — is it still so certain that its ecological record is superior in every way to that of the old East bloc?" *Op. cit.*, page 124.

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298 "The Lucas plan was rejected by all elements of the British establishment, including management, conservative trade unionists (one *complaining* that it would change British society!), academic 'leaders' and most of the Labour Government, whose initial encouragement was sustained by only a few, like Tony Benn. This is unsurprising since it was revolutionary, proposing industrial restructuring in the interests of labour; redefining wealth by rediscovering William Morris' definition ('working cheerfully at producing the things we all genuinely want'); redefining, therefore, economic rationality; challenging labour vanguardist views that average workers can do little more than to describe their grievances; reasserting working people's right to associate (across unions); exposing the hidden values behind seemingly neutral, technical, 'rational' management and challenging its right to manage, at least without accountability to workers: as Lucas workers at Shipley are reported to have said: 'In our experience management is not a skill or craft. It is a command relationship, a habit picked up at public school, in the church or from the army. And we can well do without it". — David Pepper, *Eco-socialism*, Routledge, London and New York, 1993, page 239.

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280 *Op. cit.*

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282 Sharon Beder, *op. cit.*, pp. 114-115.

283 See Rene Bowser, "History of the Montreal Protocol's Ozone Fund", *Analysis and Perspective*, Bureau of National Affairs, Washington, 20 November, 1991, p. 637. Cited in Tom Anastasiou, *op. cit.*, p. 65. The CFC Multilateral Fund, a joint initiative of the World Bank and various UN agencies, has allocated $695 million to projects in 111 developing countries to speed CFC phase-out.

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285 A recent example is the 1997 proposal of the Australia Institute whose proposed $A23 per ton carbon tax, permitting the elimination of payroll tax, would reduce carbon dioxide emissions by a totally inadequate 11.7 per cent in the short run and be "closer to 40 per cent" only by 2010 — assuming the modelling is accurate. At the same time it would produce immediate price rises of around seven per cent for petrol, 17 per cent for gas and 21 per cent for electricity (Clive Hamilton, Tor Hundloe and John Quiggin, *Ecological Tax Reform in Australia*, The Australia Institute, Discussion Paper Number 10, April 1997.)

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Notes

Preface

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D. Alternative analyses

The two main streams of alternative analysis of the environmental crisis are ecological Marxism and social ecology, which has anarchist roots. For the former see the works of Barry Commoner and K. William Kapp. For the latter, see the works of Murray Bookchin, such as *the Philosophy of Social Ecology* (Black Rose Books, Montreal, 1990).

E. State of the environment movement

Tom Athanasiou's *Slow Reckoning: the Ecology of a Divided Planet* (Vintage, London, 1998), with its perceptive analysis of the trends and contradictions of contemporary environmentalism, is the best starting point.

F. Marx & Engels on ecology

Marx and Engels' writings on the humanity-nature relationship are scattered throughout their work. Howard Parsons has collected all the relevant texts in *Marx and Engels on Ecology* (Greenwood Press, Westport, Connecticut, 1977).

G. Soviet writing on ecology

In today's "post-communist" world it is often forgotten that ecology was a flourishing discipline in the Soviet Union of the 1920s and again, although to a lesser degree, in the post-Stalin period. The best introduction is the work of Igor Laptev, available in Progress Publishers editions.■

Further Reading

A. State of the environment

The most accessible immediate source materials on the state of the environment are the publications of the Worldwatch Institute, especially its two series *State of the World* and *Vital Signs.* More specialist material is advertised on the Institute's web site (<http://www.worldwatch.org>) and in the endnotes of Worldwatch publications. Another major source of environmental data is *World Resources,* published every two years by the United Nations Environment Program and other UN institutions.

Up to date information on the environment can be found in a myriad of sources, especially on the World Wide Web. Especially worth consulting are *Rachel's Health and Environment Weekly* at <http://www.rachel.org> and the *Environmental Organisations Web Directory* at <http://www.webdirectory.com>.

Newspapers and journals include Australia's *Green Left Weekly*, the *New Internationalist*, *The Ecologist* and *Capitalism, Nature, Socialism*.

B. Sources of modern ecological & environmental thought

There are numerous "comparative surveys" of the differing analyses of the environmental crisis. A good starting point is David Pepper's *The Roots of Modern Environmentalism* (Routledge, London, 1989). Caroline Marchant's collection *Ecology* (Humanities Press, New Jersey, 1994) provides a representative selection of the various trends, while Joan Martínez-Alier's *Ecological Economics: Energy, Environment and Society* (Basil Blackwell, Cambridge, 1987) unearths forgotten traditions of ecological analysis.

C. Mainstream environmentalism

Works advocating one or other variant of green capitalism are appearing all the time. Notable recent texts include Paul Hawken, *The Ecology of Commerce: How Business Can Save the Planet* (Weidenfeld and Nicholson, London, 1993); Frances Cairncross, *Green, Inc., Guide to Business and the Environment* (Earthscan Publications, London, 1995); Ernst von Weizsäcker, Amory B. Lovins and L. Hunter Lovins, *Factor Four:*

by such figures as the Amazon's Chico Mendes and Mexico's Zapatistas, can attain its fullest influence, as a tradition imparting precious environmental knowledge and skills.

All this goes to underline one reality: that social ownership of the major means of production and democratic decision-making is the only way of running society that is compatible with an environment which is itself ever increasingly social. It is the only road to a "steady state", sustainable economy.

Levins sums up his experience:

> … of a socialist economy in which there is no profit-oriented chemical industry pushing pesticides, and in which the conscious goal of planning is a better, more abundant and healthier life. Difficulties arise when intermediate goals toward these ends take on a life of their own, become the measure of an enterprise's contribution to society, and seem to conflict with the long-term goals. Although socialism is all too obviously no guarantee that intermediate goals will not obstruct ecological wisdom, it does practically eliminate vested economic interest in perpetuating harmful practices. Therefore, a debate over technological directions is only an argument, a confrontation of opposing beliefs, but not a confrontation of opposing interests.
>
> This gives a different feel to argument even against stubborn ignorance. It makes strong argument effective and makes convincing the other party more important than the simple exercise of power. It also affects the style of struggle, which starts from the premise of comrades struggling with each other for a shared goal and is more educational than oppositional …The debate also takes place within a theoretical commitment to Marxism with its emphasis on the historical contingency of science and technology, the importance of looking at the whole, the recognition of complexity, process and contradiction. This provides the tools for challenging technocratic developmentalist assumptions.
>
> At a time when ecological issues are becoming major political concerns throughout the world, the Cuban struggle should be watched closely and actively supported. The different texture of the struggle in Cuba from that in capitalist countries reveals the intensely political character of human ecology. *Its victories under difficult circumstances show just a little of the potential of socialism and of Marxism in negotiating a new relation with nature.* If allowed to continue its socialist development, Cuba may yet become a world ecological power as well as a medical one.[309]

In short, the only possible "sustainability transition" is that which can be carried out by an environmentally aware people in control of their own destiny. ■

profit-making creates extremes of wealth and poverty on an expanding scale — without coercion by the capitalist state. Its ethic of individualism and consumerism clashes directly with any sense of environmental responsibility, as shown in the reaction to price rises introduced by Britain's newly privatised water companies:

> A substantial proportion of customers associate these price rises with privatisation, the enhanced profitability of the water companies, dividend payment to shareholders and directors' salaries. The capital investments undertaken by the companies and improvements in some aspects of customer service are at best imperfectly perceived. Customer attitudes towards the water industry have undoubtedly changed; they are less willing to accept what they see as system failures, are less prepared to cooperate with the companies in reducing consumption during drought periods, and are increasingly resistant to the notion that the companies should be able to restrict their usage by imposing hosepipe bans. Such attitude changes were clearly seen over the dry, hot summer of 1995; many customers reacted with hostility to the idea that their increased demands were to blame for shortages and they saw it as the function of commercial companies to meet all legitimate supply requirements (including garden watering).[307]

Fourth, a society ruled by democratic socialist planning will be able to establish an "economic Plimsoll line" marking the sustainable *scale of production*. Once people, through their elected representatives, can compare the costs of different scales of production, the best scale possible can be decided and the disastrous "giantism" of typical Soviet production units avoided. It will also be possible to pay full attention to the imperatives of bioregional and local production. Decentralisation and the gradual overcoming of the difference between the city and countryside will likewise become increasingly feasible.

Richard Levins draws out the link between right-scale technology and social regime in the case of Cuban agriculture:

> The gentler the technology, the more site specific it has to be. The adaptation of a technology suited to every microsite is beyond the capacity of even the most affluent extension service. Rather, the technology has to be developed on the farm through a collaboration of the farmers who have a detailed, intimate, local knowledge of their own circumstances and the off-farm scientists who can provide the general, theoretically based and abstract knowledge that requires some distancing from the particular. This interaction is only possible when the parties meet on terms of equality and mutual respect. In class-divided societies this is extremely difficult to achieve. In Cuba, the fact that many of the agricultural scientists come from peasant backgrounds makes it easier.[308]

In such a context of post-capitalist democracy the "Ecology of the Poor", symbolised

program of environmental conversion will involve a radical change in the scale and nature of consumption as well as the closing down of environmentally unsustainable industry and agriculture, the transition phase to sustainability will require conscious restraint from an environmentally aware population.

Such restraint is impossible to achieve in capitalist society — where the rule of

(based on the country's volcanoes) as well as a series of hydroelectrical and biomass projects based on sugar cane waste.

Pest management: Nicaragua before the revolution was drenched in DDT, with hundreds of workers dying each year from pesticide poisoning and mother's milk showing up to 45 times the World Health Organisation's "safe" limit. Between 1979 and 1982 the Sandinistas banned the use of eight of the world's 12 most dangerous pesticides and generalised a UN program in non-chemical Integrated Pest Management. As a result by 1982 pesticide imports by volume had fallen by 45 per cent and by 1985 the IPM program had expanded to cover 45 per cent of the cotton crop, the largest such program in Central, and possibly Latin, America. Daniel Faber comments:

"Nicaragua's IPM program became exemplary of the integral role performed by revolutionary ecology in the process of social transformation. First, IPM promoted greater national independence. Since the science was "home grown", the IPM program dramatically lessened the country's dependence on millions of dollars in expensive chemical imports from multinational corporations, thereby freeing up scarce foreign exchange for the building of schools, health clinics, environmental restoration, and other programmes designed to improve the lives of the popular classes. Secondly, IPM promoted social and environmental justice by improving environmental quality and worker/public health. Thirdly, IPM contributed to a new sustainable development model. By overcoming the dynamics of the pesticide treadmill the IPM program better enabled Nicaragua to overcome many of the major ecological and economic contradictions which periodically plague export agriculture in the Third World. Finally, IPM technology promoted greater ecological democracy in that the successful application of the science required democratic state planning, including the close cooperation of coalitions within the Labour Ministry, workers' associations and unions, the Health Ministry, environmentalists, national and international scientists and doctors, the Agricultural Ministry and growers' associations, and other non-governmental organisations. As such, these efforts to safeguard environmental and human health while increasing economic productivity made the Sandinista government's pesticide policy a model for 'productive conservation' for the entire Third World." (*Op. cit.,* p. 68)

lower the degree of social alienation — the less will be the pressure for consumerism, especially in those economies which can already readily meet basic human needs.

Thirdly, a post-capitalist society will also be able to apply the precautionary principle. Our knowledge of how ecosystems work is still limited, and the possibility of unwitting environmental damage and loss is great. At the same time, because any effective

Box 3: Environmental achievements of the Nicaraguan Revolution

Agrarian Reform: On the basis of its 1984 Agrarian Reform, which gave poor peasants more than 10 times the land they had owned before the revolution, IRENA (the Nicaraguan Institute for Natural Resources and the Environment) began a series of campaigns to address problems of deforestation, erosion and fertility loss in the country's major watersheds. These included the building of 4220 torrent-regulating dykes and the restoration of 202,500 hectares of tropical dry forest and farmland in the degraded Pacific highlands.

Under this programme the Western Erosion Control Project planted some 3000 trees daily over a two-year period, creating 1192 kilometres of windbreaks in the region's cotton-growing areas. At the same time the rate of deforestation was cut from 1009 square kilometres a year in the late 1970s (the highest in the Central American region) to 500 square kilometres by 1985 (among the region's lowest). This was because the agrarian reform lifted the pressure on tropical rainforests from landless peasants in search of subsistence farming plots.

Wildlife Protection: Before 1979 Nicaragua was a Central American leader in the hunting and export of rare and endangered species. After the revolution, because the Sandinistas nationalised the country's import/export banks, IRENA was able to implement an effective ban on the export of endangered species. Most exemplary was the Sea Turtle Conservation Campaign, in which local communities participated in the sustainable management of their own marine resources.

Energy and Appropriate Technology: One of the chief causes of habitat destruction and deforestation was the peasantry's lack of access to alternative energy sources to wood, which accounted for over half the country's energy output. In response CITA (the Centre for Appropriate Technology Research) launched a series of renewable energy projects, covering windmills, hand-pumps, biogas and more efficient wood stoves.

On a larger scale, as part of a project to reduce the countries dependence on oil imports INE (the Nicaraguan Energy Institute) initiated geothermal projects

ownership of the key means of production combined with political power in the hands of an environmentally aware working people, offers the possibility of drawing on the stifled creativity, not of a handful of entrepreneurs, but of the vast mass of the population.

How then can the instruments of democratic socialist planning specifically tackle the job of building sustainability?

First, in a post-capitalist democracy the struggle to harmonise the still conflicting demands of growth and the environment is conducted on a *social* playing field — the institutions of working-class democracy, workers' collectives, scientific institutions, media and governing organs. Through the politics of their debates and struggles (which of course will always rely on *some* element of economic valuation) a more accurate measure of the social value of the environment can be established and an *overall* development plan implemented that is compatible with environmental restoration and preservation.

The establishment of full social control over production decisions also sets the right context for decision-making on the issues that almost totally exhaust mainstream environmental discussion, namely the relative virtues of market-based and regulatory instruments. A post-capitalist society that leaves some space for the market will, for example, be free to decide the extent to which it should use environmental taxes and charges.

It also allows the best use of techniques like full cost accounting, cost-benefit analysis, cradle-to-grave accounting and input-output analysis, often so open to abuse and so sensitive to initial assumptions (or too revealing about the full range of costs involved with capitalist production). Under planned economy there is also greater latitude for choosing a discount rate that will induce the producing units to switch over to renewable energy more rapidly than might otherwise have been the case.

(Given the present embattled position of post-capitalist societies — and the tenuous position of countries like Cuba and Vietnam which retain some degree of revolutionary democracy — the value of such resources as tropical rainforest as an ecosystem compared to its value as timber for export will continue to present difficult, inescapable choices with which many environmentalists will disagree. Cuba's flirtation with nuclear power is a case in point.)

Secondly, one of the powerful anti-environmental pressures operating in "state socialism" was the need of the bureaucracy, which had no intention of setting an example of austere living itself, to provide the population with distracting "bread and circuses" — a "socialist" consumerism that sadly mimicked the West's. However, the greater people's real control of economic and environmental decision-making — the

economies. However, because Cuba had built up a stock of scientific knowledge and a well-developed agricultural research infrastructure, it was able, in desperate circumstances, to undertake what is essentially the largest conversion from conventional agriculture to organic or semi-organic farming that the world has ever seen.

This was made possible by the investment of an estimated $12 billion in the 1980s in developing "human capital" and infrastructure in biotechnology, health sciences, computer hardware and software and robotics, an investment partially driven by a developing disillusionment with a model of agriculture that was generating growing pesticide resistance and soil erosion.[302]

Cuba gives a glimpse of the enormous potential of socialist methods:

> In 1987 the Institutes of Botany and Zoology merged to form the Institute of Ecology and Systematics of the Cuban Academy of Sciences, and the first international symposium on these topics was held in Havana in 1988. Ecology was now a respected and legitimate branch of biology with public visibility.
>
> Ecologists are able to promote their program through several channels. In the laboratories and institutions charged with pest control they adopt their own research plans in assemblies of the collective. Ecologists also address themselves through the mass organisations (the union, women's federation,[303] student organisations) and the Communist Youth and Communist Party.[304] They write for the popular press, work with amateur innovators' groups, and are increasingly seeking a role in the training of agricultural technicians. As individuals, some ecologists have been elected to the Assemblies of People's Power, the legislative bodies at the municipal, provincial and national levels.
>
> There is thus a growing ecological movement in Cuba. But it is not an ecological movement in the sense of those in Europe or North America. It is not a distinct political movement such as the Greens, nor is it an opposition movement confronting a resistant government and corporations, nor is it yet an "official" movement of the sort set up by governments to say yes. Cuban ecology activists are political, committed revolutionaries who see their struggles for ecologically sound policies as part of the duty of communists in building a new society with its own relation to nature.[305] The working method of the Cuban ecologists is educational, at the levels of society as a whole, government, and the party. In their view, ignorance, developmentalism, and economic urgency are their main adversaries. But the problem is not the lack of channels for expression but the resistance of opposing ideas. In the absence of greed as a major interest to overcome, discussions are not confrontational.[306]

This is the social essence of the alternative to the false dilemma of end-of-the-pipe regulation or green taxes that supposedly drive "entrepreneurial creativity". Public

practice" energy use, be industrialised to the West German level while cutting total energy use to a third.

Lovins argues that the best mechanism to achieve this is the environmentally rejigged market of the type outlined in *Factor Four* but the patent naivete of this position doesn't take away from the fact that there is an enormous unused human potential waiting to be drawn into the job of saving the ecosphere. The question is: how best to summon it into life?

The 1979 Nicaraguan revolution, led by the Sandinistas but crushed through the US-backed war of the *contras* 10 years later, is the best recent illustration of how this is to be done. Box 3, based on a recent article of Daniel Faber,[299] provides a short summary of its achievements in the environmental field, which were partially based on a critical analysis of Soviet shortcomings. In Faber's words:

> One of the lessons provided by the legacy of the former Soviet Union and other Eastern European countries is that any socialist society which institutes social *ownership* of the means of production without establishing systems of genuine democratic social *control* by the people is doomed to be a political and ecological failure. Characterised by top-down systems of party/bureaucratic rules which sever links with both people and nature, really existing state socialist societies resorted to what was in effect a rightist politics of commandism … [T]he Nicaraguan revolution would have to promote new forms of democratic state planning and administration which increased the power of the people themselves to exercise control over the major political, social and economic institutions in society.[300]

In the longer run, social control of technological development allows planned conversion to the foundations of sustainability. It would permit, to take one very insidious example, the elimination of chlorine-based production, which does not occur in nature, is poisoning our ecosphere and which grew "not so much by creating new industries as by taking over existing forms of production … It grew through a virulent form of industrial imperialism."[301]

If Cuba, even under the pressure of the criminal US economic blockade, can become a world leader in biotechnology and "green medicine", then the application of even half the research and development effort that is producing the latest in lethal weaponry would rapidly open up "soft technology paths" in all industrial and agricultural sectors.

In the Cuban case the collapse of the old "socialist bloc" threw into crisis the "classical model" of conventional modern agriculture — based on extensive monocultures and a high degree of mechanisation and fertiliser and pesticide use — because all these inputs were obtained at subsidised prices from former Soviet bloc

Lastly, in the underdeveloped countries, it opens the way to large-scale land reform, which is the precondition for relieving the environmental pressure superficially due to "rural overpopulation".

In the short run the most important element is the explosion of popular energy that a revolution brings. Indeed, even working life in the advanced capitalist economies provides glimpses of the potential for harnessing people's latent commitment to the environment. Imagine if social conditions allowed examples like this to become a general and natural feature of working life:

> When the United Steelworkers engaged in a cooperative program with Republic Engineered Steel called Project 80, employees suggested about 1000 cost-saving and environmental improvements in the first 20 months. About half of these have since been implemented, resulting in savings of about $45 million. The single largest saving, more than $3.5 million, resulted from suggestions for improvements in the recycling of steel scrap. Another huge saving resulted from more efficient use of water, as a group of workers found a way to reduce water used in the heat-treating process. Water consumption dropped 80 per cent, from more than nine million gallons per month in 1991 to less than two million two years later, saving close to $50,000 per year.[297]

US industry is certainly well aware of the benefit to its profits of workers' knowledge of where such plums might be picked. In 1981, Dow Chemical, one of the world's greatest polluters, began a contest in its Louisiana division to find capital projects costing less than $200,000 with payback times of less than a year. In 1982, the contest yielded 27 projects and continues with more projects backed each year. In 1989, 64 projects costing $7.5 million saved the company $37 million in the first year and every year thereafter.

Probably the most advanced attempt to harness workers' creativity to the cause of environmentally and socially useful production was the Lucas Aerospace Combined Shop Stewards Committee plan. Instead of the "defence" hardware which was the firm's staple, the Lucas shop stewards developed such projects as solar power and wind generators, heat exchangers, a road-rail vehicle, a hybrid petrol-electric car and an airship using jump jets to avoid helium waste. The production processes developed did not waste raw materials, were labour-intensive, were non-hierarchical and non-alienating, required discussions with the final consumers, and were designed to break down the divisions between skilled and unskilled jobs.[298]

From a global perspective the potential gains in energy efficiency and resource usage in an economy where the collective intelligence and interest of the real producers is engaged and harnessed is immense. For example, Amory Lovins, in a classic 1981 study, calculated that a world populated by eight billion people could, with "best

The failure of the planned economies of Eastern Europe to go over from the "extensive" development model of the early Five Year Plans to an efficient "intensive" economy — the precondition for attacking the burgeoning environmental crisis — was due to the alienation of the workers, the conservatism of economic managers, the excessively low wage (which encouraged the flogging of old polluting machinery instead of investment in new) and the *non-application* of developments in science and technology, in turn mostly due to bureaucratic fear of failure.

It was also due to the triumph under Stalinism of the following view of socialist construction, which trampled Soviet ecological thinking (the most advanced in the world during the 1920s) under foot:

> Let the fragile green breast of Siberia be dressed in the cement armour of cities, armed with the stone muzzles of factory chimneys, and girded with iron belts of railroads. Let the taiga be burned and felled, let the steppes be trampled … Only in cement and iron can the fraternal union of all peoples, their iron brotherhood of all mankind, be forged.[296]

All this goes to show that the environmental crisis in the former Soviet Union and Eastern Europe was *not* due to the *intrinsic* features of a society in transition to socialism — social ownership of the major means of production and economic planning. Rather, the Stalinist counterrevolution that began in the late 1920s meant that planned, socialised economy was blocked from working to anything like its full potential.

That's because the socialist revolution equips society with the key weapons for the war against resource depletion and pollution by removing the vested interests of the private capitalists. How does this work?

Firstly, social ownership of major industry and the finance sector enables the implementation of emergency plans of large-scale environmental repair. By eliminating all the contradictory interests of competing capitalists — which make environmentally effective green taxation such a rarity — it enables policy to be directed straight at the sources of resource depletion and pollution.

Secondly, resources presently squandered on the luxury consumption of the rich can be redirected, helping fund the vast increase needed in spending on environmental repair and conversion.

Thirdly, the elimination of such a critical underpinning of capitalism as the business secret and patent rights allows the most environmentally benign technology to be applied *across the board*, instead of being jealously guarded as one or two companies' fount of super profits.

Fourthly, it empowers the environmental movement, presently dispersed and fragmented, to concentrate its energies in a permanent and organised crusade against environmental degradation.

capitalism's?[295] Why should we give any credence to the socialist claim that only economic planning resting on socialist democracy can hope to save the environment?

The most environmentally damning feature of bureaucratically planned economies was their general inefficiency compared to the advanced capitalist West. As a result their products carried an "ecological rucksack" many times heavier that of their Western equivalents. The fact, too, that these economies were "resource-constrained" — that is, produced to capacity and piled up huge stocks of inputs and final products "just in case" — has led many economists to theorise that planned economy must sooner or later become an obstacle to further productivity growth. Therefore, planned economy must necessarily block any possibility of sustainable development.

This theorem overlooks the fact that the wellsprings of productivity growth are a *combination* of three elements: the stage of development of science and technology, the extent to which these are applied to production and the degree to which the mass of working people are *engaged and interested in* making this evolving economic apparatus work to its potential.

In addition, Marxists like Harry Bravermann and environmentalists like Barry Commoner long ago pointed out that the nature and pace of technology development is no class-neutral *datum* — something automatically brought into life by the state of scientific knowledge. It is constrained by the basic imperatives of the prevailing economic system, under capitalism being typically moulded by the need to control the labour process and produce the class of output that will yield highest unit profit.

Technological development is also determined by how much is spent on it. For example, capitalist technology development is greatly shaped by the fact that state research and development budgets for environmentally benign technology are either stagnant or falling while two-thirds of the world's scientists are doing work for the military. The internal research of the corporations is driven by the need to find products that will produce monopoly superprofits (like grains that last one season or crops that depend on being drenched in one particular company's pesticide).

Nor does "planning" exist in a social vacuum. Only through the participation and full empowerment of an environmentally aware people can a planned economy realise its potential as a healer of past environmental wounds and provide a framework for sustainability. Remove the vital ingredient of democracy and decisions on all the vital issues of technology and development become the domain of an unaccountable bureaucracy and mass alienation rapidly takes root. Such was the socio-economic lesson of the Soviet "stagnation period" (1969-89). By contrast — and this has been the formative experience for many environmentalists over the past decade — the methods of capitalist eco-reformism can bring better results.

> whole; they are heterogeneous and cannot be quantitatively compared to each other and to others, not even in principle.[292]

This truth is the reflection in theory of the fundamental incompatibility between the laws of reproduction of the biosphere and the expansionary dynamic of capitalism itself. The longer capitalism lasts, the greater its ruinous impact on the environment, the greater the number and size of the "externalities" which its instruments of technocratic, managerial environmentalism will be called upon to solve, and the greater the gap between disease and treatment will become. In the words of Jorge Riechmann, "entrusting the ecological fate of our planet to market forces amounts to a collective suicide".[293]

Lastly, if we look at those polluting industries that have effectively been eliminated, green taxes have had nothing to do with the matter. DDT was eliminated in the US by being banned. And the US nuclear power industry has been stalled because environmental concern over the horrendous associated hazards escalated its costs by as much as tenfold. One example was the Shoreham, Long Island, nuclear power plant. The original cost estimate of $503 million had become $5.3 billion on completion, and it never saw service because of the impossibility of evacuating the nearby population is case of a serious accident. And, as for lead in petrol:

> Hidden in the otherwise dismal data on air-pollution emission trends, we can find concrete evidence that the strategy of prevention can actually achieve [an] astounding result. In 1970 US vehicular transportation emitted 180,000 tonnes of lead into the air; by 1994 emissions had decreased by 99 per cent, to 1600 tonnes. This was achieved while vehicular transportation — a major economic activity — increased by 50 per cent, as measured by fuel consumption … This too-rare miracle was accomplished by a well-known industrial practice: the technology of production was altered, albeit at the behest of the government.[294]

In such cases the problem was solved not through the roundabout application of green taxes of dubious impact, but by going straight to the source of the environmental problem — and getting rid of it. And that is the only approach that will turn the tide of environmental destruction.

Can socialism do better?

The argument so far confirms that capitalism will continue to have a very difficult time proving that it has the answers to our environment crisis. But is the socialist case any more credible? Why isn't the deadly environmental record of the departed and departing "state socialism" of the former Soviet Union, Eastern Europe and China proof that socialism's environmental crisis is just as systemic and inevitable as

The heart of the matter is that *there is no sovereign regulating institution* within capitalism that can guarantee that any resource efficiency increases will go into *reducing* overall resource use and waste, when competition drives the system in the opposite direction. If the capitalists could control their competition and agree on a parcelling out of the profits, then green taxes would certainly have a better chance of working. But then capitalism wouldn't be capitalism.

Therefore, because the end result of increased efficiency is at best *indeterminate,* there is no way that the *Factor Four* authors' exercise of plugging a two or four per cent efficiency increase into a macroeconomic model can yield any reliable predictions whatsoever. The façade of science conceals a method that is little more than chicanery.

None of this means that green taxes (or, preferably, taxing the polluters and removing their subsidies) don't have some role to play in the struggle against environmental degradation. But the central role they are given in environmental reformism (and the economic programs of many Green parties) strengthens a dangerous and *irrational* illusion — *that our systemic environmental crisis will yield to technocratic fiddling often based on misleadingly precise valuations of "externalities".*

Some environmentalists argue — given continuing business suspicion of green taxes — that they present environmentalism with a useful opportunity to "make the polluter pay". Yet, while the position to adopt on any given green tax proposal will always involve a concrete case-by-case assessment of costs and benefits, ecotaxation as a general approach still leaves the greatest decision-making power over environmental quality in the hands of those with the greatest economic power.

Confronted with green taxes, corporation boards, not workers, citizens or environmentalists, decide on whether to pollute or clean up. And, to the degree that the market, "corrected" by a green tax, is viewed as the main instrument for winning sustainability, the whole issue of the environment becomes depoliticised. Environmental protest, action and debate take a back seat as existing social relations and the fundamental legitimacy of the market are reconfirmed.

At bottom, ecology and economy are incommensurable. In the words of ecological economist William Kapp:

> Giving monetary values and applying a discount rate (which one?) to future utilities and disutilities in order to express their capitalised present value, may give us a precise monetary calculation, *but it doesn't rescue us from the dilemma of choice nor from the fact that we are taking risks with human health and survival.* For this reason, I am inclined to think that the attempt to measure social costs and benefits simply in monetary or market terms is doomed to failure. Social costs and benefits have to be considered as an extra-market phenomenon; they bring pain or gain to society as a

about 44 million workers.[287] Against them we can set only one major industrial zone operating on the principles of sustainable industrial ecology — Kalundborg in Denmark. It's also why hundreds of new chemicals come onto the market each year before any testing of their long-term effects has been done or is even possible.

Yes, Iceland is planning to convert totally to renewable energy by 2020, Denmark aims to have half its energy needs supplied by wind within a decade, and aspiring "energy Microsofts" are sniffing for profits in fuel cells, wind turbines and photovoltaics.[288] But so overwhelming and immediate is the global climate crisis that leading climate scientists are demanding an effort equivalent to spending on the Cold War arms race *now*.[289]

This urgent environmental imperative clashes directly with capital's two most pressing needs — to wring whatever profit it can from existing plant and equipment, polluting or not, and to defend the source of its next wave of superprofits — the technological rents from new products, processes and knowledge — many of which are also far from being "clean and green".

On this last issue, we recall that the "intellectual property rights" (IPR) in biotechnology of the agribusiness multinationals like Cargill Seeds provoked violent discussion at Rio,[290] with the US rejecting any idea that environmentally sustainable technologies should be made available at anything other than commercial rates. The Uruguay Round of the General Agreement on Tariffs and Trade tightened its IPR clauses by granting current patent holders, usually multinational companies, virtual monopoly rights on biotechnology. As already noted, WTO members are obliged to pass national legislation protecting the rights of IPR holders, in the vast majority of cases the multinational firms which account for most of the world's research and development spending.

Today all the major statements from the Commission for Sustainable Development reaffirm the sanctity of IPR and agree with the World Business Council for Sustainable Development that "the protection of the patent rights of the developer is essential" even as they stress the need for an increased rate of transfer of environmentally benign technology to the developing world. But the assessment at Rio +5 was:

> Although no concrete data are available, there is overall recognition that the level of technology and technology-related investments from public and private sources in developed countries directed towards developing countries has not, in general, been realised as envisaged at UNCED [United Nations Conference on Environment and Development].[291]

What, then, does all this mean for the *Factor Four* authors' central argument (sufficient green taxes at the micro-level will produce macro-level sustainability)?

ozone loss will actually increase over populated and agriculturally abundant areas. Nor is a "final solution" guaranteed. Industrialising countries do not have to phase out CFCs until 2010 and their rate of consumption is increasing. Moreover, evidence is now emerging that the increased levels of radiation passing through the ozone holes may be damaging the DNA of plants and animals and affecting the entire food chain.[284]

Even this very partial success has been an exception to the rule. As we have seen green tax *proposals* typically fall between two stools, being too low to make sufficient inroads into, say, carbon dioxide emissions and too high to be acceptable to business (and, in some cases, the mass of ordinary people).[285]

The green tax that typically *gets implemented* after the "stakeholders" have had their say leaves business with the space to improve its operations at its own pace and to pass any extra costs onto its consumers, while having a minor effect on pollution and resource usage. But taxes that are sufficiently powerful to cut back pollution or resource depletion, not a nightmare to monitor and administer, not destructive of competitiveness, not too unsaleable politically, not easy to evade and able to generate sufficiently broad support are rare indeed.

That's because the eco-tax treatment is based on a false diagnosis of the disease. The problem for the global environment today is not so much that sustainable production methods and technology don't carry with them "competitive advantage" for private business that might convert to them under the pressure of green taxes. As is obvious from the hunt for new market opportunities there are already niche markets for "clean, green" production, especially across the advanced capitalist world. *However, unsustainable production methods, dangerous and polluting product, cheap labour and oppressive working conditions are immensely more profitable.* Comparative advantage in the vast majority of production is still to be gained in the way first noted by Karl Marx:

> Capitalist production … only develops the techniques and the degree of combination of the social process of production by simultaneously undermining the original sources of all wealth — the soil and the worker.[286]

The core contradiction between capitalism and the environment is not that capitalists *in general* treat the environment as a free good and as a sewer but that it *gives the biggest reward* to those who *most* treat it in this way. They're the most successful "profit maximisers", the best exploiters of those "factors of production", labour and nature, and hence the best placed to expand and devour the competition. The history of any successful multinational, say Rio Tinto, provides ample confirmation.

That's why some 230 special processing and export zones, notorious for pollution and low wages, are in operation around the world in around 70 countries and employ

the rare event that the polluter is exposed to sufficient competition, some of the cost-savings *may* be passed on to consumers. And they might, provided there is sufficient pressure on industry, allow for a greater reduction in pollution for a given anti-pollution budget and increase the chance that any targets (if they exist) will be reached.[279] *But, as we have seen, this is as nothing compared to the treatment needed if we are to make inroads into the crisis.*

David Malin Roodman acknowledges:

> Tax and permit systems are promising medicine, but are neither cure-alls nor free of side effects. Drivers will not respond to a gasoline tax by driving less, for example, unless good zoning laws and mass transit systems provide them with alternative means of getting to shopping and work. And pensioners living on fixed incomes, who lack the funds to invest in energy conservation, could have their living standards diminished by higher oil or electricity prices.[280]

Roodman is actually conceding a lot more than may be immediately apparent. For if "drivers" won't drive less in response to an energy tax unless there are attractive and competitive public transport systems then the present pattern of rising global nitrogen oxides emissions is *simply set to continue,* particularly as car-centred transportation spreads to the newly industrialising world.

Green tax supporters like to point to the success of taxes and emission quotas applied under the Montreal Protocol against CFCs[281] as an example of what they can achieve. However, they only played a bit part in a story that is full of instructive lessons.

First, there was the inevitable ten-year phase in which the main manufacturers of CFCs, DuPont and Imperial Chemical Industries (ICI), denied that there was any connection between their product and ozone depletion, spending large sums on greenwash, attempting to discredit ozone scientists and suspending all research into CFC alternatives.[282]

Next, the phasing out of CFCs was facilitated by transition to a substitute technology developed by the chemical industry itself — hydrochlorofluorocarbons (HCFCs) which still contain chlorine, still damage the ozone layer and are also greenhouse gases.

Further, while global CFC production is down by 76 per cent from its 1988 peak, black market CFCs are still being produced in Russia (which failed to meet its 1996 reduction target) and other cash-desperate countries, developing countries' consumption of CFCs and halons has risen by a third from 1986, and the fund to finance the phasing out of their CFC production stands at only $455 million, well short of the $5 billion needed, according to one informed estimate.[283]

Finally, the undoubted gains on the ozone front haven't changed the fact that full recovery of the ozone layer isn't expected until 2050, and that in the intervening years

> insufficient to stop deforestation and genetic erosion.[276]

Here is the real meaning of the notorious 1992 circular "Between You and Me", issued by Lawrence Summers (now US Treasury Secretary) when he was chief economist at the World Bank and in which he suggested that the World Bank should be encouraging more migration of polluting industries to the Third World. Given his assumptions, Summers' conclusions were entirely correct. First, if the costs of pollution are measured by loss of earnings through death and injury, then "I think the logic behind dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that". Second, the costs of pollution rise disproportionately as it grows, so "underpopulated countries in Africa are vastly underpolluted, their air quality is probably vastly inefficiently low [in pollutants] compared to Los Angeles or Mexico City". Lastly, since people value a clean environment more as their incomes rise, it is surely more efficient to avoid dumping carcinogens "in a country where people survive to get prostate cancer than in a country where under-five mortality is 200 per thousand".[277]

The core of the problem lies not in Summers' argumentation but the fundamental postulate that a price label can be attached to environmental "goods" as if to any other commodity. However, abandon the assumptions and it becomes clear, again in the words of Martínez-Alier, that:

> Conventional environmental economics ... is useless as an instrument of environmental management, because the concept of "externalities" merely hides the inability to put a value on social costs that are shifted to other social groupings or to future generations.[278]

Whatever externalities can be reasonably valued are "awash in a sea of externalities that defy valuation".

Here we reach the fundamental reason why ecotaxation fails. It is based on countering *only one* of the main anti-environmental features of capitalism (its tendency to use the environment as a free good or a sewer). But orthodox environmental economics is blind to the three other tendencies inherent in capitalist production that are inimical to the environment — its tendency to make the only lasting connection between things the "cash nexus", its structuring as a network of separate firms whose own individual "rational" economic behaviour may conflict with overall rationality at the social and environmental level, and its irrepressible growth dynamic.

A drop in the (polluted) ocean

A dispassionate look at green taxes tells us that the best they can achieve is the same impact as some regulatory "command-and-control" measure, but at less expense. In

scientific, especially ecological, knowledge.

How, for example, to set a price on such an "externality" as the damage done by global sulphur dioxide and carbon dioxide emissions since the industrial revolution? How to establish a net value for plutonium (whose military "benefit" was, incidentally, included in the cost-benefit analyses of the first British nuclear reactors) when it will last for hundreds of generations? What is the annual value of "environmental services" supplied to humanity every year by the Amazon? What is the value of a life?

Take, indeed, life itself: it is literally worth less in the Third World. The 1989 decision of the Supreme Court of India on compensation for the damage caused by the accident at Union Carbide's pesticide plant at Bhopal, with thousands of dead and wounded, was calmly accepted by the international environmental bureaucracy. The appeal against the decision, on the grounds that the compensation proposed was very low, posed the question of the degree to which the evaluation of externalities depends on geography and social class. For the compensation paid was less than for the 1989 *Exxon Valdez* disaster in which there was no loss of human life. In the words of Spanish ecologist Joan Martínez-Alier:

> Union Carbide would have been ruined by the damages and compensation it would have had to pay if the Bhopal accident had occurred in a North Atlantic country or if the case had been heard in the United States and if the court had used … North Atlantic value scales for human life.[275]

By the same token, the poor sell the environment cheap. Martínez-Alier cites the example of Costa Rica's National Institute for Biodiversity (INBio), which has an agreement with the multinational pharmaceutical company Merck to sell genetic resources (plants, insects and micro-organisms) from that country's native forests. He comments:

> Of course, the agreement implies recognition of Costa Rican sovereignty over the country's genetic (in this case forest) resources, but on the other hand the agreement does not guarantee that traditional ecological knowledge and the conservation of biodiversity will of themselves be able to compete with other, more profitable, forms of land use. The agreement (whose exact terms are secret) envisages that Merck will pay something more than one million dollars over two years in exchange for exclusive rights to information on samples of chemical extracts prepared by INBio from a large protected area in Costa Rica, and that there should be a royalty payment based on the profits of any commercial products Merck might develop. Unless there are other, more expensive, forms of conservation, legal regulation and a forestry police presence paid for by the Costa Rican authorities, as well as some interest on the part of the local population in conservation, then the small financial incentive paid by Merck will be

markets or are only partially reflected in them. Hence more resource depletion and pollution take place than would occur if markets fully captured costs. The solution lies in making users of underpriced or free "environmental services" pay their "true value".

This can be achieved in two ways. Firstly, by creating markets where none exist (for example, by selling rights to fish, withdraw water or to emit sulphur dioxide). This is the most "natural" process for the market, for it allows buying, selling and profit-making to continue with minimal government interference. Trade in what was once plentiful generates business in formerly free goods, like pure water or the bottled fresh air on offer in Mexico City.

The second approach is to estimate the values of "environmental services" through a range of valuation techniques so that they can be taken into account in decision-making. In this way "external effects" can be "internalised". However, since "environmental services" cannot, in general, be bought and sold, only artificial (proxy) prices can be established. As already established, any tax rates set on this basis are at best using remote substitutes for prices.

In both cases the expansion of the market (even in theory) implies not only the inclusion within it of inputs and products that once stood outside it, but the extension of the *principle* of monetary valuation to elements of nature that stood outside the market system. For example, agricultural genetic resources and the function of forests as carbon dioxide sinks have stood outside the market and been socially very valuable but lacked any market valuation.

The valuation techniques of environmental economics are sometimes useful in those cases where costs and benefits are clearly delineated and in exposing the *general magnitude* of damage done to the environment and "free gifts" provided by it. Such was the case when an extensive Australian survey revealed that the environmental value to the Australian people of the country's magnificent Kakadu National Park was many times greater than any conceivable revenue from mining in the region. However, the more intangible and pervasive the "externality" under consideration the larger the margin of error in the various valuation techniques used and more random and arbitrary any final figure settled upon.

For one thing, the typical valuation techniques used by conventional environmental economics (such as surveys of a target group's "willingness to pay" or "willingness to accept payment" to preserve, say, wilderness from development) are totally sensitive to whom the "target group" is. Valuation becomes critically dependent upon such factors as the income of those surveyed, the discount rate applied to the consumption of future generations (who cannot participate in the evaluation process), the value of past transfers made and damage done before a market existed and the actual state of

competing investment projects.[271] The way discount rates are typically set disadvantages renewable technologies because these more often than not have a high initial capital cost and low running costs whereas fossil fuel based systems have a lower initial capital cost and high running costs. One study made for Western Australia's Renewable Energy Advisory Council showed how sensitive the cost of power generated by a solar electric power station was to the discount rate adopted. A 4 per cent discount rate yielded a power cost of 12.3 cents a kilowatt-hour; 8 per cent gave 17.1 cents a kilowatt-hour; 15 per cent gave 26.8 cents; and at 30 per cent it reached 49.7 cents.[272]

The pressure for an acceptable rate of return on capital invested, internalised in the discount rates most typically used — by capitalist governments as well as private firms — thus tips the "playing field" against environmentally sustainable investments that will benefit future generations. In the words of US economist Shimon Awerbuch:

> For such long-lived benefit streams, the application of the private discount rate may incorrectly allocate resources since this rate is based on the time preferences of *individual, finite-lived, investors.* But society … continues in perpetuity. This suggests the need to derive a discount rate for projects with long-lived benefit streams, which reflect society's time preferences.[273]

It follows that for a company which has sunk billions of dollars in a polluting technology and may even have covered the costs of the investment, it will be "rational" to continue using this capital stock and to suppress, if possible, new technology altogether and to lobby governments not to favour its development. This, in a nutshell, is the story of the very slow uptake of solar thermal and photovoltaic energy, which still receives far less in US federal subsidies than nuclear fusion.[274] It is also why it was "rational" — it maximised "net present value" — for whaling companies to hunt the species to near extinction.

For the economy as a whole, it is simply not possible under generalised market production to derive a "social" discount rate that would guide the rate of resource depletion towards some presumed "optimum". The very concept of "society's time preferences" implies some *social decision* that reflects the best possible compromise between the competing demands of environmental health and development. Such a decision can only be reached in a social context where *all the most important economic decisions are made socially* — rather than via the monetary policies imposed by the central banks of competing capitalist economies.

Can 'social marginal cost' be established?

As we have already seen, the entire wisdom of environmental economics consists in saying that some environmental impacts and services fall outside the influence of

around 1.5 per cent of US GDP and five per cent of European GDP in its first year alone.[268]

Competition and discount rates

It's obvious that capitalism is an economy made up of competing capitalists, for whom green taxes will, depending on their cost structure, be more or less tolerable. Any specific green tax proposal will always tend to create winners and losers among them. Is it possible, through some carefully designed green tax regime, to harmonise competing and conflicting interests? The *Factor Four* authors look at office building stock, "a system of incentives and institutional structures to make buildings use about ten times as much energy as they should do, be less healthful and comfortable than they should be, and cost more to build than they should do".[269]

Yet they claim that it is possible, by paying designers and architects on the basis of energy saved rather than a percentage of total building cost, to produce integrated resource-efficient design. However:

> Even if we solve all those problems, we'll still have more than 20 other parties to the building process who still have their own perverse incentives. Any of these parties can be a show-stopper. Thus, making markets work properly to produce cost-effective buildings is an unusually complex institutional problem requiring sustained and concentrated attention by practitioners, their professional societies, their regulators, other public-policy bodies and other market actors.[270]

Thus regulators testing whether buildings are actually meeting designed energy-efficiency projections will clash with builders under pressures to cut corners (and who may have "gone out of business" by the time any failure to meet standards is established). Financiers whose need for a quick return on investment predisposes them to install lower-cost, less energy efficient equipment will conflict with future lessees who demand an environment in which "their" workers can work more efficiently.

The reality the *Factor Four* authors never quite address is that to get capitalists to invest in a particular project the rate of return can't deviate too much from some industry standard "hurdle rate" (say 15 per cent) without the shareholders getting restless. Yet to operate different industrial activities in an environmentally benign way, that is, one that takes account of the differing rhythms of various ecological cycles, *requires* that the rate of return be able to vary. (Of course, a planned economy pursuing environmental objectives can allow for this, even to the point of fully subsidising some activities, like public transport.)

Trying to strongarm the "market" into operating in the interest of the environment also presents particular difficulty when assessing which discount rate to use in evaluating

heavily taxed.)[263] To implement the still inadequate Dutch plan would require total government spending on the environment to rise to three or four per cent of GDP. (For the OECD countries spending on environmental protection typically runs at between 1.5 and 2 per cent of GDP, with Australia at a shameful 0.8 per cent.)[264]

In 1971 Barry Commoner estimated that the cost of converting ecologically faulty technology along ecologically sound lines would require that "most of the nation's resources for investment would need to be engaged in the task of ecological reconstruction for at least a generation".[265] Spanish environmentalist Joaquín Araujo more recently confirmed the order of magnitude of Commoner's estimate. Spending needed to make serious and rapid inroads into agricultural and industrial recycling, conversion to solar and other renewables, water conservation, reforestation, shifting to ecologically sound agriculture and expanding public transport would have to run at 15 per cent of GDP a year, between 75 and 100 per cent of total investment spending for an average OECD country.[266] In terms of global production we are talking of sums in the order of $4-5 trillion — four to five times Roodman's figure of potential global green tax revenue.

How are green taxes that are acceptable to business even remotely likely to bring such sums into being, especially when national economies are engaged in a "race to the bottom" in company tax rates? The tax rates needed would be so steep as to reproduce on a global scale the quandary of the US petroleum industry for which full compliance with the Clean Air Act would have cost refineries $37 billion, *$6 billion more than the book value of the entire industry*.[267]

Those who have approached such issues as global warming in precisely the opposite direction as the *Factor Four* authors — *first* calculating the cost of reversing trends and *then* the tax rate implied — reach the same sort of conclusion. For instance, Thomas Schelling writes of the economics of global warming:

> A carbon tax sufficient to make a big dent in the greenhouse problem would have to be roughly equivalent at least to a dollar per gallon motor fuel, and for the United States alone such a tax on coal, petroleum and natural gas would currently yield close to half a trillion dollars per year in revenue. No greenhouse taxing agency is going to collect a trillion dollars per year in revenue; and no treaty requiring the United States to levy internal carbon taxation, keeping the proceeds, would be ratified by the Senate. Reduce the tax by an order of magnitude and it becomes imaginable, but then it becomes trivial as greenhouse policy.

Schelling who, as far as one can judge, is no friend of "big government", concludes that the only feasible plan of attack on greenhouse is a repeat of the Marshall Plan for European reconstruction after the Second World War. This involved expenditure of

"hundreds of businesspeople snooping around for bonanza opportunities" will be sufficient to reverse the spiral of environmental degradation and introduce a virtuous circle of competition in green products and production methods.

Even on the extremely hopeful assumption that the present lobby of polluters wouldn't have the political clout to stop the introduction of a revenue-neutral green tax of the scope required, the adequacy of the total tax take for the job of, say, helping fund renewable energy conversion is never seriously addressed.

However, it's been clear, at least since Rio, that seriously getting to grips with environmental degradation demands massive expenditure on clean-up, technology conversion and improving resource efficiency well beyond the scope of any green tax system.

Whenever environmentalists, economists and the odd concerned politician seriously address the issue the analogies are always of World War II efforts, the Marshall Plan, the Manhattan Project and the Apollo space programs — massive emergency mobilisations of government funds to beat a powerful and menacing enemy.[260]

Not surprisingly, one of the loudest laments of Earth Summit +5 was that the funds that Agenda 21 outlined as necessary to fund its (inadequate) program — $561.1 billion a year including 0.7 per cent of GDP from the advanced industrial countries — are nowhere to be found: indeed since Rio official aid from the advanced industrial countries to the South has *fallen,* from 0.32 to 0.27 per cent of GDP ($59 billion in 1995).[261]

Even if this 0.7 per cent were forthcoming, it would return to the South only a fraction of what it loses each year to the North in repayments on its accumulated debt burden and the expatriation of the assets of its ruling elites. Between 1982 and 1990, in debt service alone, the advanced capitalist economies received $418 billion more from the Third World than the Third World received in aid.

Again, the clean-up cost of a *regional* environmental disaster like the US-Mexican border is reckoned at $8 billion, but the North American Development Bank, set up under the North American Free Trade Agreement (NAFTA) to fund such projects, started with a total capital of $112 million.[262]

On a national scale the Dutch National Environmental Policy Plan is along with Denmark's and Switzerland's Energy 2000 plans the most advanced in the world, but still aims to cut greenhouse gas emissions by only five per cent by 2000. To achieve this goal annual subsidies to public transportation were recently raised to $5.7 *billion* (1.6 per cent of GDP) and fully ten per cent of the surface transportation budget goes to bicycle facilities. Natural gas and renewable energy use are to be increased and the energy efficiency of buildings and appliances improved. (Petrol and cars are already

totally inadequate level of government expenditure on environmental clean-up and protection. Moreover, inasmuch as the taxes are successful in reducing pollution and resource depletion they will supply less and less funds to the treasury (and, potentially, to the environment budget). Everything will then depend on whether green taxes have pushed private industry toward non-polluting and resource-efficient technologies on a sufficiently large scale.

The heart of the problem is that there is no unambiguous "double dividend" of sufficient size to be had from the imposition of a green tax. A tax that works effectively against pollution will put less revenue in the coffers (as with the Swedish sulphur tax[255]) and a green tax that can be a stable source of income (and hence potentially replace other, less "efficient", taxes) won't be effective enough against pollution. Such is the case with a carbon tax, which, according to some models, could in theory collect up to *10* per cent of world product[256] before cutting back carbon dioxide emissions fast enough to forestall global warming.

Thus, one edge of the "double-edged sword" of ecotaxation is always blunter than the other. Paul Ekins summarises the experience of the Nordic countries with carbon taxes:

> Tax rates have tended to be increased and some new taxes have been introduced, especially by Denmark. *It is hard to know how environmentally effective the taxes have been.* Where the tax rates have been increased, but the revenues have not by the same amount, it is possible that the taxes' incentive effects are working — for instance, lubrication oil in Norway. Similarly, where revenues have increased more than taxes, then the incentive effect would appear to be weak — for instance, air pollution in France. (Emphasis added.)[257]

The OECD itself has admitted that the shift to ecotaxation may be useful cover for pursuing other taxation objectives. It says of Swedish environmental taxes:

> It seems fair to say that, without the opportunity offered by the need felt to reduce income taxes, while keeping the total volume intact, environmental taxes would not have been introduced to the extent that is now the case.[258]

According to David Malin Roodman "more fully taxing pollution could raise more than $1 trillion worldwide, which could be used to cut taxes on wages and profits by up to 15 per cent".[259] Yet this $1 trillion income, even if politically achievable, would not necessarily be accompanied by a sufficiently rapid reduction in pollution nor lead to any increase in public expenditure on environmental conversion and clean-up.

The *Factor Four* authors don't address these issues. In their book, "government" is synonymous with bureaucracy, inertia and high-cost solutions. The unaddressed assumption is that once correctly designed green taxes have been set in place those

world's annual output of 400 million tonnes of hazardous waste. It is almost impossible to keep track of these wastes but experts reckon that at least 30 million tonnes cross national borders, with a high percentage going to poorer countries. *As green taxes on these wastes have climbed in countries like the US (up to about $250 a ton), African countries have been willing to accept shipments for as low as $2.50 a ton in order to get their hands on foreign exchange.*[252]

Just as damning is the ability of Dutch environment policy, regarded as the most advanced in Europe, to operate by exporting its burden of pollution:

> The emission of various polluting substances has decreased during the past few years although economic growth has continuously increased. The most important exceptions, however, are carbon dioxide emissions, mainly from growing transport intensity, and waste. These failures of policy are obvious.
>
> What is hidden and therefore not discussed within Dutch society is that during the ten years between 1985 and 1995, the use of primary (newly produced) metals increased very substantially with a range of environmental impacts in the Netherlands and abroad, particularly in developing countries … So within the Netherlands the environment may be cleaner, with some important exceptions, but the total Dutch environmental burden on the planet is increasing. Gains in pollution control are being overtaken by volume growth, mainly associated with resource and land consumption.[253]

What happens to a global eco-tax proposal that *would* be fair? Consider the eminently just scheme of Indian environmentalists Anil Agarwal and Sunita Narain made at Rio — to base the initial allocation of tradeable permits in greenhouse gases on the basis of population.[254] India and China would then get the lion's share and the advanced industrial economies, responsible for 75 per cent of emissions, would have to purchase a lot of permits from the South, settling some of the ecological debt accrued through a century of carbon dioxide generation. The wealth transfer to the South could be anywhere between $480 billion and $1 trillion, depending on the tax model adopted — equitable but an idle fantasy in today's world.

Would green taxes raise sufficient income to fund needed environment budgets?

Green tax economists engage in permanent debate about the "power" of a tax needed to achieve a given cut in resource use or pollution. Yet there is general agreement on one issue — these taxes should be made "revenue-neutral" by introducing offsetting cuts in taxes on wages, profits and employers' social security contributions.

However, if the overall tax take remains unaltered then the introduction of green taxes leaves unaddressed a central reason for the ongoing environmental crisis — *the*

housing stock in Europe — wouldn't have been able to afford to keep warm in winter.

In Alaska a tradeable permits system that was designed to restrict the depletion of haddock soon drove the smaller fishers, including those Indians for whom haddock fishing provided subsistence, out of business and into a sub-contractor status for the large fishing companies.[249]

It's also hard to avoid the conclusion that some green taxes are directly designed by central governments to undermine the ability of local (and often more radical) authorities to implement their program. As applied by the Tory government of John Major the UK landfill tax fits squarely into this category. It was estimated to have cost local councils £150 million in 1997-8, with only £30 of this being recycled as cuts to employment and social security charges.

In the South green taxes deepen class divides even more. The majority of water permits issued under a Chilean scheme ended up in the hands of the rich farmers. Little wonder that at the sixth session of the Commission on Sustainable Development in early 1998:

> There was a spirited exchange of views on the desirability of full-cost pricing of water. Some participants stressed that water was primarily a social good and that full-cost pricing would be socially inequitable, particularly in developing countries. Others emphasised that movement towards full-cost pricing, with provisions for meeting basic needs, was an essential mechanism to promote the efficient use of limited water supplies and to mobilise resources to finance the extension of drinking water and sanitation infrastructure.[250]

Moves to remove environmentally damaging subsidies can also, if regarded as the sole or even main treatment for resource depletion or pollution, undermine the position of the poorer producers. For example, in many Third World countries irrigation is typically supplied free-of-charge or at a very low fee, a procedure that promotes water wastage on a huge scale. However, moving to full cost pricing would ruin many producers.

Already, where water markets exist, double exploitation of the resource *and* the poorest users can result.

> In India's southern state of Tamil Nadu, well-owners pump groundwater, sometimes with the benefit of subsidised electricity, and sell it to intermediaries who in turn sell it to poor households lacking a piped water supply. The poor thus gain access to water, but may pay as much as 10 times more for it than wealthier households connected to the public water system.[251]

The international trade in toxic waste provides graphic confirmation of the devastating results of green tax evasion. The advanced capitalist world produces 90 per cent of the

The poor also pay environmentally:

> The very first pollution trade made under the 1990 Clean Air Act allows plants belonging to the Tennessee Valley Authority (TVA) and Pittsburgh's Duquesne Light to increase their sulphur dioxide emissions. These allowances were bought from Wisconsin Power & Light, which can afford to operate without them. Is it any surprise that in the counties surrounding the TVA plants the minority population is proportionately seven times larger than in Wisconsin? That the percentage of people living in poverty is nearly twice as high?
>
> There are no simple ways to locate the point at which a pollution market can fairly be said to be "properly designed".The Clean Air Act had hardly come into effect when Long Island Lighting sold pollution rights to AMAX Energy of Indianapolis. AMAX passes them along to utilities as incentives to use its high-sulphur coal. The utilities, burning that coal, will send acidic plumes that drift over the Adirondack Mountains, an area the Clean Air Act was specifically intended to protect.[247]

The 1990 California "feebate" scheme to rebate cars with higher than normal fuel efficiency and impose a fee on less-than-efficient models wouldn't have just caught the Ferraris and Lamborghinis. The biggest impact would have been on working families with no choice but to drive their old Fords to and from work and the supermarket. The same objection holds for the vehicle-miles-of-travel (VMT) fee of three cents a kilometre proposed for Southern California and for road pricing systems that squeeze poorer drivers off the tollways.

The most dramatic recent illustration has been the ability of Britain's private water companies to increase water and sewerage provision costs under the guise of passing on the cost of maintaining and improving watersheds and equipment. Between 1989 and 1995 real price rises averaged 39 per cent for water and 37 per cent for sewerage, with the result that in some areas pensioners and single parents living on social welfare were paying as much as *nine per cent* of their income for these services.[248]

Champions of such taxes are always quick to point out that some of the revenue gained can always be devoted to compensating those upon whom the cost most falls, but it's difficult to find any examples in the real world. This is not only because it's hard to draw dividing lines between those who are "worse off" and everyone else, it's also because compensation will tend to undermine the environmental purpose of the tax (for instance, to force people to consume less energy).

Clearly, green taxes, like their traditional cousins, inevitably reflect or intensify the inequalities of the economies within which they are applied. If the 1994 UK proposal of an eight per cent hike in value-added tax on domestic fuel had not been defeated by the political outcry, some seven million households — Britain has the worst-insulated

> efficiency, and lower government spending respectively, without a second thought about the effects of this policy on capital overproduction on a global scale — of the type Karl Marx identified long ago — not to speak of the dangers of bitter trade wars, creative forms of beggar-my-neighbour policies, growing social decay, political instability, and regional trading blocs. Put another way, there is no global parliament to pass minimum wage laws and protective legislation, no World Ministries of Labour or Social Welfare, no World Ministry of Environment, no legitimate power spreading Keynesian economic literacy on an international scale … The prospects of global regulation today, organised in a truly cooperative spirit, are as poor as those of national regulation during the crisis of the 1890s, namely, zero.[244]

Such is capitalism today: *a world system of competing national capitalist powers in which the advanced capitalist nations (the "centre") exploit, and distort the development of, the South (the "periphery")*. Within it those countries that are trying to claw their way out of underdevelopment are compelled to undercut each other for the status of preferred raw material suppliers, sub-contractors and assemblers to the big multinational corporations based in the imperialist Triad of the US, Western Europe and Japan.

The world price of a commodity like tropical timber is simply too low (90 per cent of the value of tropical timber accrues to consumer countries) for the burden of even minimal environmental taxes to be endured for very long. In this connection decisions like the 1998 Indonesian government move to cut its export tax on timber from 200 to 30 per cent in the wake of the 1997 Asian economic crisis says more than a dozen essays on ecotaxation.

Who pays?

This issue is directly linked to that of green tax evasion, for if the polluter doesn't pay through evading a green tax, someone else will. The "polluter pays" principle has been on the books of bodies like the OECD and European Commission since 1972, albeit in a watered-down version that basically makes the polluter responsible for pollution produced after the date of adoption of the principle. Yet polluters can often offload some or all of the cost of a green tax onto other parties — consumers, communities or entire countries.

For instance, a $100-per-ton carbon tax in the US would use up on average 3.7 per cent of the spending budget of the poorest 10 per cent of households, but only 2.3 per cent among the richest 10 per cent.[245] A 1991 British study predicted that a $10 per barrel (seven cents a litre) carbon tax would reduce overall household consumption by 6.5 per cent while cutting the consumption of the poorest 20 per cent of households by 10 per cent.[246]

> "stable" political climate. Well, soon enough, the party was over. What has remained are skyscrapers, fancy hotels and an élite habituated to Western consumption styles, but otherwise widespread destitution, a devastated natural environment and political instability. Neighbouring Ghana, the current darling of the international financial institutions, is going down the same track. The Solomon Islands, much smaller than Ghana and the Ivory Coast, destroyed their forests at such a rate that even the IMF became nervous and admonished the country to adopt a more cautious pace.[239]

Perhaps the World Trade Organisation could calculate annual global externalities associated with each product and have these paid for by those who benefit most from the fact that they are "not reflected in social marginal cost" — the advanced industrial economies? Not if the banana trade is anything to go by. When a European network of NGOs worked with banana producers to reform the European banana-importing regime in favour of bananas produced in a "fair" and sustainable way, the proposal was blocked by the European Commission: such a reform would have been contrary to current WTO rules which forbid discrimination on the basis of the way products have been produced.[240] In 1998 the WTO itself ruled against a US law forbidding the importation of shrimp caught without a device protecting endangered sea turtles.[241]

And what about the position of economies that have imposed energy taxes unilaterally? Are they able to impose compensating tariffs on imports produced without energy taxes ("border tax adjustments"), in order to protect themselves from competition? The WTO rules are unclear.[242]

None of this is surprising. The basic goal of the WTO is to deregulate international trade in the interests of multinational corporations. To accomplish that goal, all WTO agreements spell out what governments can't do under pain of severe sanction. The only WTO agreement that doesn't take this form is that concerning Intellectual Property Rights (IPR), which *requires* all signatories to pass national legislation entrenching protection of capital's patent rights.[243]

Theoretically, it would be possible to create a more stringent global green tax regime if there were world institutions capable of enforcing them. Under such a "green Keynesian" set-up, economies that won "unfair advantage" through breaking agreed standards would be punished and countries with socially and environmentally benign policies rewarded.

However this global Keynesian "state":

> … is in the hands of big capital in general and finance capital in particular. Hence, with the exception of G7's attempts to lower interest rates and stimulate demand in countries with export surpluses (especially Japan), the "global state" follows an anti-Keynesian policy, one that forces individual capitals and whole countries to cut costs, increase

> ships, and reliably identifying where and how the tuna was caught is almost impossible.[234]

Where environmental laws are strong on paper but unenforced (the former "communist" countries) or simply weaker (the underdeveloped world) capital will always be tempted to flow out of its existing centres of operation in search of a better rate of return, typified by the lines of *maquiladora* (assembly) plants on the Mexican side of the super-polluted US-Mexican border.

> In the city of Mexicali, near the California border, more than a quarter of the factory operators surveyed in the late 1980s said that Mexico's lax environmental enforcement influenced their decision to be there and a 1995 report found that roughly a quarter of *maquiladora* hazardous waste — some 44 tonnes daily — could not be accounted for, presumably because it is dumped in ditches.[235]

While some claim that there is no convincing evidence of large-scale capital flight to "pollution havens" so far,[236] it's clear that in a world economy marked by increasing capital mobility, any tax which cuts into profits past a certain point must drive investment abroad, especially where new plant is concerned.

For example, in its submission in the discussion over the UK landfill tax, the Confederation of British Industry, representing big business, laid great stress on the need to maintain international competitiveness, emphasising as well that the tax should not reduce Britain's "natural advantage" over other European countries in still having land suitable for landfill.[237]

In the absence of any ability to enforce uniform green taxes internationally, the degree to which national economies can afford such taxes becomes constrained by the competition from economies with lower (or no) green tax burdens. So those economies that have gone furthest in adopting energy and other green taxes — the Scandinavian countries and the Netherlands — grant exemptions for uses that most affects the cost structures of their major industries, like electricity generation and use (Sweden and Denmark), natural gas use (Norway and Netherlands) and domestic and overseas transport fuels (Finland and Norway). The Danish government is presently demanding that Germany increase its taxes on petroleum and diesel to reduce the temptation on energy-dependent Danish companies to cross over the Danish-German border.[238]

Factor Four devotes half a chapter to the issue of green tax evasion, and this inevitably draws attention to the environmental havoc wreaked by unequal exchange between the imperialist centres and the underdeveloped world:

> When the Ivory Coast in the two decades following independence sacrificed much of its natural treasures to the production of cash crops and other export commodities, the young nation became a hero of the international banking community. Here was a country "taking off", enjoying a stable currency (linked to the French franc) and a

been eliminated in the advanced industrial world, a thriving black market for Russian-produced CFCs still challenges the policing arrangements established under the 1987 Montreal protocol.

In the case of lead in petrol the trading permit regime that operated among US petrol refineries produced savings to refiners of about $228 million as they moved to meet Environmental Protection Agency targets for phasing lead out of petrol. However:

> Given the success of this market in promoting cost savings over a period in which lead was being produced, it is important to understand why the market was successful. The lead market had two important features, which distinguish it from other markets in environmental credits. The first was that the amount of lead in gasoline could be easily monitored with the existing regulatory apparatus. The second was that the program was implemented after agreement had been reached about basic environmental goals. In particular, there was already widespread agreement that lead was to be phased out in gasoline. This suggests that the success in lead trading may not be easily transferred to other applications in which monitoring is a problem, or environmental goals are poorly defined.[233]

As already noted, successful environmental taxes also depend on the existence of a stable relationship between the tax base and pollution, but relationships that appear stable can become highly unstable once a tax is introduced and the targets look for ways to avoid its impact. For example, a household refuse system in Norway which required householders to get rid of their garbage in special sacks that had to be bought backfired because householders either overfilled the sacks or dumped their refuse illegally. There are also fears that the UK landfill tax will produce an epidemic of uncontrollable "fly-tipping".

The fishing industry provides a particularly stark example of enforcement failure. In 1992 it was estimated that up to 80 per cent of fish sold in New Zealand passed through the black market, evading the permit system. According to a 1993 Greenpeace report on the world tuna industry:

> Literally hundreds, if not thousands, of fishing ships operate without any monitoring or control at all. They use flags of convenience to avoid regulations, or change their names to avoid inspection … The vessels are able to move from ocean to ocean very quickly when necessary, mixing tuna caught in different regions and using different methods. For example, a boat can fill most of its hold with tuna caught in areas where there are no observers and control, and then "launder" its catch by a brief trip to the eastern Pacific, where there are inspectors and controls … Once the tuna arrives in port, it is further mixed with tuna from other ships, coming from other areas. By this point, buyers have an enormous choice of tuna, caught in different areas by different

car production and highway infrastructure. In 1991 the *Financial Times* celebrated the possibility of the old "communist" world providing a "Potential Market of 420M" cars (there are presently 501 million cars *worldwide*).[228]

> Hilary F. French describes the global situation for the automobile multinationals: The major multinational automobile companies, for example, *plagued by saturated markets in the industrial world,* are salivating over the "emerging markets" of Asia, Eastern Europe, and Latin America. Some three quarters of the auto factories projected to be built over the next three years are expected to be in emerging markets. European, Japanese, US and South Korean companies are competing aggressively to build these plants. General Motors recently sank some $2.2 billion into a "four-plant strategy" to build nearly identical plants simultaneously in Argentina, China, Poland and Thailand. And nine of the world's major automakers — including Ford, General Motors and Mercedes-Benz — have set up shop in India in just the last few years. If these countries develop auto-centric transportation systems along the lines of the US model, the consequences for local air pollution, climate change and food security will be serious indeed. (Emphasis added.)[229]

What green tax regime could conceivably arrest the spread of the ongoing ecological catastrophe that is the motor car, the "commodity that is eating the world", which as a provider of mobility has been compared to "using a chainsaw to cut butter"?[230] Does anyone seriously suggest that the multinational car corporations — overwhelmed with excess capacity and in many cases operating on paper-thin margins — can suspend their century-long push to convert everyone into a car-owner, or their entrenched hostility to public transport, just because our planet is choking to death? At the same time as General Motors talks greenwash at home its cars for the Chinese market will not even have catalytic converters.[231]

If we take global warming, it's not surprising that eco-tax enthusiasts like the Worldwatch Institute's Christopher Slavin and Seth Dunn can point to only one energy tax regime that has actually reduced carbon emissions. This is the Dutch carbon tax, which has the least exemptions of all existing energy taxes and in 1996 was cutting carbon emissions in that country by two per cent a year.[232] However, even that tax had weaknesses that are touched on later.

Green tax evasion

Like any tax an eco-tax must be enforceable. This was an easy affair, for instance, in the US oil industry where the amount of lead in petrol could be readily monitored. It has been reasonably easy with CFCs, where production of the pollutant is restricted to a small number of companies and outlets. Yet, even while CFC production has practically

> energy consumed for these purposes is increasing by two per cent per year. The technical efficiency of the car improves by 1 to 1.5 per cent per year, but this is outstripped by growth in travel (2 to 2.5 per cent per year) and the upgrading of vehicle power (0.5 per cent per year). As a result of these types of trends, European energy consumption has increased by 40 per cent since 1970. The extent of built-up land has doubled, and so on.[226]

Indeed, taking capitalism since 1900, the only force to date that has been able to stop the exponential growth of materials use and pollution has been *recession*.[227] For example, the catastrophic collapse of the Russian economy between 1990 and 1996 saw carbon emissions simultaneously fall by 30 per cent.

If we look at the history of the industrialisation of nations, it has certainly been true that each newly industrialising economy has been more efficient than its predecessors because of the "leap-frogging" impact of new technology. However, this heightened resource efficiency has *in no case* been reflected in lower rates of resource usage and pollution output for a given rate of growth. Rather the universal pattern is that the newly industrialising capitalist economy exploits the advantage of newer technology to grow more rapidly and with greater overall through-put of natural resources. Such is the experience of the "miracle" economies of South Korea and Taiwan, which made the journey to full industrialisation more quickly — and at greater cost to the environment — than all their predecessors.

Enthusiasts for the new eco-efficient technologies, like the *Factor Four* authors, really can't afford to face these realities. They dream of a wholesale renewal of capital stock involving energy-efficient buildings, closed-loop industrial production and rapidly increasing application of renewable energy, but they can't answer such simple questions as: Could capitalism really survive if it made articles that lasted for 100 years and abandoned its relentless pressure to force up consumption (and/or military spending)? If the obsession with turnover is "nonsensical" why does every capitalist firm persist with it?

The world car industry is a case in point. While at home environmental concerns have compelled the Big Three car producers (Ford, GM and Chrysler) to accept some increases in domestic fuel taxes and they boast about their Supercar project (which is aimed at reaching fuel efficiency of three litres per 100 kilometres and producing half the carbon dioxide as today's models), in Eastern Europe they are behind the push to prune back the region's extensive railway network and build more motorways.

Eastern Europe has become a huge market for second-hand cars from richer Western countries. The car fleet is expanding at an annual rate of 10 per cent and the largest Western investments in the east (including the World Bank's) have gone into

produce declining resource usage and pollution at each round.

At the same time, the more energy-efficient technology becomes, the smaller will be the proportion of energy cost in the total cost, and the less important such cost will be in the consumer's decision to buy.

Moreover, if succeeding generations of refrigerators don't achieve the energy gains necessary to continue reducing their overall impact on energy usage, *they will still have to be sold.* The manufacturers can't abstain from profit-making simply because their rate of resource productivity gain is falling after its initial leap forward. And if the rate of return in refrigerators isn't high enough capital will turn to other product lines, polluting or not and the organised and relentless pressure of the "sales effort" will fight any slackening of consumption.

There is, at the very least, no *prima facie* reason to agree that "progress in efficiency is likely to speed up and ultimately to exceed all potential market expansion for commodities"[222] and to continue to do so, as it must if the "win-win result" of stable profit rates and declining resource use are to go together. This is true even if we concede that there is a logjam of energy and resource efficient prototype products and processes *presently* awaiting a green tax regime to attract trillions of dollars of investment.

There's certainly no evidence for it in trends to date. While we should certainly always be wary of the vice of extrapolation, it's surely significant that since the 1980s oil crisis no gain in energy efficiency has gone into reduced total energy usage. For example, between 1980 and 1994 energy efficiency for the OECD countries, as measured by GDP output per kilogram of oil equivalent, more than doubled — from $2.4 to $5.5 — while per capita energy use rose from 4339 to 4503 kilograms over the same period.[223]

In fact, the increase in Japanese energy efficiency between 1980 and 1994 *facilitated* an increase in energy use. Businesses as a whole reacted to increases in oil prices by more than tripling energy efficiency between 1980 and 1994 at the same time as *increasing* commercial energy use from 2972 to 3825 kilograms per capita and with it greenhouse gas emissions. Between 1990 and 1996 these rose by 13 per cent, even as German and UK emissions stabilised. At the same time carbon emissions in developing countries were 44 per cent above 1990 levels and 71 per cent above 1986 levels.[224]

Similar trends have emerged in US consumption of cars, houses, plastics in cars, bottles and cans, lead batteries, car tyres and mobile phones.[225] For Western Europe over the past 25 years material and energy efficiency has improved greatly.

> Typically, however, these gains have been more than outstripped by absolute increases in consumption. For instance, the efficiency of building services (lighting, heating, cooling equipment) is increasing by about one per cent per year, but the quantity of

None of this is surprising. Total growth always potentially offsets efficiency gains unless the goal of a green tax is the *definitive elimination* of the pollutant from the environment. While some level of pollution is allowed to enter the environment the intended reduction can always be negated and *the more expansionary the dynamic of the economic system, the greater the likelihood of this result*.

Capitalism is *nothing* if not expansionary. Once existing markets become saturated the rate of return on investment inevitably falls. This dictates permanent creation of new "needs", the unending stimulation of acquisitiveness and planned obsolescence — all driving ongoing expansion of the scale of production and ever-rising resource usage and pollution. Any interruption to this process can only take the form of an economic crisis. So, whatever the gains made at a local level, green taxes face a permanent uphill struggle to keep resource use efficiency growth ahead of total resource use growth.

The *Factor Four* authors are aware of this reality, conceding that "shrinking turnover may repel rather than attract capital that is seeking profitable investment". They reply:

> Some of the efficiency gains are indeed achieved by doing away with nonsensical turnover. But that would not in itself mean that capital cannot be interested. After all, it was the business world itself which moved from the old-fashioned obsession with turnover to the lean and profitable firm, recognising that what matters is not the top line (total revenue) but the bottom line (net profit). More important, the better part of the examples [given in the opening chapters of *Factor Four*] are fully compatible with market expansion — to meet the needs of thousands of millions of people under conditions of limited resources.[220]

Why?

> If global economic growth averages three per cent annually, resource productivity would have to increase at an annual rate above three per cent if we were to win the race. Given the proven potential in many sectors for productivity gains above 300 per cent (which is the percentage meaning of a factor of four), annual increases of 4-5 per cent would not seem an unrealistic hope, and in various times and places have already been achieved …[221]

Yet concede, for argument's sake, the *Factor Four* case that there is some nice profit to be made in meeting demand for a new generation of refrigerators embodying energy efficiency gains of at least 300 per cent. But operations for private profit can't stop there. To keep profits flowing, consumers have to be convinced to buy the following generation of energy-efficient refrigerators and for this whole process — involving recycling and scrapping the first generation and installing the next generation — to remain ecologically sustainable the resource efficiency gain has to be large enough to

1970 world energy production continues to rise inexorably. The World Energy Council (WEC) projects increases in energy demand between 1990 and 2020 of between 30 and 98 per cent, with the 30 per cent figure derived from what it calls its "ecologically driven" scenario.

> [This] assumes a very high annual improvement in energy efficiency, a massive transfer of energy-efficient technology to those nations without it, and, consequently a very low increase in energy demand among developing countries over the next 30 years. In addition, this scenario presumes an accelerated switch to natural gas and renewable energy sources.[214]

Clearly, the impact of a 30 per cent increase in energy generation on global warming will depend critically on the rate of uptake of non-traditional renewable energy technologies (solar heating, photovoltaic, wind, geothermal and tidal). This is increasing rapidly, but from a very low base. Less than two per cent of global energy comes from such sources and a detailed study by the WEC projects they will contribute less than four per cent by 2020 if current rates of implementation continue.[215]

In California, the site of many of *Factor Four's* examples of the most imaginative uses of green taxes, energy use overall has *increased* since the early 1980s, even though there has been "modestly decreased electricity use per capita".[216] A US study of households whose homes were insulated in 1982 found that 49 per cent of them did not use less energy as a result.[217]

The same trend holds for toxics. The latest US EPA report states:

> American industry continues to generate more toxic waste each year. In 1995, industrial companies covered by the report generated 35 billion pounds of toxic waste, three per cent more than the previous year and seven per cent more than in 1991. Some 2.2 billion pounds of these toxic chemicals were released into the air, land and water in 1995. Moreover, manufacturers' reliance on deep injection wells to dispose of toxic chemicals — a cheap way of dumping wastes on site which poses potential hazards to underground drinking water supplies — jumped nearly 20 per cent (an additional 24.5 million pounds). Furthermore, according to a 1991 report by the National Academy of Sciences, it is estimated that American business annually produces some 4.5 billion *tonnes* of hazardous waste, *an amount equal to 48,000 pounds (or 100 pounds daily) of hazardous waste for every man, woman and child in the United States.* (Emphasis added.)[218]

Even 3M Corporation, which with its "Pollution Prevention Pays" (3P) plan is trumpetted as the US pioneer in corporate pollution prevention, while claiming a reduction in pollutants released of 33,000 tonnes a year between 1975 and 1989, actually increased its total output of pollution because of increases in overall production.[219]

producers which, in the most expensive lobbying effort ever, successfully squelched Clinton's 1993 proposal for a very mild energy tax. Similarly:

> Within the European Union, the proposal for a community-wide carbon-energy tax, designed to be the centre-piece of EU climate policy, was also weakened by excluding energy-intensive industries and making the tax conditional upon the adoption of similar measures by industrial competitors such as Japan and the US. The weakening of the tax is explained by a potent combination of concerns over competitiveness, heightened amid global recession, and some of the fiercest lobbying ever seen against an EU proposal by the fossil fuel industries.[211]

Sometimes targets for green taxes do get determined a bit realistically and the consequences, in the real world of profit-making, speak volumes. For instance:

> One of the most innovative tax initiatives to date appeared in the heavily polluted state of Louisiana in 1991. The state government began grading petrochemical and other companies on a scale of 50 to 100, based on their history of compliance with environmental laws, the number of people they employed for the amount of pollution they generated, and related factors. Companies with low scores lost up to half the standard tax deduction for new investment. In the first year, 12 firms agreed to cut toxic emissions enough to lower the state's total by 8.2 per cent. Many of the pollution reduction plans cost the companies more than they earned in tax credits, showing that the fear of a tarnished public image was giving the tax system added kick.[212]

Despite the modest reduction in total emissions achieved, this tax was so irritating to big business in Louisiana that it campaigned to have it repealed. The tax was removed from the statute book in 1992.

What impact have resource efficiency gains had on total resource depletion & pollution?

The next issue to assess is whether gains in resource efficiency (whether due to green taxes or not) have been offset by an increase in total resource usage or pollution emission.

Telling here is the consistent failure of the advanced industrial countries to meet targets for reducing smog-causing nitrogen oxide emissions. Because nitrogen oxides largely come from cars, rising fuel taxes and increased fuel efficiency have failed to offset the increase in total emissions, which continued to rise from 1988 to 1994, even as sulphur dioxide emissions declined slightly.[213] Increased fuel efficiency went into increased overall consumption — in cars constructed (two for every new-born child!) and kilometres driven.

Despite energy efficiency in the advanced industrial world roughly doubling since

> sustainability of the water environment, agreeing to implement an abstraction-charging [payment for water removal] scheme which even approximates to the prescriptions for efficiency. If long-run river-flow enhancement costs were employed as the charging base, abstractors in the southern and eastern parts of England would face charges at least 10-20 times higher than the present, and in some areas an increase approaching 100-fold would be likely.[208]

As the *New York Times* reported before Kyoto:

> Many experts believe that it is already too late to avoid serious climactic disruption, that the task ahead is one of keeping it from becoming truly catastrophic. The reason, [they] say, is that the world's economic and political systems cannot depart from business as usual rapidly enough.[209]

These facts of life cannot be conjured away with the *Factor Four* argument that national capitalist economies with higher energy prices tend to be more efficient or that their proposed green tax rate increase would be "imperceptible". First, the role of high energy prices in making Japan and Switzerland more efficient economies than the US (if this is still true) begs the question as to how much, if at all, this is due to higher energy prices and whether every economy would benefit from having higher energy prices foisted upon them.

Second, even if it could be proved that "the economy" stood to gain from higher energy prices, this would not hold for many of the economy's most important individual capitalists. In an economic universe of excess capacity and massive downward pressure on costs, energy-dependent big corporations will move heaven and earth to ensure no green tax undermines their global competitive position. As McKinsey consultants Noah Walley and Bradley Whitehead wrote in the *Harvard Business Review*:

> While tough environmental standards may yield significant positive results for the economy as a whole, individual companies will actually be battling increasingly complex environmental problems at a much higher cost than before … Companies are already beginning to question their public commitment to the environment, especially since such costly obligations often come at a time when many companies are undergoing dramatic expense restructurings and layoffs.[210]

The green tax utopians, like the *Factor Four* authors, bedazzled by the *long-run* benefits to the economy that their models often show, forget that competing capitalists operate, and mostly have to operate, in the short run: they cannot sacrifice their concrete immediate interest to the imaginary general good of "the economy".

Thus, it was the Ford Motor Company which in 1990 induced the governor of California to veto a fuel economy incentive system that had already been passed by the state legislature and it was a cabal of the major US manufacturers and energy

gas reduction targets. By 1997, at Kyoto (COP3) the US, which emits 23 per cent of all greenhouse gases, proposed a global emissions reduction target of a mere five per cent below 1990 levels by 2012. The final agreement was for an average global cut of 5.2 per cent.

Even this token target is proving very difficult to translate into reality. At the Buenos Aires Conference of the Parties (COP4) there was no agreement on why the targets for the industrialised groups of countries were so inadequate. Big greenhouse gas emitters like the US blamed non-participating countries like Russia, and newly industrialising countries blamed industrialised economies for their poor efforts to date. The "review of adequacy", aimed at establishing what long-term level of greenhouse gases was sustainable, simply didn't take place.

While the Clinton administration finally signed the Kyoto agreement at Buenos Aires it made no serious commitment on reducing greenhouse gases due to electricity generation, and none at all on those due to road transport. So while Rio's global warming convention still has a roadmap and a process, *it falls further and further behind where it needs to be*.

In 1991 ecotaxation expert Scott Barrett had already noted:

> While it is difficult to compare the estimates from one study with those of another, the qualitative story is pretty clear. To lower carbon dioxide emissions very substantially would require a large carbon tax — larger, certainly, than the taxes already implemented, or for which there exist firm proposals.[206]

Jean-Philippe Barde, the principal administrator of the OECD's Environmental Directorate agrees:

> We are in a "grey" area where most existing environmental taxes, including carbon taxes, are still fairly small. If we want environmental taxes to be really effective and efficient, their level must increase significantly. Carbon taxes are a case in point: in OECD countries, even a moderate carbon tax of $50 per tonne of carbon would raise approximately $150 billion (based on 1990 carbon emissions) — i.e., about 2.5 per cent of the total OECD tax revenue. Stabilising carbon dioxide emissions at 1990 levels by the year 2050 would necessitate much higher taxes. Clearly, such tax levels would imply significant economic effects and restructuring, even in a revenue-neutral perspective. The prospects for significant increases in eco-taxes are far from clear for the time being.[207]

Similar impossible choices would confront a government that wanted to force privatised water supply companies to cover the costs of maintaining and repairing Britain's watersheds and rivers:

> There is little prospect of any government, however committed to the long-term

lowered their discharges only in response to a number of regulations introduced by government over the past five years".[201]

The conditions for success for a green tax simply don't apply to the world's major polluting and resource-devouring industries. Here eco-taxes that would make a difference would have to hurt. For example, an eco-tax which aimed at "internalising the externalities" of the US car industry would involve removing subsidies ranging, according to one 1993 study, between $380 billion and $660 billion a year — roughly between seven and 12 per cent of national product, or $1500 and $2700 for every man, woman and child.[202]

That's because, according to G. Tyler Miller:

> In the United States one of every six dollars spent and one of every six non-farm jobs are connected to the automobile or related industries such as oil, steel, rubber, plastics, automobile services and highway construction. This industrial complex accounts for 20 per cent of the annual GNP and provides about 18 per cent of all federal taxes.[203]

A recent Danish study of the level of tax needed to fully "internalise the externalities" of passenger car use came up with a real cost of driving a car of 70 cents a kilometre, only seven cents of which related to owning the car and 63 cents of which related to driving it. Assuming the car was driven 200,000 kilometres over 10 years, then covering external costs would require a vehicle tax of $4000 and a fuel price of $5 a litre![204]

If the US chemical industry were forced to pay the cost of destroying all the toxic chemicals it now discharges into the environment, the annual cost (in 1986 figures) would be $20 billion, 7.5 times its yearly after-tax profit of $2.6 billion.[205]

Clearly, designing green taxes and tradeable pollution permits is no more a technical exercise than designing any tax. How such decisions will be made will have everything to do with the relative strength of the contending parties — in the case of a carbon tax, the oil multinationals, the energy-dependent big corporations, the governments that represent them, the Organisation of Petroleum Exporting Countries (OPEC), non-OPEC oil-exporters and the rest of the countries of the South.

Here the fight to reach agreed targets and an international permit system for tackling global warming has been instructive. The consensus of the 2500 scientists who make up the Intergovernmental Panel on Climate Change (IPCC) is that the Earth's average temperature will rise between 0.8 and 3.5°C during the next century, causing rising sea levels, severe storms, increasing desertification and epidemics. To halt this trend greenhouse gas emissions *have to be cut rapidly by between 60 and 80 per cent and stabilised at that level.*

Yet, only by the 1995 Berlin Conference of the Parties to the Rio global warming convention (COP1) was the US government forced to accept the *concept* of greenhouse

green tax doesn't require establishing a precise value for the "externality" that it is designed to address, and implementation of the tax can proceed by trial and error, market-based decision-making over the environment cannot take place unless *some* values are assigned to environmental costs and benefits. Yet the very concept of "valuing environmental services" is fraught with problems, both of principle and in practice. We look at these issues in the section "Can 'social marginal cost' be established?" (See page 165.)

Box 2 shows the best achievements green taxation can boast to date. Recent OECD summaries of experience with environmental taxation in OECD countries[197] have revealed significant environmental improvement in only a few cases, confirming the findings of a 1989 study by Robert Hahn.[198] There is no mystery here; for no private firm or industry is going to take lying down a tax set to meet a target rate of reduction in resource depletion and pollution that excessively undermines profits. Tax rates simply have to be set within a band that keeps the bulk of companies in business and allows them to turn their investment towards more resource-efficient and less polluting equipment at their own pace.

The recent debate in Britain over the rate to apply for a landfill tax tells this story clearly enough. While Friends of the Earth proposed a tax of £30 ($48) a tonne of waste in order to provide a strong recycling incentive, the Advisory Committee on Business and the Environment proposed a rate beginning at £8 ($12.80) a tonne and rising to £12 ($19) a tonne after two years. Yet, according to a 1993 Coopers and Lybrand report, even a £20 ($32) a tonne tax would lead to only 12 per cent recycling, although there would be a greater shift to incineration. The tax rates finally levied were £7($11.20) a tonne for standard waste and £2 ($3.20) a tonne for "inactive" waste which would not cause pollution. According to one sober assessment, "there is some evidence to suggest that the tax will not achieve its aims, particularly in the minimisation and recycling of domestic waste".[199]

What success stories there are fall into two basic categories: those where polluting technology was already on the way out, like chlorofluorocarbons (CFCs) and sulphur dioxide, and those where consumers could readily change their spending behaviour. In both cases substitutes were available or coming on line. For example, when a tax differentiation between three categories of diesel fuel was introduced in Sweden in 1991, it led to "clean" diesel's share of the market rising from one to 60 per cent within two years. [200]

At the other end of the scale, the fees paid under British Colombia's "sustainability fund" are capped so that total income doesn't exceed $15 million. As a result "the current fee structure has changed behaviour only on the margin" and "most permittees

the tax affects prices, and how prices affect the demand for alternative fuels and energy conservation, keeping in mind that changes in demand will in turn affect the price of all forms of energy — often in a very volatile way — and that historical evidence of these relationships doesn't provide a sure guide to future behaviour.

A 1991 UK study found that the rate of carbon tax needed to obtain a 20 per cent reduction in emissions — only one third of that needed to stabilise atmospheric carbon dioxide levels — ranged from 171 per cent to 23 per cent for coal, 134 per cent to 18 per cent for oil and 65 per cent to 9 per cent for oil, depending on varying but realistic assumptions about the impact of price change on demand.[193]

Or again, UK Treasury officials who appeared before the House of Lords' Select Committee on Sustainable Development had to concede that they "were not 100 per cent certain" about the response in car-driving behaviour that would result from increases in petrol excise tax.[194]

An "energy modelling forum" carried out by Stanford University in 1990 injected an $80 carbon tax into 14 different economic models, and came up with a change in carbon dioxide emissions of between –35 and +20 per cent! US economist William Nordhaus calculates that uncertainty about the degree and impact of global warming means that the "optimal" tax rate has to double.[195]

An apparently surer method of reaching a given reduction target is to use tradeable permits, which fix the amount of the resource that is to be used or pollution emitted and then allow permits equal to this total to be traded. But how is the market asset (the right to pollute) to be distributed at the outset? Should it be distributed equally among the "players", auctioned off, sold at a set price or distributed according to a more or less complicated rule?

When the US began its tradeable permit program for sulphur dioxide in 1990, existing polluters were given the right to pollute at or near existing emission levels, being sheltered by a device known as "grandfathering", by which permits are distributed in proportion to current pollution emissions and the oldest and dirtiest industries are preserved from having to pay "too much" for their right to pollute.

However, precisely because it remains hostage to the profitability of the most polluting, grandfathering can actually *slow down* the introduction of cleaner technologies by reducing the cost advantage for those that are thinking of building new facilities which embody the latest innovations.[196] Predictability is bought at the price of a lesser impact on pollution.

What lies behind the difficulty in establishing "the" optimal level of a green tax is the thorny question of how to establish "social marginal cost", and whether, indeed, this concept can be expressed in numbers. For while setting a rate for a particular

for business of adapting to them has not been as great as initially feared.[190]

Certainly, green taxes (and, equivalently, the removal of anti-environmental subsidies, estimated at $650 billion a year at least for the world economy[191]) can cut back pollution and resource depletion — if five conditions can all be broadly met.

- Tax rates are high enough (or, in the case of tradeable permits, the number of permits low enough) to meet targetted cuts in resource use or pollution *per unit of output.*[192]
- The cuts achieved in resource use or pollution emission per unit of output aren't offset by any increase in *total* resource use or pollution emission;
- Resource-depleting and polluting activities aren't shifted outside the area where the tax applies;
- The funds raised are large enough, when combined with funds from other sources, to finance sufficient investment in sustainable technology across all industry, as well as funding the budget needed for cleaning up pollution and accumulated environmental degradation;
- A strong enough alliance in support of the taxes is built, as was *not* the case with the 1994 UK domestic fuel tax, which had to be withdrawn because of popular protests, nor Clinton's 1993 energy tax proposal, which was torpedoed by corporate opposition, but has been possible in Denmark where social democratic governments have enjoyed the support of the left wing Enhedslisten (Red-Green Lists) for their green taxation legislation.

Can these conditions generally be met under today's capitalism? What follows is a survey of experience to date. While the evidence is considered in the same order as the five conditions just stated, the key interconnections among the various elements are also drawn out.

What tax rate?

Every tax has to be set at a rate and given a basis (weight, value etc). This starts off as a more or less difficult technical problem — even before the potential winners and losers from the tax come into the picture. Yet working out the likely environmental impact of a given rate of green tax is no simple business. For example, a carbon tax on coal would be expected to lead to some combination of increased use of fossil fuels with a lower carbon content (oil and natural gas), a switch to non-carbon energy sources (nuclear or renewables) and increased investment in energy conservation.

Potential margins of error are huge, starting with the reaction of the taxed capitalist firm to the tax. Will it decide to pay and carry on polluting at the old rate or introduce some form of abatement (and to what degree?). The end result will depend on how

> End-user real prices for energy and primary resources should increase by around five per cent annually for a period at least of some 20 years, preferably 40 years or more … the annual signal should be so mild that no capital destruction would result and that technological progress in average resource productivity can outweigh the price increase, thus leaving constant the annual average expenditures for energy and resources … Nonetheless, the same signal would be tremendously strong for technology development. Knowing that energy and resource prices will steadily go up by five per cent per annum for a very long period of time would serve as an extremely powerful motivation for managers and engineers to work on the efficiency revolution. Suddenly you would find hundreds of businesspeople snooping around for bonanza opportunities …[185]

Link 4. If we inject the productivity gains accruing from the introduction of these resource-efficient technologies into a "systems dynamic" model[186] of likely global developments in population growth, industrial production, raw materials usage and environmental pollution:

> A moderately optimistic development is obtained for the two per cent [productivity] gains assumption, and a truly attractive scenario [of rising food and industrial production and living standards matched by a falling rate of raw material usage and pollution] emerges from the four per cent gains assumption.[187]

Quod Erat Demonstrandum. The intelligent and flexible application of green taxes and charges at the micro-level will bring about the macro-result of global sustainable development via the accelerated introduction of environmental technologies.

Economic modelling supports this line of argument.[188] Typical was a 1994 exercise commissioned by the European Commission, which modelled three scenarios for the six largest European economies — a "reference scenario" based on environment policy already agreed , a "policy-in-the-pipeline" scenario incorporating all environment proposals that had been the subject of an EC directive, and an "integrated scenario" based on using ecotaxation and other measures to internalise environmental costs.

For 13 areas of environmental damage, the results showed that there would be an improvement between 1990 and 2010 in only three under the business-as-usual scenario, six if policy-in-the pipeline applied, but in 10 if the ecotaxation package were implemented. In this last case there would also be an increase of 2.2 million jobs if the income from the eco-taxes were fully recycled to business as a cut in their social security contributions. Nor would these gains come at the cost of lower growth. Indeed, under the integrated scenario growth by 2010 would be one per cent higher than otherwise.[189]

Is such a "win-win" scenario realistic? At face value two trends seem to make it feasible. Certain eco-taxes have been successful (see Box 2) and in many cases the cost

time as halving resource usage — a "factor four" increase in efficiency. This would not only lay to rest the spectre of resource depletion raised in *Limits to Growth* (the first Club of Rome report) it would also go a long way to fulfilling the main projections of Agenda 21, the program of sustainability adopted at the Rio Earth Summit.

The picture becomes all the more rosy when "leapfrogging" is taken into account: newly industrialising countries will simply jump over older generations of polluting technology presently in operation and adopt leading-edge clean and green techniques.

Embodying these technologies in the world's capital stock will certainly require a massive reform of what are seen as "market distortions", but this reform can be achieved without overturning the existing system of capitalism. The *Factor Four* authors write:

> The idea that much of the answer to unsustainable market activity is sustainable market activity may offend both those on the right who don't see why what they're doing is unsustainable, and those on the left who think markets and profits can't be used for good ends. If so, that may be the price of pragmatism. For abundant experience now emerging in diverse societies suggests a bonanza of market-based institutional innovations no less important than the technological innovations just described … *Perhaps the trouble with eco-capitalism is not that it has been tried and found wanting, but that it has not yet really been tried.*[181]

Factor Four spells out a by now common chain of argument, which has four links:[182]

Link 1. The key to sustainability is to make the technologies that will underpin it profitable while making polluting and resource-inefficient technologies progressively less profitable.

Link 2. This is economically feasible because, to take a key sector like energy as an example:

- fuel prices correlate negatively with fuel consumption (we observe a high, if long-term, price elasticity);[183]
- energy prices appear to correlate positively with economic performance, not negatively as conventional wisdom from the industrial lobby suggests: that is, cheap-energy economies tend to be wasteful and uncompetitive while dear-energy economies tend to be ingenious, innovative and highly competitive;
- higher resource prices are justified as a means of internalising external costs; and, best of all,
- a fourfold increase of resource productivity is technologically available and often cost-effective, so that no loss of well being must be feared from rising resource prices.[184]

Link 3. On the basis of existing experience with green taxes and economic modelling:

> income and savings, than with a will to move towards sustainable development. The spectre of an uncontrollable welfare state and an increasingly costly ageing population adds to the drive to shift the burden of social payments on to individuals according to need and to means.[180]

So ecotaxation has a role to play in neo-liberal "tax reform", but can it really push the private profit system any significant distance towards sustainability? A recent and complete expression of confidence comes in the latest report to the Club of Rome, *Factor Four: Doubling Wealth, Halving Resource Use,* by Ernst von Weizsäcker, Amory B. Lovins and L. Hunter Lovins. The authors argue that a reorganisation of taxes and the rules governing markets can stimulate private investment in resource-efficient, non-polluting technologies with the potential to double wealth creation at the same

achieved 80-100 per cent return of waste packaging and used containers in other OECD countries. Four per cent of government revenue comes from green taxation.

- In **Britain** lead emissions fell by 70 per cent in the decade to 1990 because of the widening gap between leaded and unleaded petrol.
- Pollution tax codes are also well-developed in the former bureaucratically planned economies of Eastern Europe as well as China, where they developed out of the previous approach of using fines to enforce environmental standards (at least in theory). In Poland revenue from these fines amounts to one per cent of total tax receipts. There are fewer examples from the developing world; the elimination of pesticide subsidies in Indonesia and ranching subsidies in Brazil are often mentioned as tax policies that have helped the environment in those countries.

Examples taken from David Malin Roodman, "Harnessing the Market for the Environment", *State of the World 1996,* Earthscan, London, pp. 168-88 and Gary Gardner and Payal Sampat, "Forging a Sustainable Materials Economy", in *State of the World 1999,* p. 56, Frances Cairncross, *op.cit.,* p. 64, Theodore Panayatou, "The Economics of Environmental Degradation: Problems, Causes and Responses", in *The Earthscan Reader in Environmental Economics,* Earthscan, London, 1992, p. 359. Other examples are summarised in T.H. Tietenberg, "Economic Instruments for Environmental Regulation", in *ibid.*, p. 275 and Timothy O'Riordan (ed.), *Eco-taxation*, throughout.

Detailed information is also available on various web pages on green taxation, such as the Environmental Tax Program Web Site at http://solstice.crest.org/sustainable/etp/, the Centre for Economic Justice's Green Tax Shift site at http://www.progress.org/banneker/shift.html#green and the Wuppertal Bulletin on Ecological Tax Reform at http://www.wuppertal-forum.de/wuppertal-bulletin/.

consume nature" and "under-consume people". The answer is a green taxation system: one that would reverse the trend to suck resources into the economy and squeeze people out of it.

The number and range of green taxes has increased rapidly in the 1990s, to the point that Timothy O'Riordan, the editor of a recent book of essays called *Ecotaxation,* can remark that it they are "now irreversibly part of the modern political and economic scene".[179] Yet how much existing eco-taxes are really driven by the desire to make the "sustainability transition" is open to question. O'Riordan comments that:

> … ecotaxation is a concept and a practice whose time has come. The reasons lie more with the prevailing spirit of letting markets work, no matter how imperfect, of encouraging deregulation generally, and of taxing by means other than striking at

Box 2: Some recent examples of ecotaxation

- The **Dutch** tax system for reducing industrial pollution of rivers and lakes has helped cut heavy metal emissions into the country's waterways by between 83 and 97 per cent. 5.1 per cent of government revenue now comes from green taxes.
- Both **Singapore** and the **US** met their targets for reducing CFCs by auctioning off limited and declining numbers of permits for producing the chemicals.
- In 1991 **Sweden** reduced total income tax by $1.65 billion (1.4 per cent of the total tax take) while imposing a tax on sulphur dioxide of $3050 per ton, followed by a tax on carbon dioxide of $120 per ton in 1995. A Swedish tax on the sulphur content of diesel fuel boosted the share of "clean" diesel in total diesel consumption tenfold in 18 months. A similar scheme targetted at nitrogen oxides reduced their emissions by 44 per cent between 1990 and 1993. Another success story has been the reduction in sulphur dioxide emissions through a system that reimburses a sulphur tax to producers in proportion to the quantity of sulphur they remove via end-of-pipe technologies.
- When **Indonesia** eliminated pesticide subsidies in rice production pesticide applications fell from 4.5 to 2.2 applications a year.
- Between 1988 and 1991 **British Colombia** Hydro raised the share of the most efficient industrial motors in mining and pulp-and-paper plants from 3 per cent to 60 per cent through a rebate scheme.
- In **Denmark** high landfill taxes have boosted building waste reuse from 12 to 82 per cent in eight years and high deposits for refillable glass bottles have boosted return rates to 98-99 per cent. Similar deposit-refund systems have

depleter will now operate at a level which is acceptable to "society" and the cost of the "negative externality" in question (unsustainable logging practices) will have been "internalised" in the offending firm's cost structure. Therefore, if governments impose high enough eco-taxes on a broad enough scale, business as a whole will convert its operations to sustainable technology and production fast enough to turn the tide of environmental decline.

It's a measure of the intensity of the pressure for a solution that such taxes, which in the 1970s were very minor tools of environmental management, are being advanced in the 1990s as *the major driving force* of the "sustainability transition". According to environmental tax expert David Malin Roodman:

> Like the gradual emergence of modern taxes on income, wages, and sales about a century ago, a great wave in the history of taxation is on the horizon. If it rises to its full potential — the elimination of environmentally destructive subsidies and the imposition of taxes and permit charges that reflect full environmental costs — it will create a trillion-dollar swing in the global tax burden in favour of environmental protection.[175]

Lester Brown agrees:

> We have a policy instrument, largely unused, for building an environmentally sustainable economy — namely tax policy. Governments now rely heavily on personal and corporate taxes for revenue, but these discourage constructive activities, such as work and savings. Meanwhile, taxes on environmentally destructive activities are typically negligible or nonexistent. The challenge is to restructure the existing tax system, decreasing the taxes on such constructive activities as work and savings and increasing the taxes on destructive activities, such as carbon emissions or the generation of toxic waste.[176]

This rapid move from minor sub-discipline to new orthodoxy reproduces the speedy acceptance of the work of John Maynard Keynes in the 1930s. Just as Keynes provided anxious capitalist governments under siege from socialism and communism with the justification for public sector deficit spending against unemployment, so "environmental economics" and ecotaxation equip their descendants with a rudimentary first aid kit for treating the symptoms of our epoch's great crisis.

Ecotaxation is the centrepiece of the US President's Council of Sustainable Development's 1996 document *Sustainable America: A New Consensus for Prosperity, Opportunity and a Healthy Environment*.[177] It envisages a new tax regime based on shifting the tax burden from labour to waste, and so winning a "double dividend" of reduced pollution and increased employment. Exactly the same outlook is contained in a 1993 white paper of the European Union.[178] In it, European Commission ex-president Jacques Delors states that current models of development tend to "over-

Appendix

Can Green Taxes Save the Environment?

By Dick Nichols

Ecological Marxism maintains that the root cause of the environmental crisis is the insuppressible growth dynamic of capitalism and that environmental sustainability can only be met by democratic socialist planning.

This is certainly not the outlook of most environmentalists today. They, along with the majority currents of most green parties, believe that one or other kind of green capitalism can reconcile economy and environment. As noted in the Preface, over the last decade environmentalists have expressed this viewpoint in a raft of pro-market books.

Yet embracing capitalism — no matter how green the vision put forward — saddles pro-market environmentalists with a difficult case for the defence. They have to explain exactly how a system that has consumed more resources and energy in the last 50 years than all previous human civilisation can be made to stabilise and then reduce its rate of resource depletion and pollution emission. How can this monstrously wasteful, poisonous and unequal economic system *actually* be made to introduce the technologies, consumption patterns and radical income redistribution without which all talk of sustainability is a sick joke?

Inevitably, one course of treatment plays a major role in all the different green capitalist cures on offer — green taxes or ecotaxation. Such taxes trace back to the work of A. C. Pigou, the father of conventional environmental economics.[172] This offshoot of orthodox economics analyses the environmental crisis as due to the "natural capital" of the environment being treated as a free or underpriced good. In this way the cost to society of an economic activity like logging (its "social marginal cost") diverges from its cost to the logging company (its "private marginal cost").[173]

The solution is to "get the price signals right": to impose some kind of green tax[174] which pushes private marginal cost up to social marginal cost. The polluter or resource

conditions that assure the blossoming of the creative abilities of all individuals and all peoples without destroying the global ecological system upon which all life depends. The alternative is a society in which the enormous productive potential of modern science and technology, subordinated to the irrational imperatives of the capitalist private-profit system, assume ever more destructive forms in relation to both society and nature. The alternatives facing humanity are, quite simply, socialism or extinction. ■

of energy for artificial lighting by 75 per cent or more. Advanced building designs can reduce loss of heat through windows, doors and walls. In prototype superinsulated homes, heat radiating from people, light and appliances can reduce energy consumption for heating by 90 per cent.[171]

The only lasting solution to the world's need for sustainable energy supplies lies in the conversion of solar and other forms of renewable energy into electricity. Solar power is an effectively inexhaustible source of energy. Existing permanent electricity generators have a combined power of 10,000 billion kilowatts, equal to about 0.01-0.09 per cent of the power of the solar energy that reaches the surface of our planet. Development of solar energy has been retarded due lack of interest and investment in research because of the low purchasing price of fossil fuels (and the ignoring of their heavy environmental costs). Moreover, those with the largest resources to devote to renewable energy sources — the big oil and coal companies and the electric power utilities that use fossil fuels — have a vested interest in delaying the development of alternative energy sources, and in using their resources to further lower the market price of fossil fuels.

A major expansion, and radical restructuring, of the world's productive forces is necessary to create the material basis for a socialist society. But unlike capitalism, with its competitive drive to accumulate capital by maximising private profit through the unsustainable production and sale of an ever-growing mass of commodities, socialism does not require permanent economic growth.

The aim of socialist planning is to satisfy the needs of society within the framework of the optimum rational development of all human potentialities. Just as individuals do not require an unlimited supply of food, clothing, housing, etc, society as a whole does not require an unlimited expansion of the productive forces. In a planned economy possessing a stock of automatic machinery that is adequate to satisfy all current needs (including a reserve to cope with any emergency) and able to assure a plentiful supply of goods and services to its citizens, there will cease to be any necessity for economic growth. The question of economic growth will become a matter of free choice for the citizens of a socialist society.

When global society is freed from any economic compulsion to expand the productive forces, the question of profitability or of labour productivity (economy of labour time) will vanish as a criterion of wealth. Instead, the criterion of wealth will become people's free, rational, and creative use of leisure, directed towards their own development as rounded personalities in harmony with each other and the natural environment. Only socialism will make it possible to develop the enormous productive potential of modern science and technology for the satisfaction of rational needs in

the distribution, use, and collection of productive resources. Despite promising initiatives in some countries, this is not likely to be accomplished under a system of private ownership of resources and production for private profit.

The development of a fully automated, waste-recycling production system may well require an expansion of energy production since every new cycle of utilisation requires a certain expenditure of energy — even though the use of recycled raw materials, particularly of metals, has energy savings as compared to the production of primary raw materials: 95 per cent in the manufacture of aluminium, 80 per cent in the manufacture of copper, 74 per cent in the manufacture of steel, and 50 per cent in that of lead and zinc. Moreover, the inevitable loss of energy in all production processes, through dissipation of heat into the environment, must also be taken into account. Thus, of pivotal importance in creating a sustainable, egalitarian society is the need to shift to renewable energy as rapidly as possible.

At present, 90 per cent of the world's electrical energy is generated by burning fossil fuels, which release large quantities of carbon dioxide. While the use of nuclear fission fuels (uranium and plutonium) could overcome this problem, their use entails serious safety problems and the generation of radioactive waste with insurmountable disposal problems. Plutonium processed from uranium in breeder reactors can provide a long-term energy source, but plutonium is the most toxic material known to humanity — the atmospheric dispersal of less than half a kilogram of plutonium could cause 21 billion cases of lung cancer. Complete reliance on it as a fuel source for electric power production would require the circulation of 200,000 tonnes of plutonium at enormous risk to all life on the planet.

At the heart of the thermal pollution problem is the low efficiency of energy production from existing thermal power plants. At present, such power stations lose at least 70 per cent of the heat generated by the chemical energy contained in their fuel. The production of each kilowatt of electricity in thermal power stations is accompanied by the emanation of 2-3 additional kilowatts of heat. Further losses are incurred in the transmission and use of electric power. If a world population of 10 billion people used electricity at the same per capita rate and with the same inefficiency as the United States does today, the human contribution to the Earth's total heat balance would reach 1-2 per cent, setting off potentially catastrophic changes in the global climate. Solving the energy problem will therefore require large-scale investments to achieve greater efficiency in energy production and use, and the development of alternative energy sources. Use of superconductive electric power lines, for example, would eliminate energy losses in the transmission of electricity. Use of improved lamps, reflectors and computerised lighting control systems in buildings could cut consumption

packaging of consumer goods, the abolition of planned obsolescence, more durable product designs, and the development of thorough recycling of all industrial products, would massively reduce the problem of resource depletion.

Today many materials are recycled in industry. The recycling of scrap metal has clear ecological benefits. Compared with traditional steel manufacture, for example, the production of steel from steel scrap reduces water consumption by 40 per cent, air pollution by 87 per cent, and extraction waste by 97 per cent (what needs to be extracted are only a few materials for conversion of pig iron into steel, such as fluxes and coke). Production waste is reduced by 105 per cent, since the amount of waste utilised in recycling steel is in surplus to the waste produced.[169]

Materials recycling, of course, reduces the need to extract primary raw materials and thus damage to the natural environment. Thus, the recycling of a million tonnes of waste paper saves 3.6 million cubic metres of commercial wood, which means that about 179,000 hectares of forest does not have to be felled.[170]

Products made from petroleum — synthetic rubber, chemicals and plastics — are among the most difficult to recycle. But even here there have been promising research results. For example, experimental work has indicated that scrap rubber products can be converted through destructive distillation into a liquid oil that can be used in manufacturing other chemicals, a combustible gas for fuel, and a carbonaceous residue useful as a filter char or binder in concrete.

There is no natural limit to this process of materials recycling since none of the chemical elements of the global ecosystem are qualitatively changed when they are used (except in nuclear reactions). And such is the progress in this area that researchers believe it will not be too long before it will be technologically possible to break down any substance into its constituent atoms and use it as raw material for a new cycle of production. Human beings have been doing this for centuries with metallic compounds, beginning with the smelting of copper ores 6000-7000 years ago.

Important engineering problems remain to be solved in developing recycling technologies, but the biggest obstacle to their utilisation is the capitalist private-profit system. Indeed, the big corporations can be expected to resist the adoption of thorough recycling where this cuts across profit-making. The development of "waste-free", non-polluting technologies will require a large-scale allocation of available financial resources, research facilities, and skilled personnel. The restructuring of industry to obtain ecological purity in production processes will threaten the big corporations with billions sunk in polluting capital stock with an across-the-board reduction of profit.

Moreover, thorough recycling will require socially planned, centralised control of

4. Social equality & environmental sustainability

Some Western ecologists argue that if all the world's people were to live as "affluently" as the present inhabitants of the industrialised capitalist countries, the world would have to produce 10 to 14 times as much energy and minerals as it does now.

According to this view, raising per capita consumption of resources in the Third World to levels existing in the industrialised countries would devastate the global ecosystem with industrial pollutants and soon exhaust the Earth's fuel and mineral reserves. From this point of view, the socialist goal of a global egalitarian society based on an abundance of goods and services would quickly plunge humanity into an economic and ecological holocaust.

This would certainly be true if the irrational consumption patterns and wasteful, environmentally destructive productive techniques existing today in the industrialised capitalist countries were to be maintained and generalised worldwide. Socialism, however, seeks to direct production for the planned satisfaction of society's needs, and as such seeks to eliminate the irrational consumption and waste of resources inherent in the capitalist system. Along this road two central technical problems — waste management and energy production — must be solved if this is to be achieved.

By eliminating the private ownership of resources and the drive for private profit through the exploitation of wage labour, socialism will open the way for the restructuring of the world's industry to obtain ecologically sustainable production through the development of full automation. By its very nature, fully automated production liberates human beings from the compulsion to labour, and therefore requires that goods and services be increasingly distributed free of charge. Moreover, fully automated enterprises can function most effectively only if they are integrally linked so that the wastes from one technological process provide the raw materials for another, so that instead of accumulating and contaminating the biosphere, wastes will be self-processed. Industrial ecology, at present a marginal experimental trend, will become the norm.

"Waste-free", automated technology would also enable the rational utilisation of mineral resources. Conventional production techniques waste enormous amounts of raw materials and energy. Approximately two per cent of the natural raw materials extracted around the world today go into making the final products used by society. The remaining 98 per cent is discharged into the environment, often in ecologically dangerous, toxic forms. Ash discharged from thermal power stations alone contains 130 times more zirconium, 25 times more vanadium, 15 times more aluminium, 14 times more cobalt, and 11 times more titanium, than is presently mined, and as much nickel as is presently mined.[168]

Fully automated production combined with the elimination of unnecessary

their gains will outweigh the price they will pay in horror and hatred by working people at home and around the world.

While mass campaigns against imperialist militarism can limit the ability of the rulers of the major capitalist powers to wage war, ultimately the threat of nuclear war will be ended only when the working people of these countries take political and economic power out of the hands of the warmongers.

But to focus on the urgent need to rid the world of nuclear weapons is not to condone conventional war as an acceptable way of conducting human affairs. On a local level, modern conventional weapons can be just as destructive as nuclear weapons. In its war against the Vietnamese people's struggle for national and social liberation, the United States and its allies not only inflicted death and crippling injuries on millions of people, but devastated large areas of Vietnam's forests and agricultural land through carpet bombing and the use of chemical weapons, defoliants in particular. The social and ecological cost of conventional war in Europe today would be almost as great as that of nuclear war. The destruction of Europe's chemicals factories and nuclear power plants in a conventional war would pollute the air, water and land with enormous quantities of toxic material, and almost certainly make the continent uninhabitable.

The Gulf War, launched by the United States and its allies against Iraq in 1991 was a further example of the destructive potential of conventional weaponry. The impact of the war (which lasted less than 90 days in total) on the local environment were severe.

Eleven million barrels of oil were dumped into the Gulf itself, causing massive disruption to the local environment. The smoke clouds caused by oil fires lowered the temperature in the Gulf area by around 10°C causing serious damage to plankton and fish stocks, seriously disrupting the food chain in the area. The Gulf War led to the release of 240 million tonnes of greenhouse enhancing carbon dioxide (around one per cent of annual emissions). The social cost of the war was massive, with deaths from preventable diseases caused by a breakdown in infrastructure continuing for years after the end of the hostilities.

War is a product of the social inequality that characterises class-divided societies. Throughout human history, wars have been the result of conflicts over the sources of social wealth (human labour and natural resources) between exploiting classes or between exploiting and exploited classes. While society remains divided into exploiting and exploited classes the potential for war will remain. The permanent eradication of the threat of war requires the permanent eradication of social inequality and the creation of a democratically planned classless society on a worldwide scale.

corporations. If they are not recruited from the families of the corporate rich — and the selection criteria for admission to the top posts in the government bureaucracy is heavily biased in this direction — they earn salaries that enable them to make investments so that they acquire a personal interest in the defence of the private-profit system.

To ensure the participation of the vast majority of citizens, a political system would require a structure in which all officials — civil, military, and judicial — were elected and in which all elected representatives and officials were subject to recall at any time upon the demand of a majority of their electors. To ensure that the material interests and social outlook of these officials was not at variance with the interests of the majority of citizens, that is, of ordinary working people, their salaries should not exceed the average wage of a skilled worker.

Genuine representative democracy would necessarily require a unique combination of centralisation and decentralisation, with a central assembly made up of delegates elected from regional representative bodies, which in turn would be elected by local community bodies consisting of delegates from constituencies of at most a few hundred citizens. The right of administration in broad sectors of social and economic activity would be devolved to these regional and local representative bodies once the central assembly had by majority vote allocated each of these sectors a part of the human and material resources at the disposal of society as a whole.

Within this democratically centralised political system, representative bodies would be executive as well as legislative organs. The citizens would participate not simply through their votes but by being drawn into the actual administrative work through forms of self-government in all spheres of social life including factories, hospitals, schools and universities, transport and communications centres, and neighbourhoods.

3. Peace, disarmament & social equality

Avoiding nuclear war is a necessity if humanity is to survive. There would be no winners in a nuclear conflict. Rather than war in the conventional sense of the term, nuclear war would be an act of suicide for the entire human race. Nuclear war would devastate the global ecosystem, making our planet uninhabitable.

Nuclear weapons were developed and used by the capitalist rulers of United States in order to terrorise working people into submitting to the imperialist world order. Even after the Cold War the US imperialists and their allies will not voluntarily surrender the power nuclear weapons give them to threaten total destruction against those who seek to overturn their system of minority rule. As long as nuclear weapons remain in the hands of the imperialists the danger exists that they will use them, particularly if, as in 1945, they are confident there will be no nuclear retaliation, and if they judge that

- Developing modern communications, transport, and electricity systems in presently impoverished areas.
- The expansion of education, housing, and medical facilities (and the industrial growth necessary to achieve this).

Provision of consumer goods, spare parts, and machine repair industries is the minimum industrial development needed in most of the Third World. In addition, social efficiency and ecologically sound planning will often favor the processing of mineral and agricultural raw materials into finished products in the areas where they originate.

A collaborative international division of labour, and assistance from the industrialised countries, would enable the Third World to industrialise without the sort of forced march in conditions of grave scarcity that characterised industrial development in the Soviet Union. It has been estimated by the United Nations that the basic industrialisation of Asia, Africa and Latin America would require investments amounting to about $US8000 billion — less than the projected world spending on armies and armaments for the next decade.

2. Parliamentary versus genuine democracy

Solving the ecological crisis will require — as the UN World Commission on Environment and Development acknowledges — "profound structural changes in socioeconomic and institutional arrangements", including "a political system that secures effective citizen participation in decision making". This is not possible under the Western parliamentary system.

First of all, the parliamentary system of government restricts participation in decision making to a small number of elected persons (parliamentarians, local councillors). The vast majority are excluded from such participation, their decision-making power being limited to their right to place a voting paper in a ballot box every three or four years. Once elected, the parliamentary representatives are not directly accountable to their electors. With constituencies of tens of thousands of voters it is not possible for the voters to meet collectively to formulate their demands, hear regular reports from their elected representatives, or recall and replace representatives if they are dissatisfied with their performance.

Secondly, even the parliamentary representatives have limited decision-making power. The administration of government, and often the formulation of government policy, is concentrated in the hands of non-elected, permanent "experts" — the upper echelons of the civil service, the chiefs of the military and police forces, judges appointed for life. These officials have indissoluble social and economic ties to the owners of the

approached systematically, starting from a progressive rationalisation of people's consumption once they have been freed from poverty and material insecurity, from the competitive struggle for private enrichment, and from manipulative advertising that seeks to create a permanent state of dissatisfaction in individuals. Already in the advanced capitalist countries, productive capacity is capable of satisfying people's basic needs for health care, education, public transport, food, clothing, housing and essential furniture at very low cost or free of charge and without adding significantly to collective spending, provided production is rationally organised and democratically planned.

The biggest obstacle to global social equality is the enormous gap between the per capita production and standard of living of the advanced industrial countries and the Third World. Whereas in the most industrialised countries one farmer produces enough food for 40-50 urban families, in the least developed countries feeding an urban worker's family still necessitates hard work by eight or nine peasant families, just as it did centuries ago. Overcoming this gap will require an end to pillage of the Third World by transnational corporations and local exploiters, and a massive redistribution of material resources in favor of the impoverished peoples of the Third World. This can be accomplished only through socialist planning of the world economy, which would allow massive priority investment in the Third World.

Within this framework, a simple reallocation of the enormous resources presently wasted on military activities around the world would be sufficient to rapidly end the chronic poverty, hunger and disease that afflict billions of people in the Third World. Moreover, this could be achieved without reducing living standards in the industrialised countries.

About two billion people in the Third World lack permanent and clean water supplies, and nine million die every year from diseases caused by polluted water. The equivalent of a mere 10 days' world military spending would be sufficient to overcome this problem.

In the Third World today, some 400 million children lack all access to medical care, 100 million children go to sleep hungry every night, and 40,000 children every day die of hunger, malnutrition and disease resulting from inadequate diet. For the equivalent of what the world now spends in just a day and a half on military activities, every one of the Third World's 500 million poorest children could be provided with basic health care, elementary education, an adequate diet, and clean drinking water. Eradicating poverty in the Third World and equalising the standard of living of the world's inhabitants will require a world plan of economic development to promote industrial growth in the Third World on the basis of a rational extension of the international division of labour. This would involve:

Because capitalists invest to maximise private profit and no one has ever worked out a way to compel them to invest in areas that they consider unprofitable, real social planning is possible only when the capitalists are deprived of the right to own the means of production, and they are thus transformed into social property. That, of course, means replacing capitalism with an economy based on public ownership of the productive resources.

But while social ownership of the means of production lays the foundation for the abolition of class divisions, it is by itself insufficient to eliminate all the social and economic antagonisms between people. This is possible only in a society with an economy advanced enough to produce such a plentiful supply of goods and services that people's material wants can be satisfied, not through the exchange of money on the market, but freely according to their needs.

Moreover, only in an economy developed to the point that production for need is the norm can disparities in economic and political power be eliminated. Moreover, effective citizen participation in decision-making depends upon the achievement of a level of social wealth sufficient to liberate all people from the compulsion to engage in tiring, routine labour. Only a society with an abundance of goods will be able to grant sufficient leisure time to everyone so that they can actively participate in the collective management of economic and political life and prevent the emergence of a new layer of privileged professional administrators.

Consumption on the basis of plenty and free from the private-profit drive, far from developing without any limit towards irrational caprice and waste, will increasingly assume the form of rational consumption, that is, consumption in accordance with the requirements of physical and mental well-being. This has been demonstrated even in a social context dominated by money, exploitation, inequality and the desire to "succeed" at the expense of one's neighbor. For example, where drinking water is made freely available to everyone irrespective of the amount of money they have, this does not lead people to excessively consume it or to hoard it.

As society is able to socialise the costs of production of an increasing number of goods and services and to incorporate them into the "social wage" (i.e., making them available to people irrespective of their contribution to social labour), the insecurity and instability of material existence will gradually vanish, and along with it, the fear that this insecurity causes in all individuals. As this occurs, the need to "assert oneself" in order to ensure one's survival in a constant struggle of all against all — the basis for the desire for individual enrichment and accumulation of wealth — will also wither away.

Thus the task of creating material abundance is not unrealistic so long as it is

VI. Towards an Environmentally Sustainable World

The environmental crisis can only be solved if two issues are fully addressed: Firstly, the survival of the human species is threatened by the elimination of its natural habitat resulting from the ways in which capitalism utilises natural resources without regard for long-term consequences. Secondly, the creation of an environmentally sustainable society will not be possible without the elimination of social inequalities within and between nations.

1. Planning & public ownership

The fundamental argument of this document has been that so long as decisions about production and technology remained in the hands of corporations producing blindly for an unknown market, and driven by competition to cut costs and maximise immediate profits, the crisis will remain. Effective environmental protection requires overall social planning, including the ability to set limits to production of certain items, and to use social wealth to subsidise branches of industry that would necessarily operate at a loss for a considerable period given the costs of serious antipollution measures. The subordination of investment decisions to social needs rather than private profits will be essential if production and transport systems are to be restructured to create a sustainable society.

Moreover, given that the degradation of the biosphere is a global problem, such social planning will necessarily have to be international as well as national. It can begin to be tackled at the local or national level but really effective gains require an internationally coordinated effort.

Real social planning is attainable only if key enterprises are denied absolute control over investment. Because the volume of investment is necessarily limited, its distribution among different sectors must be fixed in accordance with socially determined goals, even though that means priority is given to investments in areas, like pollution control technology, that are not profitable for individual enterprises.

While partial victories along these lines can slow the slide to environmental catastrophe, ultimately the survival of humanity will require the replacement of the capitalist system with a worldwide system of democratic socialist planning whose aim is the satisfaction of the rational needs of each individual and humanity as a whole. Mass campaigns aimed at winning concessions from the capitalist ruling class can play a crucial role in raising mass consciousness of the need for such a radical social transformation, and in organising the social forces that can carry it through.

In building such campaigns, the DSP seeks to draw the broadest numbers of people into struggle, whatever their current level of consciousness. Our goal is to teach the masses to rely on their own united power. We counterpose extraparliamentary mobilisations and mass actions — street marches, rallies, public meetings, strikes, pickets — to reliance on parliamentary elections, legislatures and capitalist politicians. *We know that what weighs most with capitalist politicians is mass sentiment and mass consciousness and the more this is aroused through mass action the more long-lasting and deep-rooted any eventual reforms are likely to be.* Hence, we fight to build an environmental movement that is independent of the needs and concerns of capitalist politics, driven by parliamentary shadow-boxing and electoral manoeuvring.

The party's perspective of trying to mobilise the broadest numbers of people around environmental issues can best be done through broad action coalitions based on concrete pro-environment demands. It is through such united-front-type actions that we can bring the greatest force to bear against the capitalist rulers and their governments, educate working people concerning their own strength, and win them to an understanding that, whatever the gains made around this or that issue, the environmental crisis cannot be solved without the replacement of the institutions of capitalist rule by a working people's government. ■

victims of environmental destruction, being forced to live in the most polluted suburbs and work with dangerous substances.

The DSP's goal is not only to lead the environmental movement in a revolutionary direction, but also to convince the working class and its organisations to champion the fight for environmental protection. Convincing the organised workers' movement to fight against environmental destruction is an indispensable part of the politicisation of the working class, of the process of transforming the trade unions into instruments of revolutionary struggle, and of the construction of a mass revolutionary workers' party.

Protection of the environment and of workers' health on the job are closely related matters. Working people are entitled to full information about, and control over, the environmental conditions that affect their health and survival where they work and live. Environmental and health standards must be established by working people and communities with full access to technical information and based on consultation with experts of their own choice.

Elected community committees must be empowered to decide directly on projects to establish factories or use industrial processes that may adversely affect the local environment. Such committees must be equipped to gather full and accurate information about the relevant ecological and health issues, and to make their decisions on the basis of this information, without concern for corporate profits.

Just as they must reject the false dilemma of having to choose between employment or cuts in wages, working people must reject arguments that they cannot afford to take the measures needed to clean up and protect the environment, or that workers' jobs will be threatened by environmental protection measures. Working people cannot afford bosses who put profits before the health of their employees and the community in general. Such companies should be nationalised without compensation (except for small stockholders) and placed under the control of workers' committees with complete access to the government funding and all the technical information required for meeting the requisite health and environmental protection standards.

Where environmental protection can be achieved only by the closure of an industry, as in the case of uranium mining and the nuclear power industry, governments and employers must be forced to provide alternative work, training and retraining, and where appropriate, compensation to employees and communities affected by such closures.

The poisoning and destruction of the environment is a crime that threatens human survival, and should be treated as such. Corporations that violate environmental standards should be forced to pay the full cost of cleaning up the damage they have caused and fully compensating all whose health has suffered as a result of such violations.

campaign committee level, the "left" is able to pose itself as a voice for the environment movement within the ALP as a whole. In practice, the loyalty of the "left" to the ALP is greater than their commitment to the issues they espouse. While the "left" may argue for the positions of environmental activists, they refuse to take such arguments beyond the party room, thus continually delimiting their impact. Not having the numbers against the "right" becomes a justification for political compromise.

In effect, the "left" becomes reduced to a useful foil for the party leadership, providing political cover and acting as a safety valve which registers when the pressure of movement discontent is getting too great and appeasement through small concessions is called for.

The ALP's electoral strategy has involved consistent environmental fakery. Hiding its real pro-business agenda behind a facade of environmentally sensitive policies, the ALP has been aided in its (successful) attempts to portray itself as an environmentalist party by the active support of certain sections of the environment movement.

The wooing of the peak environmental organisations by the ALP in the run-up to elections was a constant factor in Labor's election strategy through the 1980s and 1990s. While it has served the ALP particularly well, the gains for the environment as a whole were minimal. In parallel fashion, the peak councils' incorporation in the Labor project compromised their effectiveness as campaign organisations.

4. The DSP & the environmental movement

Since its founding in 1972 the Democratic Socialist Party (formerly the Socialist Workers Party) has consistently publicised environmental problems and been actively involved in campaigns against environmental destruction. We recognise that the preservation of a habitable environment is vital to humanity's survival and therefore is crucial to its ability to create a socialist society.

In solidarity with, and as members of environmental movements, we emphasise two points above all. Firstly, that even relatively small attempts at defending and bettering the environment can come into conflict with capitalist property relations. Secondly, that to succeed in achieving its objectives the environment movement needs to orient itself toward the mobilisation of the working class, the only social class that has the *social power* to liberate society from environmental destruction.

While the environment crisis threatens the survival of all humanity, the survival of the capitalists as a class is dependent on the maintenance of a social system that is by its very nature environmentally destructive. By contrast, the working class has no objective stake in the preservation of the capitalist private profit system, which is the root source of its own oppression. Furthermore, wage workers are usually the chief

the ALP's rhetoric in government, Australian industry is considerably in arrears of some European nations in reducing environmentally harmful greenhouse emissions. Wherever the interests of the business sector conflict with those of the environment, the ALP has consistently watered down commitments, or delayed implementation of necessary measures, so as not to reduce profitability.

The ALP in government made great use of close links with particular sections of the environment movement. A range of agreements between the ALP and the environment peak councils helped Labor defuse environmental opposition, and worked to ensure Labor's reelection in the 1987 and 1990 federal elections. In particular, the close working relationship between the ALP and the ACF provided an important base of support with which the ALP was able to defend its environmental credentials.

A key part of Labor's cooption strategy was the Environmentally Sustainable Development (ESD) task force. The task force was established in 1989, and comprised government, industry and environmental organisations. Its stated purpose was to map out environmentally sustainable development for government and industry.

The ESD process was wholeheartedly embraced by the Australian Conservation Foundation (ACF) and some other environmental organisations as a way for environmentalists to intervene in the processes of environmental policy formation. However, according to the Wilderness Society, which declined participation in the process, the ESD task force was mere window dressing, allowing the ALP government "green" cover for its numerous environmental policy compromises. After two years deliberation, the task force report failed to contain many of the positions of the environmental groups. The report also failed to recommend compulsory standards, calling into question the effectiveness of the project as a whole.

Throughout the 1980s the collaboration between the ALP and the peak environmental organisations was very close. The extent of incorporation of the peak councils in Labor's project became increasingly evident after details of confidential deals between ACF executive director Philip Toyne and Prime Minister Bob Hawke became public in 1991. Prior to the 1990 federal election assurances on mining and forestry issues were given by Hawke in return for ACF support. However, with the election won, the ALP government reneged on its guarantees by introducing its Resource Security Legislation. Public exposure of the deal in the media was very embarrassing for the ACF, which nevertheless continued its support for Labor. Despite the ALP's betrayal of trust, the ACF continued to participate in the ESD process until the end and publicly supported the ALP in the 1993 federal election.

The role of ALP "left" factions has also been instrumental in winning support for the Labor Party among environmental activists. By being more involved at the

The ALP's environmental cynicism was further displayed at its 1994 national conference. At this conference the ALP adopted policy permitting exploration for minerals in National Parks as a step toward the granting of full mining rights. The credibility of the ALP's "commitment" to the preservation of National Estate forests and sensitive habitats was further undermined by its proposal to introduce Resource Security Legislation (RSL) in March 1991. The intent of the RSL legislation was to guarantee long term access to forest reserves for industry willing to invest a minimum of A$100 million in resource development (for example, pulp mills). In essence the proposal translated into the lifting of many environmental restrictions on logging and woodchipping interests considered of significant economic importance.

While strenuously opposed by all major conservation groups, RSL was finally withdrawn only after losing industry support, subsequent to being watered-down. While never formally introduced, the general principles of the legislation (guaranteeing ready access to forestry and mineral resources for industry) have never been removed from Labor's agenda.

Throughout its period in opposition in the 1970s, the ALP held a position of shutting down the environmentally hazardous uranium mining industry. In its first national conference after winning the 1983 election, party policy was changed, with the adoption by the 1984 national conference of the compromise "three mines" policy. Under this policy, the three existing uranium mines at Ranger (Northern Territory), Roxby Downs (South Australia) and Narbalek (Northern Territory) were to be allowed to produce until exhausted, but were not to be replaced with new mines. At the 1994 national conference, a proposal to further compromise the policy to permit the opening of new mines was narrowly defeated. The fact the issue was (yet again) raised, shows that it has not been definitively removed from the minds of some Labor leaders.

ALP policy notes "concern that increasing and increased atmospheric concentrations of greenhouse gases will enhance the natural greenhouse effect, resulting in climate change that is highly likely to alter natural and human environments adversely". Action taken by the ALP to carry out this policy has been minimal and largely ineffectual. Indeed, although a signatory to the Rio Earth Summit convention to stabilise greenhouse gas emissions at their 1990 levels by 2000, Australia under the ALP never looked like reaching the target, with both Hawke and Keating governments consistently rejecting any measures that would endanger Australia's perceived economic and trade interests. What commitment given was qualified by undertakings not to enforce changes to industry practice if this should make industry less competitive.

Given a real lack of commitment to improve public transport or develop alternative energy sources, the ALP's real actions on the greenhouse threat were token. Despite

of the ALP in the environment movement.

The environmental policy of the ALP, as adopted at national conference in August 1994, demands the ALP in government comply with strict environmental criteria. Among its many sections are commitments to preserving the habitats of endangered species, biodiversity, reducing greenhouse gas emissions, environmentally sustainable forestry, wilderness protection and the phasing out of ozone destructive substances. However, the environmental record of the ALP in government, both at a federal and state level, has been very mixed at best. While the party has administered a number of environmental reforms, it has universally failed to deal with the most serious threats.

The ALP came to power federally in March 1983 after a little over seven years out of office. One of the key promises it used to win the environment vote in that election was its commitment to prevent the construction of the Gordon below Franklin hydroelectric scheme in South West Tasmania (the damming of the Franklin River).

However, ALP commitment to the unique wilderness of the area came slowly, and in contradiction to the stated policy of the Tasmanian branch of the party. Indeed federal ALP action on the issue was determined by the loss of power by Labor in Tasmania and the emergence of a broad-based mass movement in defence of the wilderness area. Upon being elected to power, the Hawke ALP government enacted legislation using its constitutional foreign affairs power to protect the area as a World Heritage listed property.

The federal ALP government was less forthcoming in carrying out its policy obligations to protect environmentally sensitive areas in other instances. Action to protect the Daintree rainforest area was one key example. The Daintree rainforest (in north Queensland) was threatened as early as 1983 by the decision of the Queensland government to force a road through the area. Despite calls for the preservation of the area at this time, the Hawke Labor government refused to nominate the area for protective World Heritage listing. The road through the rainforest went ahead causing irreparable damage.

Only in 1987, when facing a further federal election did the ALP belatedly nominate the area for World Heritage listing as the Greater Daintree National Park. In an election marked by Labor's courting of the environment movement, the Daintree decision was a cynical (and largely successful) ploy aimed at garnering environmental votes.

In over 13 years in office, the ALP also failed seriously to act in defense of old growth forest, an important habitat of a range of endangered species. From the South East forests of NSW to Fraser Island in Queensland, Labor continued to issue and promote export woodchipping licences, despite the enormous environmental cost.

(that were in any case doomed to disappear when the resource was exhausted).

In October 1993, the ACTU officially supported the large-scale woodchipping of old growth forest in the East Gippsland area, against the protests of environmentalists. Claiming the move would preserve jobs in the timber industry, the ACTU ignored the fact that any jobs created would be highly unstable and very short term. The key motivation of timber companies in seeking extensions to wood chipping licences over recent years has been the desire to deplete as much of the remaining resource before internationally competitive plantations are ready to harvest elsewhere. The ACTU has been a consistent ally in this short-sighted goal.

Overall the labour bureaucracy has consistently presented the interests of workers as being inimical to those of environmentalists. The maintenance of this false dichotomy has consistently hampered the development of the environmental movement, and inhibited its effectiveness.

In effect, the stand taken by the trade union bureaucracy has benefitted only the capitalist owners of logging and mining interests. Playing on the division between the labour movement and the ecological movement they have been able to present themselves as valuable investors in "the nation's future" at the expense of a "minority" of marginalised "greenies".

It is true that at times divisions have appeared within the trade union movement on specific environmental issues, such as uranium mining. In its desire for members at any cost the Australian Workers Union has sought coverage of miners at uranium mines, against the opposition of many unions to uranium mining *per se*. However, this opposition rarely issues in serious action (like the 1976 ARU ban) because in a period of declining unionisation all unions know that one day they may want to seek coverage of workers, no matter what the industry.

3. Environmental record of the ALP

The two mainstream parties of Australian capital are the Australian Labor Party (ALP) and the Liberal Party, both fundamentally committed to upholding the interests of Australian big business. However, as a social-democratic liberal bourgeois party the ALP differs from the Liberal Party in its relation to the progressive social movements. The ALP's political practice is to attempt to defuse and channel the social impact of movements through the cooption of their leaderships.

By cultivating a direct relationship with the ecological movement the ALP attempts to draw it into a parliamentary framework of support for Labor as a substitute for independent political activity, a strategy that has been very successful. It is for this reason that environment activists need to be thoroughly aware of the nature and role

The green bans movement was, and remains, an inspiring example of how the environment can best be defended and why working people and unionists should see the environmental struggle not as a luxury addition to "bread-and-butter" union issues. It confirms that the organised working class, working in alliance with affected communities, is the most formidable defender of natural heritage against the greed of developers and other capitalists.

This movement was also linked to the rise of campaigns around workers' health and against deadly industries such as asbestos mining. In many cases, however, the unions were dragged into action by small groups of activists rather than being the initiating force. Indeed, despite the pivotal role played by the trade union movement in the early formation of the environment movement, the part played by the official trade union leadership has very often been a negative one.

As a group, the trade union officialdom seeks to maintain their positions and whatever privileges go with them by attempting to reconcile the interests of the workers with those of their capitalist employers. This bureaucracy is imbued with the liberal illusion that the problems confronting working people can always be solved within the framework of the capitalist system, through gradual, piecemeal reforms achieved through negotiations with the capitalists and their governments. This bureaucracy therefore accepts the fundamental logic of capitalist profitability, attempting to limit the demands and methods of struggle of the working class to conform to its imperatives.

In Australia this state of affairs became even more explicit with the signing of the Prices and Incomes Accord with the Hawke ALP government in 1983. Here the ACTU tied itself to the notion that increases in capitalist profits were the best way to ensure rising workers' living standards. Such was the general context in which the labour bureaucracy responded to the challenge of the environmental movement in the 1980s and early 1990s. Seeing environmental protection measures as a threat to profits, union leaderships drew the conclusion that workers' jobs were threatened by such measures. In a number of instances, this meant the trade union bureaucracy siding with major industrial capitalists (for instance the timber industry) in defence of resource "rights" as opposed to "green and black tape" which was claimed to slow development of new projects unnecessarily.

It was with arguments such as these that the ACTU supported proposed Resource Security Legislation (RSL) in 1992. The legislation was largely framed to guarantee pulp and paper corporations access to vast sections of native forest. Yet the interests of long term employment in the industry would have been better served by the insistence on a switch to plantation logging. However, the ACTU and the timber companies argued for the defence of short term profitability of the industry as the only guarantee of jobs

generalise the issue for other local communities and among others in struggle. If greens want to remain a force on the "radical" (anti-systemic) side of politics, they will need to be far more than the "community's voice".

Capital is increasingly monopolised and centralised, and the great majority of humanity is defined by its lack of access to the centres of economic and political power. The object of class analysis is not to reduce struggle to economic issues but to unite this great majority as not only a "class in itself" but also a "class for itself", fighting on every front against every aspect of this class-divided society. If greens are going to play a role in any such political mobilisation of those oppressed and exploited by the system, they must also face the issue of how best to organise themselves to achieve this goal.[167]

2. Impact of the environment movement on the labour movement

While the environment movement initially developed outside the framework of the organised labour movement, by the mid-1970s trade unionists also began to mobilise in defence of the environment.

The movement against uranium mining in Australia, which began to gain momentum in the late 1970s, was actively supported by trade unionists involved in the mining or export of uranium. In 1975, the Australian Council of Trade Unions (ACTU) voted at its congress to ban all mining of uranium except for biomedical use. Acting on that decision, the Australian Railways Union (ARU) forced the stoppage of mining by banning the rail transport of uranium ore. As the support for the movement against uranium mining increased during the 1970s with street demonstrations of increasing size, union activity also increased in scope. In 1978 ten major unions were represented at the consultation of the Movement Against Uranium Mining, while in a ballot of major ports waterside workers voted 3486 to nil to ban the handling of uranium exports. Labour movement involvement in the struggle reached a high point in 1979 with the campaign to prevent the establishment of two new mines in the Northern Territory. Trade union opposition to the uranium mining industry continued until the 1983 election of the Hawke Labor government, on an official policy of "phasing out" the industry altogether.

The green bans movement was an environmental mobilisation initiated by the NSW Builders Labourers Federation (BLF) in the early 1970s aimed at the preservation of urban environment and architectural heritage and in defence of working class housing areas. Initiated in the fight to preserve bush land at Hunters Hill near Sydney, the bans expanded to become a mass movement in defence of important heritage areas of Sydney against plans for redevelopment.

effect of tying the environment movement in Tasmania to the ALP's business agenda. The accord finally collapsed in early 1992. New elections saw a return of the Liberal Party to power and a fall in the vote achieved by the Green Independents from 17.1 per cent in 1989 to 12.8 per cent in 1992.

The Green Independents suffered a voter backlash for keeping Labor in power while it slashed funding of government services and retrenched 2100 public servants. In the final analysis the accord must be judged as a negative experience for the Greens. Many of the environmental gains made were reversed by the incoming Liberal government while the long term credibility of the Green political project was setback by the Green MPs' failure to differentiate themselves from the ALP and big business demands.

These contrasting approaches reveal the existence of different tactical shades within Australian Green parties. In contrast to the Australian Greens, the WA Greens have managed to walk the tightrope between parliamentary work and maintaining a link to the social movement activity from which they emerged in the 1980s. The WA Greens' appeal to community action and self-empowerment has been consistent enough to ring warning bells among ruling circles. The WA Greens senators' refusal to "do deals over different issues" — unlike the Tasmanian Greens for example — has made them a thorn in the side of establishment politics.

However, despite standing by these principles, the WA Greens' lack of strategic vision and guidelines has left them rather disarmed in the face of ruling-class attacks. This is for the obvious reason that greens who take their principles seriously are sooner or later going to face the following challenge: dissolve their principles into a strategy aimed at minor alterations to the neo-liberal agenda, or elaborate a program of action to mobilise and organise the opposition to this agenda. To avoid the shift to the right, greens have to engage in a serious and honest discussion around questions of political orientation, strategy and forms of organisation.

Dissolving strategy into abstract principles only leads to phrase-mongering, usually dominated by the gurus who can "talk the talk". In the struggle for reforms, principles are crucial, but they are always subject to the principle that some reform is better than none, the Tasmanian Greens' justification for their accord with Labor. The problem is that capital can turn reforms back and the only guarantee against this is to be found, not in the hearts of "honest" parliamentarians, but in the mass organisation of people struggling to better their conditions of life.

At the same time many greens confuse localised "community action" with mass social movement action and organisation. While local community action can bring change, its strength is precisely in its ability to extend beyond the purely local and

Independents to the Tasmanian parliament encouraged environmental activists in other states to form Green electoral parties. In 1987 a second NDP candidate, Robert Wood, was elected to the Senate on the basis of preferences from a Green Senate ticket and in the 1990 elections a wide range of Green candidates stood. The election also saw the re-election of Jo Vallentine for the Greens (WA).

The Greens (WA) were formed in 1990 out of an amalgamation of a number of smaller Western Australian green political organisations. The success of the Greens (WA) in electing one member to the Senate in 1990 was repeated by the election of a further senator in 1993.[166]

The experience of Green parties in Australia has been highly varied. The two most significant experiments have been those of the Green-Labor accord in Tasmania between 1989 and 1991 and that of the Western Australian Green Party — The Greens (WA) — in federal parliament. In these cases and in others the politics of the Greens has oscillated wildly.

On the one hand, during the 1990s, the WA Greens, in the persons of senators Christabel Chamarette and Dee Margetts refused to rubber-stamp Labor government budgets, to the extent that establishment media editorials reached a crescendo of vitriol against the Greens. "Greens or Gangrenes?" asked the *Age* of Melbourne on September 13, 1993, attributing the fall in the dollar to them. The *Sydney Morning Herald* of the same day accused the Greens of "holding the government to ransom" with "some very bizarre demands". The Green senators' crime was to propose changes which would have reduced the impact of the budget on low income earners.

After four years in the Senate, Chamarette gave a mixed but generally positive assessment of her and Dee Margetts' role in the upper house. "I'm not sure the community at large is aware of how much of a political monoculture dominates the parliament. The most common vote in the Senate is 66-10, with Labor and the Coalition versus the real opposition made up of Democrats, Greens and independents."

At the other extreme Greens in Australia have also made a fetish of ensuring "stable" and "responsible" government. The Greens in the Australian Capital Territory voted to allow the formation of a Liberal government which launched into the usual austerity program; the Greens in Queensland gave their preference votes to the reactionary National Party to prove to Labor that they couldn't be taken for granted.

The Green-Labor accord was signed by the Tasmanian parliamentary Labor Party and five Green Independents who held the balance of power in parliament in May 1989. The agreement promised independent support for an ALP minority government in any no-confidence motion in return for specific concessions on environmental concerns. However, while securing certain environmental reforms the accord had the

to allowing different political currents to organise, fundraise and publish their ideas inside the party, the following practices were adopted:

- All elected members were rotated after two terms or six years;
- No person could hold a political office and be a party functionary at the same time;
- MPs received only the average pay of a factory worker, the remainder of their salary being returned to the party; and
- Party meetings and election slates were open to non-party members from the social movements.

As their parliamentary aspirations and representation increased, however, the Greens' attention to extraparliamentary mobilisation declined. In the words of Jutta Ditfurth, a *fundi* who led a walkout from the party's April 1991 congress: "We once said that the Green Party had a 'standing leg' — its centre of gravity — outside parliament, and that this leg was more important than the 'play leg' inside parliament. But then the leg in parliament became the 'standing leg' and the movement leg was being cut off."

Green electoral success has always been accompanied by a shift in the decision-making weight in favour of the parliamentary group. The parliamentarians and their staff, by virtue of their positions, are usually better organised and have more resources than the rest of the party. Engaging on a daily basis in political discussion and decisions, parliamentarians also end up making party policy on the run — democratic policy making at the grassroots would take more time than the structures and rhythm of capitalist parliament allow.

The increasing weight of the MPs in Green parties has consistently led to priority being given to the (illusory) attainment of reforms within the system, at the expense of mass action, participation and rank and file control. The underlying perspective of reforming the system through parliament has meant that respect for and accommodation to parliamentary procedures, expectations and other parties has been inevitable.

At the time of the 1990 federal election, the German Greens had 48 MPs. In that election, their vote dropped below the five per cent cut-off, and they lost all 48 positions. The *realo* parliamentarians blamed the diminishing left in the party for the loss and moved quickly to "reform" the Greens.

There was to be no more collective structure or responsibility, the "obstacle" of rotation was abolished, the party was to have only one party president, and the rule preventing MPs from being on the party executive was abolished.

In Australia, the development of Green parties began in 1984 with the emergence of the Nuclear Disarmament Party and its unprecedented success in having a candidate, Jo Vallentine, elected to the Senate. Subsequently the repeated election of Green

to create for ourselves a different life by opting out would have such a drawing power that the ruling class would be forced to subsidise socioeconomic reconstruction. They were allied with ecosocialists, who started from a principled opposition to the capitalist order and placed their emphasis on extraparliamentary activity in the social movements.

Until the mid-1980s, the German Greens had a clear policy and practice in solidarity with trade union and Third World liberation struggles, against the rearmament of Europe, in defence of democratic rights and so on. With the decline of the social movements and growing electoral success, which put Green MPs onto opposition benches alongside the Social Democratic Party (SPD), the policy and practice of the Greens moved rapidly to the right.

By 1990, nearly half of the *fundis* and ecosocialists had left or been thrown out, and the party was taking positions of support for NATO, almost unqualified support for coalition with the SPD in government and a much less clear opposition to nuclear armament. At their December 1995 annual congress, 38 per cent of party delegates and most of the parliamentarians supported the sending of German troops as part of imperialism's "peacekeeping" force to Bosnia.

Green parties had formed both to better organise mass action and to represent in parliament a green-thinking constituency. However, as the Greens won electoral success, and simultaneously the social movements declined, the balance between these two goals shifted. The parties became increasingly separated from their extraparliamentary campaigning base, and today the majority of Green parties are purely parliamentarist.

From the beginning, right-wing Greens theorised that the "movement phase of politics is over"; now the struggle has to take place in parliaments. They argue that parliament is where the power is, and the Greens have to be included. In the words of former British Greens leader Sarah Parkin, "The only pressure that is really respected by governments is the ballot box".

These leaders think that as the ecological and social crises deepen, support for environmental and social justice parties will grow exponentially, until the Greens will win majority support at the polls, take government and implement their policies. But this belief has proved an illusion in the more developed Green parties. Despite escalating ecological and social crises, nowhere in the world have Green voting patterns at the national level increased significantly.

The early German Greens took the position that the parliamentary party was an extension of the mass movements. They tried to institutionalise this by developing a party organisation in which the fundamental idea was "continuous control over all officials and elected representatives in parliament and their recallability". In addition

new political perspective, one that was "neither left nor right but out in front". Generalising from the fact that, in the 1970s, the most dynamic social movements formed mostly around cross-class issues, Green theorists argued that "capitalism has not rendered the working class a class-for-itself, let alone a class that tends to mobilise itself on behalf of universal human interests". Instead, according to US Green theorist Howard Hawkins, "working people are mobilising around other identities in the new social movements" which tend to challenge capitalism in "universal democratic terms" rather than the "simplistic two-class struggle of old left theory".

Former anarchist, now Queensland Greens leader, Drew Hutton argued in 1987 in *Green Politics in Australia* that "Green politics does not accept the philosophical dualism which underpins modern industrial society (mind/body, humanity/nature, boss/worker, male/female) nor that of the traditional left (class struggle and class war leading to a classless society)."

By emphasising "harmony with nature" and "a sense of wholeness and oneness", while simultaneously caricaturing socialism, such Greens "theorising" attempts to render class divisions and class struggle (left and right) irrelevant. But no amount of philosophical rejection of "old dualisms" or the culture of violence in capitalist society will make them any less real.

From the very beginning the German Greens represented a coalition of differing green opinion. On the right the "realos" sought to advance "green" politics through pursuing coalition with the Social Democratic Party (SDP). On the left of the party were "fundis" and others who placed emphasis on the independence of the party, on the need to build a "green" movement outside the parliamentary system. The debate within the German Greens continued throughout the 1980s, with the party making consistent moves to the right in its attempts to attract the SDP into coalition. For example, the Green parliamentary deputies refused to support German steelworkers in their campaign for nationalisation and export of steel at cost-price to the Third World, because this would spread the vice of "industrialism".

The Green parties' inability to develop a coherent strategy for change which went "beyond class politics" has been manifested most clearly in the constant struggle over the relationship between parliamentary and extraparliamentary activity, and over how the Greens should relate to the major capitalist parties.

Throughout the 1980s, for example, the German Greens' program attempted to compromise. On one side were the proponents of *Realpolitik* (*realos*), who argued for an ecological transformation of capitalism by means of political compromise, and the ecolibertarians who wanted to promote ecological change through market mechanisms.

On the other side were the fundamentalists (*fundis*), who argued that the efforts

V. Political Consequences of the Environmental Crisis

Over the past three decades the environmental crisis has had a deeply destabilising impact on politics-as-normal, especially in the advanced capitalist countries. Even when movements against this or that environmental outrage are not in the street, the "background" environmental crisis poses a permanent challenge to the legitimacy of the system, constantly draining its ideological, political and material resources.

Most unnerving for the powers-that-be is the possibility that "red" and "green" political formations will link up to form a political force of such critical mass as to pose the alternative of environmental and social justice as a real possibility. However, an important precondition for reaching such a threshhold is to understand how the environmental question has affected all political trends to date.

1. The Green parties

The emergence of the West German Greens in the early 1980s introduced a new dimension to the environmental movement in developed capitalist countries. The new party was based on the activism of the large anti-nuclear movement that had swept through Europe in response to the deployment of new, advanced US nuclear missiles — Cruise and Pershing II. Because it attracted activists from the women's movement and other social movements and from various socialist currents, its political program reflected attempts to draw links between environmental and social issues. This synthesis was reflected in the four basic principles of the German Greens that have subsequently gained worldwide currency. These principles are: ecological sustainability; grassroots democracy; economic and social justice; and disarmament and non-violence. Politically, this represented a significant advance over the limited environmentalism of the 1970s. It challenged many of the simplistic and false solutions referred to earlier and broadened discussion beyond defensive campaigns aimed at conserving wilderness areas.

The theoretical foundation of Green politics was the idea that they represented a

range of ecocentrism — even in those who reject the extremes of deep ecology. Having objected to modernity and the Enlightenment on the grounds that these led to the notion of nature as simply material for exploitation by humanity, the ecocentrics now invert this relation. Nature is privileged over the human species. Nature becomes too complex for humans to understand. Humans may be considered part of nature but their desires are not to be privileged.

The root flaw in the ecocentric argument lies in the confusion of the environmental crisis with humanity's domination of nature. The "domination of nature" is not responsible for environmental problems. Rather, the very presence of these problems proves the inadequacy and partial nature of that "domination" that is inevitable under capitalism. To end the ecological crisis will require *more* "domination", that is, more conscious, collective and democratic control by humans of their relationship with the natural world, but one based on a profound grasp of the complex interrelatedness of the "web of life".■

back-to-naturism with aspects of the Mother Earth worship. Earth First!, part of the deep ecology movement, contains many elements that underlie such reactionary positions. Arguing that people are the problem, Earth Firsters call themselves tribalists, practicing the totemism and ritual of tribal society. This is based on a warrior cult of certain American Indian tribes who conceive non-human species as kindred "peoples" and through rituals of inclusion, extend the community of common concern beyond human beings. They see themselves at war with modernity and practice acts of sabotage (ecotage) against any encroachment on wilderness areas.

Human society's very existence is challenged, almost on an original sin basis, by these deep ecologists. Some quite fascist and racist positions have been explicitly advanced by leading proponents like Dave Foreman, who outlines the view that famines are nature's population control and that humanitarian and food aid should be withheld from starving populations, and Christopher Manes, who sees the HIV/AIDS virus itself as desirable as a means of population control and destruction of urban life and whose central slogan is "Back to the Pleistocene!". This fits into the Earth First! apocalyptic belief that industrial society must collapse under its own unsustainable weight. If enough of the species survive then evolution will resume its natural course: if humans survive they will have the opportunity to re-establish tribal ways of living in balance with nature.

The strand of ecofeminism that practices similar pagan rituals (including witchcraft) and espouses Earth goddess beliefs also propounds the view that there is an inherent male-female difference. This in turn reinforces a biological determinist explanation of women's oppression, and sanctifies motherhood and the creativity of birth. The elevation of gender difference also reinforces those reactionary theories, which have traditionally justified an inferior and subordinate role for women, as in fascism's church, children and kitchen philosophy.

5. Their common features

What most of these diverse ecopolitical strands have in common is a strategy based on educating the individual and setting examples, whether by the ecotage of Earth First! or the ecocommunities of green anarchism. In that sense all are *romantic reactions* to the existing capitalist system and all fail to grasp how its institutions and power structures stand in the way of realising an environmentally benign and socially just society.

Because of this romanticism, all tend to hark backwards for a model of such a society, in a past free of the horrors of today's ecocide. This requires a denial of contemporary social and ecological reality, which is particularly marked in the whole

environmentalism was often considered to be a conservative, even reactionary, issue. Ecoconservatism reflects a romantic and nostalgic attachment to the rural way of life threatened by urbanism and industrialisation. It doesn't envisage any forward movement based on ideas of democracy, cooperation and ecology, but longs for a return to the pre-industrial utopia of rural life and the known security of fixed hierarchical social relations. Such a view typically focuses on the issue of conservation and attempts to preserve what is known as "the natural heritage" — forests, fields and moorlands as well as the architectural and social heritage.

The preservation of nature can even be linked to a return to the feudal past. Edward Goldsmith, Schumacher Society member and co-author of the *Blueprint for Survival*, has argued that an ecological society would involve the resurrection of traditional order within the family and the community and a return to a strong authoritarian state: the ideal would be the oppressive Indian caste system.[164] Similar views were expressed by the right in, for example, Margaret Thatcher's 1988 "green" speech in which she described the British Conservative Party as "the guardians and trustees of the earth".

In the United States conservative environmentalism takes on the tones of robust frontier Republicanism:

> A market economy does not maintain an industry simply for the sake of employing workers. When a product becomes obsolete or a resource runs dry, the economy adapts. Companies and industries have been changing or shutting down for 200 years, and workers always find new jobs — the nation is not lacking in jobs; it's a natural, necessary component of capitalism. Chopping down forests for the sake of jobs is nothing more than social welfare — not something our nation prides itself on.[165]

In Russia today groups like Pamyat take up issues of conservation as well as extreme Russian nationalism, racism and anti-semitism. Conservation and eco-conservatism has been linked to extreme reaction. During the Third Reich an agrarian nature philosophy was preached by Walter Darre, the Minister of Agriculture, under the slogan "Blood and Soil". Combining Nordic racialism with an idealisation of rural life Darre argued for Germans to abandon the city and return to the soil to adopt a peasant existence. Darre advocated organic farming and eugenics as essential features of a strong Germany.

Rapid industrialisation in Nazi Germany also created a strong back-to-the-land movement particularly among students and young people. The German Youth Movement developed out of the "Wandervoegel" — bands of German students who returned to nature through a mystical experience of the forests and mountains in a romantic escape from the alienation of urban life. Ecofascist movements today combine

Secondly (and ironically) all ecocentric schools of thought suffer to some degree or other from anthropomorphism. This is the inevitable concomitant of their abandoning a scientific (not scientistic) viewpoint for some variety of idealism or religion. In ecocentric theory nature, living things and ecosystems *acquire human attributes,* as the laws of development of the physical, natural and human worlds are conflated and confused.

Thirdly, in attacking the short-term, partial rationality of academic sciences like neo-classical economics, ecocentrism abandons any conception of rationality itself, and hence of the ability of the human species to grasp its long-term relations with the environment and so act to stabilise and nurture these through social and political action.

In the most extreme cases of deep ecology this takes such bizarre forms as Aldo Leonard's injunction to "think like a mountain", Bill Duvall's claim that we are "citizens of the biosphere", Roberick Nash's axiom that only when the question "do rocks have rights" *doesn't* sound ridiculous will a true ecological consciousness have arrived, and Paula Gunn Allen's intimation that "The Woman I Love is a Planet". Lastly, "ecocentrism" is bereft of means with which to understand the course of human social and intellectual development. Everything has gone wrong since humanity began to feel separate from nature, producing a 10,000-year "anthropocentric detour". According to George Sessions "the West had several decisive historical opportunities to … return to ecocentrism, but the dominant culture has not done so". The history of human civilisation has been a mistake, an "epistemological error".

Even in its less extreme versions ecocentrism's stance against anthropomorphism confuses humanism with human arrogance and megalomania towards nature. James Lovelock writes:

> Our humanist solicitude towards the poor living in the impoverished suburbs of the big cities of the Third World, and our almost obscene obsession with death, suffering and pain — as if these were harmful in themselves — all these thoughts deflect our attention from the problem of our harsh and excessive domination of the natural world.[163]

The overall thrust of ecocentrism is conservative, especially in its most unmoderated form, deep ecology. Human desires are not more special than those of other "biota"; the world ecological system is too complex for humans to understand; the best attitude humanity can adopt is to contemplate, not change, the world.

4. The conservatives & reactionaries

Right from the start the questions and explanations advanced of the relationship between nature and the human species have provided the basis for reactionary as well as progressive political movements. During the 19th and early 20th centuries

environment that underpins its existence. Apparently inanimate matter like atmospheric water vapour and trace gases are as part of Gaia's life as a lobster's exoskeleton or a cat's fur. This model, which Lovelock bases on the interaction of the biosphere, atmosphere, oceans and soil, provides the basis for many of the environment movement's arguments that respecting the health of the planet entails privileging the planet over that of any species living on it. Lovelock argues that species which have prospered have been those that have helped Gaia's self regulation, while species which pose a threat as humans currently do, are likely to be extinguished. He concludes:

> I would want to stress that in no way is Gaia fragile. Gaia has withstood devastations far beyond our powers at least thirty times during the three-and-a-half billion years of her life-span. Nothing that we can do threatens her. But, of course, if we transgress in our pollutions and our forest clearance, Gaia can move to a new stable state, and one that's no longer comfortable for us. So living with Gaia is not so different from a human relationship. It is an affair of the heart as well as the head; and if we are to do it lovingly, it is something that must be renewed on a daily basis if it is to succeed.[162]

While Lovelock states that "I never envisaged Gaia in any sense as a sentient being, a substitute for God" and doesn't attribute intelligence to Gaia, many of his followers do. Gaianism lends itself to New Age mysticism, including paganism, to deep ecology and the "bioethic" which calls for respect and reverence for nature's intrinsic rights and worth, privileging these rights over human rights or needs.

The Earth mother aspect of Gaia is central to ecofeminism, which contrasts the "masculine" desire to exploit nature through science with the "feminine" values embodied in many ancient cults. Ecofeminism equates the ongoing domination of nature by men with the ongoing domination of women, arguing that they are systemically related. Some ecofeminists take this to the level of intuition — that because of the shared exploitation and domination by men, women and nature share a common understanding of that exploitation in some mystical relationship. Women become the "voice" of nature, usually based on their capacity to give birth and nurture, as in many mythologies predating the rise of class society.

These three viewpoints theorise their outlook as "ecocentrism". This standpoint, which prioritises non-human nature and at least places it on a par with humanity, is contrasted to that of "anthropomorphism" (human-centredness), supposedly guilty, even in its most environmentally conscious versions, of fostering the domination of nature by humanity. However, ecocentrism, inasmuch as it amounts to a theory, is erected on a number of fallacies. Firstly, there is no such thing as "the standpoint of nature and other biota" independent of human perception. The very definition of nature and ecological balance is a human act, made in relation to humanity's needs.

feasible answer to the environmental crisis. However, despite mutual hostility, it is not a huge step from their utopianism to the more mystical outlooks of deep ecology, ecofeminism and Gaia — "ecophilosophical" worldviews capable at best of becoming cults.

In all these outlooks the rejection of the mechanical materialism of the 17th century (the philosophical expression of rising capitalism) takes the form of reversions to nature idolatry, paganism, shamanism and animism. The core ecological insight — of the complex, web-like interrelatedness of all things animate and inanimate — becomes converted, not into a more sophisticated and dialectical scientific outlook, but into outright mysticism.

The most theoretical exponent of this trend is physicist and New Age irrationalist Fritjof Capra. In *The Turning Point*, beginning with the standard "ecological" polemic against the "Cartesian-Newtonian paradigm", Capra draws on the developments in physics in the 20th century to reject a mechanistic or atomistic worldview and calls for a revival of Eastern mysticism on the grounds that Hinduism, Buddhism, Taoism and Zen have traditionally held to the principle of the oneness of all things. The wisdom that Capra uncovers in these religions is primitive (that is, pre-scientific) dialectics, the reflection in the human mind of the patterns of change and development in nature. Other exponents of deep ecology seek out the same wisdom in the work of the pre-Socratic Greek philosophers.

However, the move from the undialectical materialism of the Enlightenment to ancient religions imbued with a dialectical outlook is a gigantic step backwards. Many ecological theorists date the beginning of the tragedy of the environment from this time, when humanity through science supposedly acquired the capacity to "dominate" nature on an unprecedented scale. Not only is this wrong in point of fact, but the growth of labour productivity brought about by the rise of science and technology made possible for the first time a decent life for all human beings and the possibility of humanity determining the terms on which it would live with nature.

Having opened the door to pre-scientific ways of apprehending the world, the mystical stream of ecological thought turns inevitably to those outlooks which most directly express humanity's oneness with nature. This involves a regression to prereligious modes of thought, most notably animistic and shamanistic cults, which make little or no distinction between living and non-living objects. All things were seen as living, even the Earth itself, often conceived as "Mother".

James Lovelock developed the notion in *The Gaia Hypothesis* that the planet itself may be a living organism, naming it Gaia (after the Greek goddess of the earth) and arguing that life on Earth constantly reproduces the meteorological and hydrological

Greek thought, in which "'necessity' was not merely compulsion but moral compulsion that had meaning and purpose".

Very radical though it may be in Bookchin, this idealism is typical of nearly all ecological philosophising. The problem doesn't lie in the material forces driving social and economic development, and the answer shouldn't be based on dissecting how such development comes about. Rather, the problem is to be solved by the adoption of some appropriately ecological "philosophy" (Greek or Tao or whatever) and then attempting to set up a model community according to precepts involved.

Bookchin's preferred recipe is that of an "ecocommunity" that mimics the self-sustaining character of an ecosystem. This is a:

> … permanent, intimate, decentralised community of a dozen or so sisters and brothers, a family or commune as it were, who are drawn together not only by common actions and goals, but by a need to develop new libertarian social relations between themselves, to mutually educate each other, share each others' problems, and develop new, non-sexist, non-hierarchical ties as well as activities.[160]

How such communities, even if they could be made to last, could successfully challenge the ideological and institutional underpinnings of capitalist class power is not explained by Bookchin.

Indeed, it's typical of all the utopians that, centering their solutions on the local, ecologically harmonious community deploying appropriate technology, they are at best ambiguous on the fundamental issues of economic and political power. At worst, in Ted Trainer, not only would the market remain ("to take advantage of the indisputable merits of a free enterprise economy"), but a huge reduction in labour productivity would be acceptable, even a step forward:

> … people would be involved in active physical work for much of their waking day, producing things for themselves and their communities … A tiring twelve-hour day involving ceaseless physical work on a multitude of odd jobs and creative problems in the workshop and the garden might be better described as absorbing play than as work.[161]

If they could ever be realised, such "conserver" societies would only recreate the social conditions that gave rise to industrial capitalism. Instead of being a progressive solution to the problems created by industrial capitalism, the local "ecotopias" favoured by Bookchin, Trainer, Schumacher and others would simply cause them to reappear.

3. Ecomysticism

In the ecological thinking of Trainer, Bookchin and even Schumacher the idealist philosophical impulse is more or less constrained by the desire to produce a hopefully

between the sciences takes the form of holism, which dissolves the real distinctions between the laws of the physical world, the laws of the animal world and the laws of social development. Revulsion from the purely instrumental attitude towards the natural world fostered by capitalism leads to the revival of nature philosophy and fantastic schemes to return human society to harmony with nature under precapitalist conditions.

This trend reaches its most theoretically developed form in the work of US eco-anarchist Murray Bookchin. Bookchin argues that the destruction of the environment is the product of domination and hierarchy in human society:

> The truth is that man has produced imbalances not only in nature, but more fundamentally, in his relations with his fellow man — in the very structure of society. To state this thought more precisely: The imbalances man has produced in the natural world are caused by the imbalances he has produced in the social world.[157]

As long as sexism, ageism, racism and militarism continue so will the domination of nature and ecological destruction. Bookchin rejects the conventional explanations of the ecological crisis (technology, overconsumption and overpopulation) as superficial and fraught with reactionary implications. In their place, however, he sets an ahistorical theory of hierarchy, with domination playing the role of original sin. Hierarchy is the:

> … cultural, traditional and psychological system of obedience and command, not merely the economic and political systems to which the terms class and State most appropriately refer … I refer to the domination of the young by the old, of women by men, of one ethnic group by another, of "masses" by bureaucrats who profess to speak in their "higher social interests", of countryside by town, and in a more subtle psychological sense, of body by mind, of spirit by a shallow instrumental rationality.[158]

Bookchin sets against "man"-imposed hierarchy the spontaneous and purposive evolution of ecosystems towards increasing complexity and consciousness:

> The universe bears witness to an ever-striving, *developing* — not merely "moving" — substance, whose most dynamic and creative attribute is its ceaseless capacity for self-organisation into increasingly complex forms.[159]

Bookchin evades the issue of whether the various forms of class society that have arisen throughout history were necessary or not. The Marxist explanation — that they successively corresponded to and for a time promoted growth in society's productive forces — is rejected as "scientistic" and hostile to an ecological approach. Bookchin doubts that capitalism was ever progressive. Moreover, in his eyes Marxism ("blind to authority as such") shares the original sin of the Enlightenment — "the concept of 'lawfulness' itself". Instead of a scientific and materialist explanation of social development Bookchin propounds a religious concept of necessity drawn from ancient

Capitalism stimulates the development of technologies which are as productive as possible from the point of view of the individual firm (and which give labour as little power as possible over the production process). However, once production becomes driven by social need new technology formation and diffusion can become influenced by other needs, such as that of keeping pollution output and energy and materials throughput to an absolute minimum. Indeed, this is the only condition under which technology can generally become "appropriate". Yet, while recognising the need for social planning in order to deal with environmental problems, Trainer argues for the retention of a "free enterprise economy".

For E. F. Schumacher, a seminal influence on green political thought, the core problem is unrestrained industrialisation. Technology should fulfil human and ecological purposes — be "technology with a human face". Schumacher's work is a polemic against the "bigger is better" ethic of expanding capitalism, but he locates the cause not in the material conditions for capitalist production and reproduction, but in six "anti-environmental values" stemming from the 19th century and "which still dominate, as far as I can see, the minds of 'educated' people today". These are: evolution; competition, natural selection and the survival of the fittest; the Marxist belief in the material base of history; the Freudian emphasis on the overriding importance of the subconscious mind; the ideas of relativism, "denying all absolutes, dissolving all norms and standards"; and the belief that "valid knowledge can be attained only through the methods of the natural sciences".[156]

Jumbling together scientific knowledge in the natural sciences (natural selection), scientific method in the social sciences (historical materialism), scientism and positivism in philosophy (only the natural sciences afford true knowledge) and pure capitalist ideology (social Darwinism), Schumacher "explains" capitalism as a product of false, inhuman and non-spiritual ideas. The solution then comes readily enough: to replace these false ideas with valid precepts drawn from the spiritual wisdom of Eastern religion.

This eclectic confusion is standard fare in green political thought. However, given the domination of mid to late 20th century political and economic theory by positivism (in the advanced capitalist world) and vulgar "Marxism" (in the Stalinist-ruled countries), it was inevitable that the revival of ecological thinking could only find expression in a re-emergence of idealist, even directly religious, modes of thought.

Thus in a lot of ecological thought the healthy reaction against positivism and the standard academic compartmentalisation of the sciences flows over into rejection of scientific knowledge and, in some cases, outright mysticism. The revolt against mechanistic materialism and academic specialisation which erects impassible barriers

There's a widespread trend of thinking in the green political movement that leads back to 19th century anarchists like Peter Kropotkin (*Fields, Factories and Workshops of Tomorrow*) or to utopian socialists like Charles Fourier and William Morris. In their attempts to deal with the misery, exploitation and alienation of industrial capitalism, they posed future visions of creative and free self-reliant communities in harmony with nature and other communities. These views emphasis the role and responsibility of the individual, who is fulfilled in relation to the community. Decentralised economies and politics, common ownership of property, distribution according to needs, non-hierarchic direct democracy built on the notion of communes and cooperatives are their main features.

Ecological theorists like E. F. Schumacher, Murray Bookchin and Ted Trainer all arrive at their own particular variant of this panacea, though each starts by selecting a different feature of industrial civilisation as the root cause of the environmental crisis. This is no accident: whatever aspect of industrial society they choose to emphasise, these thinkers all tend to view the growth of the productive powers of society (for which capitalism was necessary) as largely evil. Whether capitalism brought with it inhuman-scale technology (Schumacher), overconsumption (Trainer) or anti-ecological dominant hierarchies (Bookchin), the solution tends to involve a flight back towards to pre-capitalist petty commodity production.

Ted Trainer's main ideas have been expressed in two books — *Abandon Affluence* and *Developed to Death*. They contain very detailed presentations of trends in resource depletion and energy supply, population growth, the wastefulness of consumer societies, and the exploitation of the Third World by wealthier nations. Trainer argues strongly against those who believe that these problems can be addressed adequately through existing political and social institutions.

However, as the title indicates, *Abandon Affluence* argues that all have to accept a lower level of consumption — the root cause of the ecological crisis is "overconsumption" by individual consumers in the industrially developed countries. This argument undervalues the great disparities in income that exist within the developed countries. It also fails to grasp that wasteful consumption is overwhelmingly created by the needs of capital for ever expanding markets: if profits are to be maintained planned obsolescence, the permanent stimulation of new "needs" through advertising, multiple versions of the same product and unnecessary packaging are all unavoidable. Thus Trainer's tendency to blame individual consumption levels for the ecological crisis stems from his equating *affluence* (a plentiful supply of products meeting rational needs) with the *consumerism* and wasteful consumption created by capitalism.

His line of argument also suffers from a strong dose of technological determinism.

> nearly two decades for any significant convergence to occur between these two efforts. In fact, conflicts still remain over how the two groups should balance economic development, social justice and environmental protection.[152]

In the US as well as Australia the wedding of reformist environmental organisations to the parliamentary process has led in instances to their virtual cooption by government. Mark Dowie says of the major US environmental lobbyist organisations:

> To a growing number of environmentalists … chummy breakfasts with Al [Gore] symbolise the compromised gradualism that has put the movement on the road to becoming an endangered species.[153]

The traditional environmental organisations have tended until recently to share the regulatory approach to pollution, debating with government over how to regulate the production facilities that, both sides understand, it is up to private capital to build and operate.

Even now, when it is better understood that pollution is inherent in the very design of many production technologies, the goals of environmentalism are regularly readjusted to fit in with the given balance of political forces. Thus Jay D. Hair, executive director of the National Wildlife Federation, has stated that "our arguments [for conservation] must translate into profits, earnings, productivity and incentives for industry".[154]

The ideological consensus that expresses this viewpoint could be called "eco-capitalism", the view in the words of Michael Rothschild, "this thing we call capitalism isn't an 'ism' at all, but a natural phenomenon",[155] like a rainforest or a beehive, regulating itself through the dynamic feedback mechanisms typical of ecosystems. The growth of this "eco-capitalist" ideology is pronounced. Many environmentalists, caught between the "end of communism", the failure of two decades of regulatory effort and the intensification of the environmental crisis, see no alternative but to entrust the solution of the crisis to having an environmentally level playing field create enough environmentally aware capitalists committed to installing clean, green technology on a big enough scale.

2. Utopianism

In contrast to the liberal reformists are those various currents which each in their own way recognise that a radical change in the existing social order is needed. However, most of these, because they fail to grasp the essential link between capitalist production and the environmental crisis, exhibit a more or less marked bent to see the solution in a return to small-scale production by local communities — that is, to put the wheel of history into reverse.

"lesser evil" of the main capitalist parties, such as the US Democrats or the Labour parties of countries like New Zealand and Australia. Certain environmental leaders have even been inveigled into supporting the conservative wing of capitalist party politics, as happened in the 1996 Australian national poll, where the promise of an environment fund had certain leaders supporting the privatisation of the country's public telecommunications carrier, Telstra.

In the advanced capitalist countries more or less stable coalitions for environmental reform and "sustainable development" have come together between government, business and broad sections of the environment movement. American environmentalist Daniel Faber analyses the US variant:

> The Clinton/Gore strategy accommodates general environmental policy aims in exchange for the granting of major concessions to American industry. This strategy includes isolating more business-friendly mainstream environmental organisations from the rest of the movement in corporatist-type negotiating arrangements. The purpose of such "environmental mediation" and "dispute resolution" strategies is to enlist the support of this wing of the ecology movement in a number of highly symbolic policy initiatives which give the Clinton/Gore administration the appearance of being pro-environment. In exchange for such support, business is rewarded with a loosening of other regulations and granted forms of economic compensation (often in the form of "free-market" alternatives) which come at the expense of other environmental organisations and the issues over which they are battling. The "realism" of this approach has even lead traditional environmental organisations into a suspicious and uncooperative stance towards Green parties, regarded by some environmental officials as an unwelcome complicating factor in the game of extracting the best possible deal from the contending "parties of government".[151]

The established environmental lobby organisations, overwhelmingly white and professional in composition, are also prey to alliances with ruling capitalist elites on such issues as immigration, as well as being indifferent to the needs of workers in polluting and environmentally destructive industries. For instance, when in 1983 US logging giants Louisiana-Pacific and Weyerhaeuser demanded wage cuts of their workers and strikes broke out throughout the Pacific Northwest during the 1980s, environmentalists were nowhere to be seen. In similar fashion:

> During the 1960s and 1970s, while the "Big Ten" environmental groups focussed on wilderness preservation and conservation through litigation, political lobbying and technical evaluation, activists of colour were engaged in mass direct action mobilisations for basic civil rights in the areas of employment, housing, education and health care. Thus, two parallel and sometimes conflicting movements emerged, and it has taken

man, and of society by the state is completely abolished." Norwegian Arne Naess's "deep ecology" points to "deep socialism".

There is nothing new here. Nature has been ransacked for metaphors to justify all political ideologies at least since ancient Greek times. The difference today, given the rise of ecological science, is that these metaphors acquire a pseudo-scientific colouration: "laws" of nature are converted into "laws" of social organisation and development or models of ecologically sustainable communities.

1. Environmental reformism & 'eco-capitalism'

The dominant political approach within the environmental movement has been that of lobbying capitalist governments to introduce legislative regulations against environmental degradation — the politics of liberal reformism. While opposing the now discredited position that the market can of itself guarantee a safe and clean environment, this approach argues that the market economy, regulated and adjusted by an appropriate mix of taxes and subsidies, is able to achieve the best result.

Thus legislation that combines the right degree of bureaucratic state action with a "playing field" appropriately tilted by well-judged green taxation is capable of ensuring environmentally sustainable production. Legislation which regulates emissions of pollutants, which licences outflows and allows for often harsh penalties for infringements, is married with the creation of bureaucratic enforcement agencies which are intended to police the legislation.

This liberal reformist approach, which focusses on lobbying capitalist politicians, has formed the standard politics of the best-known environmental organisations. Their small bureaucratic apparatuses preside over often very large paper memberships. These organisations, such as Greenpeace internationally, the Sierra Club in the US and the Australian Conservation Foundation promote themselves as spokespeople for the movement as a whole, even while their quasi-corporate organisational structures entrench unaccountability.

With few exceptions these are "top-down" organisations which do not seek to involve and mobilise their members. Where they do initiate mass protest actions, the aim is to exert public pressure on capitalist politicians to listen to the organisation's lobbyists. Some of these liberal-dominated organisations, most notably Greenpeace, prefer to use spectacular actions by small groups of "environmental commandos" to draw attention to environmental scandals. However, while often attracting publicity and sympathy, such stunts tend to ensure that the majority of members of the organisation remain passive observers and not participants in the movement.

In the realm of capitalist politics these organisations inevitably gravitate to the

IV. Currents in Ecological Thought

Since it began to emerge thirty years ago, the contemporary environmental movement has crystallised into a range of distinct ideological trends. The differences among these currents are based on varying analyses of the roots of the environmental crisis and different proposals about how to reverse it. Yet, while all these trends now speak in the language of ecology and environmentalism, none of them are new. As far as political action in relation to the environmental crisis goes, they revive all the classical political currents, from fascism through to revolutionary Marxism.

This is inevitable, because green political thought in all its varieties grows in the soil of capitalist class society and must — explicitly or implicitly — take a stand on all the issues to which this society gives rise. Attempts to evade such vital issues under the naive and conceited illusion that green politics is "neither right nor left but out in front" inevitably produces absurd results in the realm of real political struggle: greens and environmentalists, like everyone else, must choose where they stand on all social issues.

While the *science* of ecology arose in the interstices of previously existing disciplines (botany, biology, meteorology, physics, chemistry) and contributed its own specific understanding of the web of previously hidden or misunderstood relationships and while the revival of ecological *consciousness* took place across the political spectrum, ecology as such carried with it no new political insight or method. Inevitably, however, each and every political trend in ecological thought uncovers in the workings of nature analogues of how, according to its particular viewpoint, human society should function. Ecological sanction can be found for any ideological product.

For Garret Hardin the "the allocation of rights based on territory must be defended if a ruinous breeding race is to be avoided". For the social Darwinist survival of the fittest is a law of social existence. For eco-anarchist Murray Bookchin the "non-hierarchical nature of ecosystems" sets the example for "the achievement of a totally new, non-hierarchical society in which the domination of nature by man, of woman by

Despite the gains in environmental consciousness made during the course of the conference, few concrete steps have been taken toward implementation. For example, the documents set a specific target for environmental aid from the "North" to the "South". Environmental aid was to be increased to 0.7 per cent of the combined GNP of these nations. By mid 1993, the amount of aid had *declined* by $6 billion from 0.33 per cent to 0.29 per cent of combined national income.

The Rio agreement on biological diversity calls on signatory states to recognise endangered species and move to protect their habitats. The agreement has done little to halt the rate of deforestation and species extinction as habitats are destroyed by forestry and agricultural activities. The biological diversity convention also contains certain provisions that would seem to contradict its intent. Under pressure from US negotiators, the draft of the final document opened the way for the patenting of life-forms.

The document allows those who possess the genetic "blueprint" of plant species to patent these and so have absolute control over their genetic use. This provision is tantamount to ceding control of future advances in agricultural productivity to those who currently control gene reserves — the agrotechnology multinationals like Cargill.

Although the majority of crop genetic strains are found in countries of the Third World, the genetic materials are stored and catalogued in institutes controlled by the industrialised nations. The biodiversity convention therefore explicitly gives the North the right to patent the genetic rights to these seeds, effectively giving these nations control over developments in agriculture in perpetuity. The failure of the US Bush administration to sign the treaty at Rio, reflected a reluctance on behalf of some capitalist interests to have to pay for any further genetic materials taken from the South, while the decision to sign on the part of the Clinton administration is explicit recognition that institutionalising property rights over life-forms will benefit the industrialised nations most.

UNCED gave the global environmental effort an agenda (inadequate), institutions and a monitoring process. It gave birth to the UN Commission for Sustainable Development (CSD) which, while having no legal or financial clout, serves as a forum for reviewing progress on sustainable development. The CSD is in effect the Rio Summit in microcosm and in regular session: through it governments can be held up to shame, independent scientific assessments can be heard and NGOs can mobilise pressure for faster change. But it lacks any power to enforce compliance with the 215 international agreements presently in operation, nor has it any power to compel important non-participating nations to commit themselves to Agenda 21 and other targets and undertakings. ■

A more rounded response to the environmental crisis was developed by the United Nations Commission on Environment and Development, particularly in *Our Common Future*. The report clearly identified the key environmental threat as poverty and the unequal distribution of the world's resources. It strongly advocated the need for sustainable development. However, the scale of the change the report deemed necessary was a challenge to the institution that commissioned it:

> The Commission has noted a number of actions that must be taken to reduce risks to survival and to put future development on paths that are sustainable. Yet we are aware that such a reorientation on a continuing basis is simply beyond the reach of present decision making structures and institutional arrangements both national and international.[150]

Reflecting the largely advisory nature of the UN General Assembly, the report attempts to set goals for change rather than outlining strategies. The document addresses all key areas of environmental concern as identified by the UN, concluding each section with a series of recommendations.

In terms of a strategy for change however, the report has little to offer. Apart from recommendations to increase the power of bureaucratic bodies such as the UN itself, the commission suggests very little to alter the system in the fundamental way it alludes is necessary. For while clearly defining the key problem of the environment as one of social control over the industrial process and international relations, the commission failed to offer any strategy to fundamentally challenge the power of those who make the production decisions, the ruling corporations.

The most lasting result of the commission's deliberations was the initiation of the process that led to the holding of the United Nations Conference on Environment and Development (UNCED) in Brazil in 1992. The UNCED conference adopted five documents, including two statements of principles, two conventions and an action agenda (Agenda 21). None of the documents adopted is considered binding on the participating nations, relying rather on moral pressure.

The Rio Declaration on Environment and Development lays down the framework for international cooperation on environmental issues agreed at the conference. In substance this document recognises the responsibility of nations for their own environmental impact, as well as espousing general principles on international cooperation, elimination of poverty and war and the need for the empowerment of women. Other declarations lay down general principles on the conservation of forests, international measures necessary to inhibit global warming and to guarantee biological diversity. Agenda 21 lays out the basis of actions necessary to implement the content of the principles adopted.

transition to an environmentally responsible pattern of life.[148]

From the advanced capitalist countries the main requirement would be "money for helping the transfer of environmental helpful technologies to the Third World", while the Third World itself would have to guarantee "sustainable population and a new pattern of sustainable economic progress". Gore's strategy would involve a massive reallocation of resources. The proposal entails a virtual reversal of the existing economic relations between rich and poor nations. The action plan envisages the transfer of technologies to the Third World, on other than a market basis. If carried out, Gore's proposal would see a massive slump in profits currently derived from exploitation of the Third World's resources. No individual capitalist firm, group of firms or nation could countenance such action. While it is certainly a basis to a solution to the ecological crisis, Gore does not suggest any feasible way it could be implemented. Thus despite all the rhetoric regarding the joint responsibility of rich and poor nations for the environmental crisis, the "global action" approach collapses into an attempt to rehabilitate the idea that it is the rapid growth of population in the Third World that is the principal threat and chief obstacle to solving the global ecological crisis.

This neo-Malthusian view was particularly reflected in the run up to the third UN International Conference on Population and Development, held in Cairo in September 1994. Imperialist governments argued that population growth was a cause rather than a symptom of ecological/social breakdown, with the consequent obfuscation of the underlying reasons for global environmental rupture. The Women's Global Network for Reproductive Rights was very critical of the basic intent of the conference. While it attempted to enlist the support of feminists, with statements linking population control with the empowerment of women, the Network saw the official conference as having a very narrow agenda:

> Fundamental to the consensus is the view that rapid population growth is one of the major causes of the environmental crisis, despite the occasional lip service paid to the problem of consumption. Blaming such a large proportion of environmental degradation on the world's poorest people is unsustainable, both scientifically and ethically.
>
> This is not to deny that the poor are involved in deforestation, though on a global level they are clearly not the main culprits. Moreover, it is important to look at the underlying reasons why poor people degrade their environment when they do. In some cases the reason may be scarcity of fuel wood and the lack of alternative energy forms, in others the need to farm marginal land because the best land is controlled by a powerful few. Population pressure can contribute to the pressure, but it is rarely the root cause. Why then does the UN Fund for Population Activities (UNFPA) continue to blame population in publication after publication?[149]

> In sum, the Congress has mandated massive environmental improvement; the EPA has devised elaborate, detailed means of achieving this goal; most of the prescribed measures have been carried out, at least in part; and in nearly every case the effort has failed to even approximate the goals.[144]

The response to the apparent failure of regulation has been a turn to deregulated market-based "risk management" approach to the setting of environmental standards. Pushed particularly by the Reagan administration in the USA, this approach attempted to combine environmental risk assessment with the "cost and feasibility" of reducing risks to arrive at a regulatory standard that is supposed to reduce the risk. The market-based approach to environmental protection was further extended with the introduction of tradable pollution rights. Companies are assigned a limit to which they are permitted to pollute. If they do not use the full "value" of their quota in any one year, it may be sold on the market to a company which has exceeded its own limits. The effect of this policy change "is a profound moral and political judgment: that poor people who lack the resources to evade it should be subjected to a more severe environmental burden than rich people."[145] The responsibility for society to protect the living environment of the individual is obfuscated in a supposed drive for economic efficiency.

A sophisticated ruling class response to the challenge of the ecological movement is that encompassed in the so-called "international development" response. Characterised by its proponents as a "new paradigm", this response is centred around international relations between "developed" and "developing" countries. A thorough exposition of this response is given by US Vice-President Al Gore in *Earth in the Balance*. Gore presents the responsibilities of the "developed" nations as follows:

> Many people of good will recognised early on the need to bring some coherence to the efforts of rich and poor nations to build a more just civilisation; what came to be called development is now the chief means by which wealthy nations — often working through multilateral institutions like the World Bank and regional development banks — can help undeveloped nations accelerate their transition to modernity.[146]

While recognising that the development paradigm often entailed serious environmental harm, Gore sees it as the basis for a global approach:

> While it is true that there are no real precedents for this kind of global response now required, history does provide us with at least one powerful model of cooperative effort: the Marshall Plan.[147]

The crux of such a plan would be:

> … massive efforts to design and then transfer to poor nations the new technologies needed for sustained economic progress, a worldwide program to stabilise world population and binding commitments by the industrial nations to accelerate their own

Where pollution is more intrinsic to the production process, regulation has proved less effective. Regulations to install catalytic converters to the exhaust systems of all new cars has had the effect of decreasing the emissions of carbon monoxide from automobiles, by as much as 24 per cent between 1975 and 1987. However, increased social reliance on road transport (cars, trucks etc) has meant that despite regulation, concentrations of nitrogen oxides (a key contributor to the formation of petrochemical smog) continue to grow. Concentrations of the pollutant grew by as much as 35 per cent between 1986 and 1991 in Britain. Water quality has not been greatly improved by government regulation. "In sum," Commoner points out, "the regulations mandated by the Clean Water Act, and more than $100 billion spent to meet them have failed to improve water quality in most rivers." In fact while levels of phosphates remained relatively constant in US water systems from the 1970s to 1987, levels of other serious pollutants increased sharply. Nitrate levels in water increased most dramatically, owing to increased use of chemical fertilisers in farming.

Despite enormous expenditure on clean-up the US decontamination program runs massively behind schedule, over budget and with questionable quality of result. Superfund, the US funding agency established in 1980 with $1.6 billion to clean up 400 contaminated sites, now faces a bill of $300 billion to clean up 1200 sites, with another 900 expected by the year 2000. The US General Accounting Office has also found that the EPA's standards for declaring decontamination "successful" vary by as much as 360,000:1 from site to site.[143]

Outright banning of toxic substances has had much more impact. The banning of DDT in the US in 1972 meant that environmental concentrations fell dramatically over a short time. A similar result was achieved with PCBs. However, regulation has failed to halt the environmental dissemination of other seriously threatening chemicals, such as dioxin, concentrations of which have been steadily increasing. (Dioxin is a resultant waste product of the burning of certain plastic wastes at relatively low temperatures. Its increased concentrations in the biosphere have mirrored increasing production of materials such as polyvinyl chloride (PVC) for throw-away packaging.)

The lack of success of the regulatory approach forced a series of back-downs by the environmental bureaucracies. Targets for the reduction of carbon monoxide, hydrocarbons and ozone levels in US cities were set by the US EPA to be met by 1977. In 1977, with no cities coming close to compliance, deadlines were extended to 1982, and then again to December 31, 1987. At this date, the most polluted cities were given a further extension of time — until 2007!

Despite the apparently massive effort to the contrary, Commoner is forced to conclude:

winners and losers. For example, German household-goods company Henkel developed a phosphate-free detergent which so rapidly swept the German market that the government was able to ban detergents containing phosphates: the losers were French detergent companies exporting their phosphate-based product into the German market.[141]

As the global environmental crisis deepens these intra-capitalist divisions will also deepen. The gap between business greenwash — and even the "sustainable development" plans of corporate think tanks — and its practice in the world of profit-making, will therefore also become more glaring, and more politically destabilising.

b. Environmental 'governance'

Confronted with the depth of the environmental problem and the growing environmental movement the response of governments in many advanced capitalist countries was to establish regulatory organisations. The best example of this approach is that of the US, with legislation such as the Clean Air Act and the creation of the Environment Protection Agency (EPA) in the early 1970s. Australia, along with other countries, has followed the US lead.

The shortcomings of this approach are analysed by Barry Commoner in *Making Peace with the Planet*:

> The United States is a good place to look for answers. Concern with the environment and efforts to improve it are now world-wide, but the United States is the place where the environment movement first took hold, and where the earliest efforts were made. Since the early 1970s the country has been governed by basic laws that were intended to eliminate air and water pollution and to rid the environment of toxic chemicals and of agricultural and urban wastes. National and state environmental agencies have been established; about a trillion dollars of public and private money have been spent … Environmental issues have taken a permanent place in the country's political life.[142]

Commoner then traces the degree of improvement achieved since the proclamation of the National Environmental Policy Act of 1969. The greatest success has been registered where minimal changes to production techniques have been required. Notable success has been achieved in reducing atmospheric concentrations of sulphur dioxide, the key constituent of acid rain. Largely emitted from the stacks of coal burning power stations, sulphur dioxide emissions decreased by around 50 per cent in Britain between 1976 to 1991 as a result of government regulation requiring the installation of "scrubbers" (pollution control devices that trap gasses before emission) to stacks. Atmospheric lead concentrations also decreased significantly as a result of regulation — by 94 per cent between 1975 and 1987.

proposal would simply accelerate the flight of capital to the pollution havens of a Third World that economists like former World Bank chief Lawrence Summers regard as "underpolluted".

The enormity of what Hawken is proposing can be understood better when we look at those very few companies that are practicing what he preaches. For instance, the Dutch information consultancy BSO/Origin began attaching a monetary value to the environmental damage done by operations in its 1990 annual report, subtracting a figure for this environmental "value lost" from conventional value added. Company president Eckhart Wintsen believes that all companies should be required to calculate, in cash terms, the burden that their products place on the ecosystem throughout their life cycle, and be made to pay an "extracted-value tax" on this basis. The revenue would be used for environmental repair. However, Philips, the Dutch electronics multinational with a 40 per cent stake in BSO, "has been unenthusiastic about Wintzen's suggestion that the company voluntarily pay its extracted-value tax into a fund to finance good works".[138]

As matters stand, "green corporate citizens" make up only a tiny minority of producers and even those companies with the best environmental record have not reduced total output of pollutants. 3M is a case in point. While its 3P program is supposed to have prevented the release of 32,600 tonnes of pollutants between 1975 and 1989, total pollution emissions increased because of big increases in production.[139] Or take US telecommunications multinational AT&T, which aimed to phase out use of CFCs by 1994 along with sharp reductions in toxic air emissions, manufacturing waste and paper use. However:

> Conspicuously absent … are goals for reducing carbon emissions and toxic wastes. Including these would permit the comprehensive restructuring of industrial processes that holds the key to building an environmentally sustainable global economy.[140]

However, the massive rise in environmental consciousness and the fact that there is no escape from most forms of pollution, means that even sections of the capitalist class will support some environmental demands, making possible very broad alliances against this or that instance of environmental degradation. This trend is reinforced by the growing division between those sections of capital which can afford to retool with less polluting equipment and those, like the oil multinationals, which have billions sunk in infrastructure with the potential to wreak havoc on the biosphere.

Similar divisions are opening up between those companies that stand to gain from the imposition of tighter regulations (for example, miners of platinum for catalytic converters, private incinerator owners and the "big few" who can afford the conversion costs of non-polluting technology). Green consumerism is also creating new classes of

> of environmental business consultant Christopher Davey: "Lack of local criticism of an operation removes one of the major triggers for the wave of public indignation that sweeps through communities from time to time, causing difficulties for industries".

A number of companies have moved even further along the spectrum of greenness. Apart from those which are producing for the burgeoning "green market", firms are to be found which are seeking to make their operation as environmentally benign as possible, in the knowledge that there's money in greenness. Thus the Australian arm of Shell spent $600 million on a refinery upgrade to reduce lead levels in its leaded petrol. In the US the 3M company introduced its Pollution Prevention Pays (3P) plan in 1975. By redesigning products and equipment, changing processes and recycling waste, 3M was able to save $537 million over a 15-year period and greatly reduce its rate of pollution emission.

The response of the more astute sections of multinational capital to the pressure for sustainability is encapsulated in the 1995 formation of the World Business Council for Sustainable Development, which promotes the concept of "eco-efficient leadership", defined by WBCSD director Björn Stigson in these words:

> The term has two elements: the first is eco-efficiency, which is about simultaneously improving environmental and financial performance; the second is about leadership, having visions, being proactive, transforming organisations and people. In everyday speech, eco-efficient leadership is how to do more with less, bring more value to your customers and come out looking great.[137]

With some 70,000 firms in the US now involved in some form of "environmental commerce" and with ethical investment funds also expanding rapidly, some environmentalists see no reason why the entire system of capitalist production can't be made ecologically benign. This prospect is outlined by leading US green entrepreneur Paul Hawken in his book *The Ecology of Commerce*. For Hawken the key to producing a "prosperous commercial culture that is so intelligently designed and constructed that it mimics nature at every step" is to levy green taxes and subsidies at levels high enough to make polluting, resource-depleting production totally unprofitable within a given time span.

Hawken's approach is reminiscent of that of 19th century populist Henry George, for whom the cardinal sin of the capitalist system (unearned property income, especially through land speculation) was to be answered through the imposition of a single land tax. In a world of increasing capital mobility, Hawken's proposal is even more utopian than George's. Multinational firms are already decamping from countries with taxes, wages, infrastructure costs and environmental standards that are "too high": Hawken's

energy utility Rockwell International was fined $18.5 million for intentionally polluting Rocky Flats, Colorado, with plutonium wastes, the same company was given "performance bonuses" totalling $22.6 million by the US Department of Energy for the last three years it ran the plant.

Similarly, after the Bhopal tragedy, which affected around 200,000 victims, plant operator Union Carbide deliberately liquidated a substantial portion of its assets in the form of special dividends to shareholders, thus reducing the company's ability to pay out compensation. (Most of the victims of Bhopal have still received no compensation.)

Notwithstanding this protection, business's position remains vulnerable because awareness is spreading that the prerequisites for a solution to the crisis already exist. Already, numerous global, regional and sectoral "blueprints for survival" have been developed; resource efficient and non-polluting technologies feature in the media; and practical courses of the treatment of the major environmental problems have been developed and formally adopted by governments and international agencies.

Taking the long view, the environmental crisis again confirms that when the ruling elites have developed their own plans for confronting an all-pervasive social crisis, the rest of society — the subordinate classes — are also capable of developing their own more radical response — at the expense of the ruling elites themselves.

This state of affairs makes the environment, especially environmental liability, a permanent fact of life for capital. Environmental management is now incorporated into the operations and management structures of major corporations. MBA courses now cover such topics as "best practice environmental management" and how to "change the corporate culture" along environmental lines. The new "pro-active" approach to environmental and community issues advocates that companies:

- Incorporate environmental management into their staff training and "total quality management" schemes;
- Have in place a well-supervised monitoring system, so that a company can react to pollution problems before being forced to react to outside deadlines and directives;
- Accept external auditing of the firm's environmental performance. By 1991 in Australia 75 per cent of chemical and mining companies and 53 per cent of companies in the metal trades were conducting external environmental audits. The point of such arrangements is for companies to have an early warning system as to the possibility of community protest or regulatory intervention;
- Become "pro-active" in their communication with local communities. Business is now putting much more effort into talking with local authorities and community groups in an attempt to diffuse or split opposition to their industries. In the words

one billion dollars on environmental PR activities in 1995:

> Every Earth Day provides another opportunity for firms to get environmental credentials, deserved or otherwise. One US PR consultant observed: "There's a virtual feeding frenzy among corporations about what roles they will play on Earth Day." On the same topic, the Public Affairs Director for the Monsanto Chemical Company has said: "There's a mad scramble for many companies to project an 'I am greener than thou' attitude" …
>
> The attempt to provide a "green" and caring persona for a corporation is a public relations strategy aimed at promising reform and heading off demands for more substantial and fundamental changes. A PR expert advised in *Public Relations Journal*:
>
> "There really are no solid solutions to many environmental problems other than ceasing to partake in the activity that causes the environmental hazard. Therefore, the key to devising successful solution ideas is to show that your client cares about the environmental issue at hand."[134]

However, big capital knows that, given its record and community suspicion, more is required. So the corporations, often the worst polluters like DuPont (main world producer of polychlorinated biphenyls), are being forced to spend large sums cleaning up their operations (at least in those countries where environmental consciousness is most acute).

Business never stops complaining about the "excessive" cost of environmental protection, which in the US has been rising faster than the growth rate of industrial production. Pollution abatement costs currently stand at $40 billion a year for US manufacturing industry. Disposal costs for some toxic wastes have risen as high as $10,000 per ton [135] and can be ill-afforded in a global economic context marked by huge excess capacity and pressure on profit margins. Cost cutting is the imperative of the day, to be secured by unending attack on wages and environmental and occupational health and safety standards, if necessary through shifts to Third World pollution and cheap labour havens.

Nor has the corporate war against environmental activism eased. In the US agribusiness corporations have been so eager to stifle debate of toxic pesticide residues on food that the industry has been campaigning to pass "food disparagement" laws which make it a crime to criticise agricultural products without "a sound scientific basis". Such legislation is now on the books in eleven US states and under consideration in ten more. Even if such laws are not adopted federally they will depress discussion of the possibility that the products of agribusiness aren't good for human health.[136]

Even where corporate polluters are caught red-handed, capitalist governments are careful not to endanger private profitability too much. For example, while US

The root cause of this failure was continuing corporate dependence on intrinsically toxic technologies. The use of mercury in chlorine production, of DDT in agriculture and lead in petrol could be banned (despite considerable corporate resistance), but nitrogen fertilisers, plastics and high-compression combustion engines could not be dispensed without making severe inroads into corporate profit. As Henry Ford II said: "Minicars make miniprofits".

However, the continual worsening of the environmental crisis (symbolised by disasters like the *Exxon Valdez*) and the ongoing broadening of environmental consciousness (particularly as reflected in the rise of Green parties) further increased the pressure on business to adapt. Even as the corporations continue to press government to adopt "realistic" emission targets and guarantee resource security, they have moved to adapt their operations to the new environmental reality. Leading the way in corporate environmental consciousness have been the insurance multinationals, for whom a decade of rising disaster payouts have provided persuasive evidence of the reality of global warming.

At one level this response has been purely decorative — annual reports are now on recycled paper, there are business environment institutes and awards, the corporates now sponsor World Environment Day and the dark satanic mills have been placed behind rows of native trees. Typical is US oil multinational Chevron. When the US Clean Air Act came up for renewal in 1990, Chevron and other oil giants spent millions trying to relax the provisions covering emissions from oil refineries. This didn't stop Chevron chairman George Keller from claiming that "at Chevron we're proud of a corporate environmental policy that says we comply fully with the letter and spirit of all laws affecting our operations".

The *Greenpeace Book of Greenwash* describes the offensive:

> A leader in ozone destruction takes credit for being a leader in ozone protection. A giant oil company professes to take a "precautionary approach" to global warming. A major agrochemical manufacturer trades in a pesticide so hazardous it has been banned in many countries, while implying the company is helping to feed the hungry. A petrochemical firm uses the waste from one polluting process as raw material for another, and boasts that this is an important recycling initiative. A company cuts timber from natural rainforest, and replaces it with plantations of a single exotic species, and calls the project "sustainable forest development" … While they proclaim that "corporate environmentalism" is here, the TNCs are working to help create a new world order where international agreements and practices will give them unregulated, unparalleled power around the globe.[133]

Sharon Beder describes the corporate lust for greenwash, which saw US firms spend

threatening claims of the environment movement while attempting to meet those of the movement's demands which are compatible with maintaining economic and political stability.

Of course, the fundamental limitation to the ruling class response to the environmental crisis lies in the refusal to accept any challenge to the private ownership and profit system, the root cause of environmental destruction. At best the results achieved by the capitalist class and its environmental reforms are a limited amelioration of the crisis in certain areas — the reduction of sulphur dioxide emissions in the advanced capitalist economies, for instance. At its worst, corporate capital's response offers only a "Greenwash" of the problems; a blaming of the victims rather than seeking the fundamental causes of ecosystem breakdown. And, predictably, there's a growing trend in private industry to see whether "clean, green" production can't be made profitable in some areas (and hence boosted as the realistic solution to the crisis).

a. Business & the environmental crisis

Until the early 1980s the basic response of business to the environmental crisis was to continue treating nature along the lines described by Marx and Engels — as a storehouse to be ransacked for "factors of production" and as a sewer. For decades the big corporations polluted with impunity and succeeded in marginalising the small environmental movement. This was the epoch of such disasters as Love Canal, Minamata and the Monsanto Corporation's war of ridicule against Rachel Carson.

However, three decades of rapidly rising pollution and resource depletion brought the inevitable day of reckoning: business stood increasingly exposed as the prime suspects in the eyes of a public that was paying increasing attention to the environmental cause. For a period in the 1970s the general corporate response was to try to ride out the storm of criticism of its environmental record through a strategy that combined pressure to dilute government regulatory standards, systematic deceit (for example, meeting emission requirements only on the days the inspectors were on site), and terrorism against environmental activists (as in the corporate murder of anti-nuclear campaigner Karen Silkwood).

Although this phase came to an end with the 1977 release of dioxin in the Italian town of Seveso and the 1979 nuclear accident at Three Mile Island, in general business's tactics were not without success. Despite the growth of a vast environmental bureaucracy (especially in the USA) the main indices of pollution continued to climb. Pollution reduction targets continued to be revised upwards; "safe levels" for emissions established by government regulators often coincided with existing business practice.

upon the Earth's environment (and of nuclear testing) had created a social climate conducive to the formation of a popular movement around this issue. The movement grew out of the protest movement against the US war on Vietnam. The antiwar movement was informed by the abundance of information detailing the detrimental environmental impact of the war in Indochina, as well as evidence of the extreme toxicity of a range of industrial chemicals to come to prominence after World War II (notably DDT, mercury and phosphates). The 1962 appearance of Rachel Carson's *Silent Spring* was a turning point in the emergence of this mass awareness.

An undeniable achievement of the environment movement both in Australia and internationally has been the mobilisation and at least partial radicalisation of large numbers of people. Owing to its broad and growing support and ability to mobilise large numbers of people, the movement came to pose an incipient challenge to the demands of capital for unrestrained economic growth and profitability. In its earliest phases the environmental movement offered a direct challenge to the compatibility of environmental demands with the dominance of private property.

In Australia and many other countries, the movement has succeeded in pushing through numerous reforms, which have had the effect of partially decelerating the explosive increase in environmental destruction. This can be seen in the almost total halt in the building of new nuclear power stations, in the reductions of the use and production of some synthetic chemicals, and in the development of exhaust emission standards for cars and industrial plants.

Victories for the Australian movement include the successful 1983 blockade of the proposed dam on Tasmania's Franklin River; the curtailing, from the late 1970s, of uranium mining; restrictions on the logging of old-growth forests; and a large expansion in the number and extent of national parks.

Yet at the same time, global damage to the environment is greater than ever before. The reforms won by the movement at most have served to slow down the slide toward environmental destruction. From this perspective, the ongoing degradation of the biosphere points to the need to go beyond piecemeal reforms toward a fundamental transformation of society.

3. Ruling class responses to environmentalism

The response of the capitalist rulers to the challenge of the ecological movement has not been uniform. It has ranged from complete denial of the existence of the crisis (US President George Bush and ultra-right think tanks like the US Cato Institute) to the adoption of "sustainable development" as a policy goal, with the rhetoric of an Al Gore. In its overall response the capitalist ruling class has sought to discredit the more

society from private capital of the means of production, making it possible for the first time for humanity to govern its impact on nature. The socialist revolution in alliance with science finally frees humanity to apply the laws of nature to the humanity-nature relation itself. In contemporary language, it is the precondition of truly sustainable development.

e. Early blueprints for sustainable societies

Aside from a few scattered general comments, Marx and Engels did not develop any systematic views on the organisation of the economy immediately following the overthrow of capitalism. However, as the German Social Democracy grew into a mass party the issue as to the forms socialism would take became more pressing. Thus Social-Democratic leader August Bebel in his work *Women under Socialism* explores the potential for socialist development made possible by the application of scientific knowledge in soil conservation, recycling and a healthy urban-rural balance. In *The Agrarian Question* Karl Kautsky anticipated that:

> By overcoming the antithesis between town and country, or at least between the densely populated cities and the desolated open country, the materials removed from the soil would be able to flow back in full. Supplementary fertiliser would then, at most, have the task of enriching the soil, not staving off its impoverishment. Advances in cultivation would signify an increase in the amount of soluble nutrients in the soil without the need to add artificial fertilisers.[132]

Writers like Josef Popper and Karl Ballod developed models of societies ruled by sustainability in the flow of energy and materials and moderation in the use of exhaustible resources. Ballod, followed by Otto Neurath, developed ecological planning techniques, calculating, for example, the area of land that could be fertilised if the annual sewer waste of Berlin were recycled.

2. Rise of the modern environmental movement

However, environmental destruction only became an issue of broad public awareness and concern in the 1960s as a result of the qualitative leap in the degradation and pollution of the planet's air, water and land which came about within the framework of the long boom in the world capitalist economy in the 1950s and 1960s. During this period there was a massive increase in the use of fossil fuels, particularly petroleum, and an accompanying expansion of the automobile industry. In addition, there was a shift to the use of synthetic chemicals, which have penetrated every sector of human activity.

By the late 1960s, public awareness of the damaging impact of these technologies

new (artificial) preparation of natural objects, by which they are given new use values. Hence the exploration of the Earth in all directions, to discover new things of use as well as new useful qualities of the old; such as new qualities of them as raw materials etc.; the development, hence, of the natural sciences to their highest point; likewise the discovery, creation and satisfaction of new needs arising from society itself; the cultivation of all the qualities of the social human being, production of the same in a form as rich as possible in needs, because rich in qualities and relations … is likewise a condition of production founded on capital …

Thus, just as production founded on capital creates universal industriousness on one side — i.e., surplus labour, value-creating labour — so does it create on the other side a system of general exploitation of the natural and human qualities, a system of general utility, utilising science itself just as much as all the natural and human qualities, while there appears nothing *higher than itself,* nothing legitimate for itself, outside this circle of social production and exchange. Thus capital creates the bourgeois society, and the universal appropriation of nature as well as of the social bond itself by the members of society. Hence the great civilising influence of capital; its production of a stage of society in comparison to which all the earlier ones appear as mere *local developments* of humanity and as *nature-idolatry.* For the first time, nature becomes purely an object for humankind, purely a matter of utility; ceases to be recognised as a power for itself; and the theoretical discovery of its autonomous laws appears merely as a ruse so as to subjugate it under human needs, whether as an object of consumption or as a means of production. In accord with this tendency, capital drives beyond national barriers and prejudices as much as beyond nature worship, as well as all traditional, confined, complacent encrusted satisfactions of present needs, and reproductions of old ways of life. It is destructive towards all of this, and constantly revolutionises it, tearing down all the barriers, which hem in the development of the forces of production, the expansion of needs, and the exploitation and exchange of natural and mental forces.

But from the fact that capital posits every such limit as a barrier and hence gets *ideally* beyond it, it does not by any means follow that it has *really* overcome it, and since every such barrier contradicts its character, its production moves in contradictions which are constantly overcome but just as constantly posited. Furthermore: The universality towards which it irresistibly strives encounters barriers in its own nature, which will, at a certain stage of its development, allow it to be recognised as being itself the greatest barrier to this tendency, and hence will drive towards its own suspension.[131]

However, the solution to capitalism's exploitation of the Earth and the worker does not lie in a return to the idyll of a "natural" society, to freezing, if that were even possible, the development of the forces of production. It lies instead in the capture by

changes that take place in nature are now increasingly due to human activity, so that, for Engels, even at a primitive level of development, "there is devilishly little left of 'nature' as it was in Germany at the time when the Germanic peoples immigrated into it".

The evolution of primitive societies into class societies and eventually into capitalist society goes hand in hand with an ever increasing impact of humanity upon nature, which under capitalism is determined primarily by production for private profit. Under the private profit system the Earth itself becomes "an object of huckstering" (Engels): the fertility of the soil and the vitality of the labourer are equally sacrificed to capital's "werewolf hunger for surplus value" (Marx).

Marx and Engels did not produce a worked-out, comprehensive presentation of the interrelationship between a young and expanding capitalism and the environment, but the *general* humanity-nature relationship haunts all their work, and the *specific* impact on the environment of different civilisations and modes of production is a recurring theme.

In particular Marx, in a remarkable passage in the *Grundrisse,* sketched out the essentially antagonistic relation between the "logic of capital" and nature.

> The creation by capital of *absolute surplus value* — more objectified labour — is conditional upon an expansion, specifically a constant expansion, of the sphere of circulation. The *surplus value* created at one point requires the creation of surplus value at *another* point, for which it may be exchanged … A precondition of production based on capital is therefore *the production of a constantly widening sphere of circulation,* whether the sphere itself is directly expanded or whether *more points within it are created as points of production* … The tendency to create the *world market* is directly given in the concept of capital itself. Every limit appears as a barrier to be overcome. Initially, to subjugate every moment of production to exchange and to suspend the production of direct use values not entering into exchange, i.e., precisely to posit production based on capital in place of earlier modes of production, which appear too rooted in nature from its standpoint …
>
> On the other side, the production of *relative surplus value,* i.e. production of surplus value based on the increase and development of the productive forces, requires the production of new consumption; requires that the consuming circle within circulation expands as did the productive circle previously. Firstly quantitative expansion of existing consumption; secondly: creation of new needs by propagating existing ones in a wide circle; *thirdly*: production of *new* needs and discovery and creation of new use values … Hence exploration of all of nature in order to discover new, useful qualities in things; universal exchange of the products of all alien climates and lands;

by the US government of Yosemite Park to California (with the stipulation that it be maintained as a public park) and the declaration of Yellowstone National Park in 1872 and the Royal National Park in New South Wales in 1879.

Further spurred on by the final closure of the American frontier, the preservationist movement was also inspired by various cults of nature, a tradition most immediately represented in the US by Henry Thoreau but with a lineage reaching back to German and English Romantic poets and Jean-Jacques Rousseau. The watchword for the preservationist movement in its search for a refuge from the horrors of industrial capitalist society was Thoreau's "in the wilderness is the preservation of the world". In the words of Sierra Club founder John Muir:

> Thousands of tired, nerve-shaken, over-civilised people are beginning to find out that going to the mountains is going home; that wildness is a necessity and that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers but as fountains of life. Awakening from the stupefying effects of the vice of over-industry and the deadly apathy of luxury they are trying as best they can to mix and enrich their own little ongoings with those of Nature, and to get rid of rust and disease.[130]

The movement that is today called animal liberation first emerged in the late 18th and early 19th centuries in the various societies for the prevention of cruelty to animals. The assumption of a moral obligation by the human species to other living beings can be traced back to the position first enunciated by Jeremy Bentham when he wrote that what was "important about beings was not, 'Can they reason ?', nor 'Can they talk ?', but, 'Can they suffer ?'". By this criterion other species become candidates for treatment by humans as something more than resources.

d. Marx & Engels

In the theoretical sphere the general scientific conception of the evolving humanity-nature relationship was first uncovered in the work of Karl Marx and Frederick Engels. For Marx and Engels humanity is part of nature and nature provides humanity's direct means of life (and hence the fact that humanity's "physical and spiritual life is linked to nature means simply that nature is linked to itself, for humanity is a part of nature"). But nature is also the "object and instrument" of humanity's life activity. That is, confronting nature, humanity "begins to distinguish itself from animals as soon as it begins to produce its means of subsistence". Through labour, through the use of tools, humanity impresses its own stamp on nature in a different way from animals and "the more that human beings become removed from animals in the narrow sense of the word, the more they make their history themselves, consciously." As history develops

came in the work of Nicolas Georgescu-Roegen. Unlike neo-classical economics which basically views the economy as a perpetual motion machine fueled by money and private individual interests and "endowments" (land, labour and capital), Georgescu-Roegen's ecological economics viewed the economy as an open system which drew on solar energy and resources and produced by converting them into dissipated heat and waste materials. These could, via recycling, be reused to a certain degree but the proper, ecologically benign, functioning of the economy depended on being able to monitor and control the pace and scale of this throughput.

- *Property forms and the environment:* In the 19th century harmonious human and natural development was seen to depend on private property (Malthus), communal property (Utopian socialists) and social property (Marxists). The same debate continues today with the "tragedy of the commons" only solvable for some (Garrett Hardin) through the assignment of private property rights over resources, while for others (Barry Commoner) private property is the root cause of environmental degradation and the threat to human survival.

b. Resource management

The resource management movement arose in the "frontier" capitalist states (United States, South Africa, Australia, New Zealand) where the threat to overall economic development from rampantly predatory private capitalists reached crisis point in the late 19th century (by 1870 commercial hunting of bison had reached three million head a year). The movement focussed first of all on forest management, seeking to establish some sustainable (or at least slower) rate of depletion and built on the Romantic reaction to a savagely exploitative capitalism.

The main figure in the resource conservation movement was Gifford Pinchot, the first director of the US Forest Service, whose book *The Fight for Conservation* was in part a reply to the criticism that conservationism was "hoarding" resources for future generations. The resource conservation movement, with its ethic of planned, efficient exploitation of natural resources from the point of view of the overall good of the economy, represented the first restriction on private capital's *laissez faire* "right" to untrammelled exploitation of nature.

c. Conservation & animal rights

The aim of the wilderness movement, represented by such organisations as the Sierra Club in the US and the national parks movement in Australia, was to preserve nature from development through setting aside large areas as a way of conserving species and species diversity. Among the earliest successes of the movement were the 1864 ceding

humanity-nature relationship. Thus, as well as foreshadowing the concerns and research procedures of contemporary environmental science, debates in 19th century science also prefigure the controversies of the contemporary environmental movement.

- *What is a sustainable level of population?* At one extreme Malthus, on the false assumption of a more or less fixed level of agricultural productivity, set strict limits to population growth and human wellbeing. At the other, Franz Oppenheimer, on the basis of productivity achieved in greenhouse farming and without accounting for energy costs and waste, set an upper limit in 1901 of 200 billion for the world's population.
- *Resource depletion:* In 1885 physicist Rudolf Clausius wrote, facing the prospect of long-run decline in coal supplies: "The most civilised nations should act in concert in order to control the extraction of coal in a manner alike to the control of forest exploitation in well organised states."[128] This already posed the question of what rate of resource depletion to allow to cater for the needs of future generations, anticipating the contemporary debate over sustainable development.
- *The applicability of the laws of animal life to the human world:* Charles Darwin himself saw his thesis about the "struggle for existence" as "the doctrine of Malthus applied in manifold force to the whole animal and vegetable kingdom". Such a doctrine is the forbear of the "lifeboat ethic" of such latter-day Malthusians as Garret Hardin and Paul and Anne Erhlich.

Critics of Malthusianism, first and foremost Marx and Engels, stressed that the laws of human life are different from those of animal life. In the words of Engels:

> The interaction of … living bodies [includes] conscious and unconscious cooperation as well as conscious and unconscious struggle … The whole Darwinian theory of the struggle for existence is simply the transference from society to organic nature of Hobbes's theory of *bellum omnium contra omnes* and of the bourgeois economic theory of competition, as well as the Malthusian theory of population.[129]

- *Entropic versus exotropic tendencies in life systems:* Which is the fundamental tendency of life systems? Entropy? That toward dispersal and disorganisation (as expressed in the Second Law of Thermodynamics), or that towards ever-higher forms of life organisation? In the 19th century this discussion had an inevitabilist character. (Was there an "iron law of existence"? Or an inevitable "heat death of the universe"?) Today it revives in the perception that simple uniform ecosystems (monocultures in agriculture, standardised human communities) are unstable in the long run and that for artificial systems to be ecologically sustainable they must mimic the characteristics of mature ecosystems.

An important role in the development of an ecological outlook in economics

> whole vast interconnection of things; and therefore not in their motion, but in their repose; not as essentially changing, but as fixed constants; not in their life, but in their death.[127]

Thus modern environmentalism draws together a number of tributary streams, each arising from a specific point of conflict or investigation between society and the natural world and each supplying a particular element to the all-round ecological outlook. These streams, which intermingled in many ways, are summarised below.

a. Ecological concerns in natural & social science

Much of the overall field of investigation of modern environmental science is to be found in embryo in the rapidly developing social and natural sciences of the nineteenth century. Thus, while the term ecosystem wasn't coined until 1935, the analysis of ecosystems as a living interactive system conditioned by physical, chemical and biological factors (the "web of life") makes its first appearance in Darwin's *The Origin of the Species*.

The work of agrarian chemists Boussingault and Liebig on soil chemistry, based on the idea of restoring minerals to the soil, prefigures the concerns of sustainable agriculture (although in the short run its effect was to stimulate the spoliation of Peru's guano deposits in order to fertilise European fields).

Most importantly, the "population debate", begun by Malthus in *An Essay on the Principle of Population*, stimulated research in many fields as to the "carrying capacity" of the Earth. Factors affecting this equation were investigated in the developing sciences of:

- *Human geography and agronomy:* What was the "carrying capacity" of regions with differing soil fertility, energy availability, and climate?
- *Physics, "energetics" and mechanical engineering:* What "energy stocks" were available in nature? What was their rate of depletion? How could they be utilised more efficiently? What was the meaning of the Law of Entropy (Second Law of Thermodynamics) for human society?
- *Economics:* At what rate should scarce resources, especially coal, be depleted? What did this mean for possible growth rates? Would the rate of technological advancement offset that of resource depletion?
- *Urban planning and development:* What level of urbanisation could a given agriculture sustain? What was the optimal layout of a city, at given levels of food and energy stocks?

In a society riven by class conflicts each and every scientific (or pseudo-scientific) hypothesis on these issues also provided support for conflicting ideologies about the

III. The Environmental Movement

The modern environmental movement contains many different views of the relationship between human society and nature, and many different projects for changing that relationship. More particularly, it covers a wide spread of answers to the vital issue of whether decent living standards and social justice for all human beings can be compatible with a flourishing environment.

1. Sources of modern environmentalism

While all religions and philosophies have expressed a viewpoint on the humanity-nature relationship, in modern environmentalism this relation, however conceived, forms the central, organising theme. Moreover, environmentalism could only arise when the conditions for transforming that relation had begun to materialise in human history. More specifically, the prerequisite for present-day environmental consciousness was the rise of capitalist industrial civilisation in the early 19th century, making possible for the first time the destruction of nature and resource depletion but also, by the same token, a choice of the terms on which humanity might live in nature. Like socialism, its cousin, ecological consciousness emerges first in those countries where capitalist industrialisation is most advanced.

However, the impact of capitalist industrialisation on nature was so many-sided that the component parts of the modern ecological outlook could only develop in relative isolation from one another. This was also the case because the natural and social sciences, while developing rapidly, were not yet sufficiently advanced for an understanding of their overall interrelatedness to have become clear. In the words of Frederick Engels:

> The analysis of nature into its individual parts, the grouping of the different natural processes and natural objects in definite classes, the study of the internal anatomy of organic bodies in their manifold forms — these were the fundamental conditions of the gigantic strides in our knowledge of Nature which have been made during the last four hundred years. But this method of work has also left us as a legacy the habit of observing natural objects and natural processes in their isolation, detached from the

Polish national income for 20 years and for East Germany by Greenpeace at $125 billion); the gutting of environmental legislation; the explosion in consumerism; the profitability of the ongoing toxic waste trade with the West; the potential revival of nuclear power using "safe" Western technology;[125] and the enormous threat from Western timber multinationals to Russia's pristine Siberian and Far Eastern forests.

Underlying all these problems is the loss of social control involved in the ongoing privatisation of the economy. For example, energy policy in the former German Democratic Republic was largely in the hands of local authorities, but when three of West Germany's largest electricity generating companies were granted a 75 per cent stake in the East German electricity supply industry, the local authorities took the issue to court. When a final out-of-court settlement was reached the West German utilities were guaranteed 70 per cent of the electricity market for the next 20 years. Manser concludes:

> With hindsight it might be said that the court case and its settlement meant that Germany missed a major opportunity to experiment with a locally controlled (and potentially environmentally friendly) supply and conservation of energy.[126]

In summary, experience in the Soviet Union and other bureaucratically ruled socialist states has conclusively shown that planning without the democratic participation of the mass of producers-consumers is extremely wasteful and can fail to meet the needs of society, including the need for a healthy environment. Moreover, those who make wrong decisions about the allocation of resources are rarely the ones who pay directly for their mistakes, and are never those who pay the heaviest price. It is the ordinary workers and consumers who are the victims. Without freedom to organise and agitate around environmental issues, without full public information about pollution levels, with bureaucratic concealment of the likely ecological impact of new investments, it is impossible to establish the social costs of different projects, and impossible therefore to make an informed choice among them.

But once these conditions no longer obtain, once planning takes place in a social context of full information and full democratic rights, then there is nothing inherent in planned economy that makes pollution on a massive scale inevitable. Unlike capitalism, where competition drives private producers to offload ("externalise") their costs, under democratic socialist planning society will be free to choose the least polluting model of development practicable at each stage of development. The early Soviet experience provided a glimpse of this possibility, which lives on in Cuban environment policy and is further developed in Chapter Six.■

and tragically large results for nature.[122]

However, despite this generally negative picture, the capacity for a planned economy to solve environmental problems was visible even in the Soviet case: the state that could win a war against Nazi Germany could also mobilise against pollution. Commoner recognised the potential of the Soviet economy to deal decisively with pollution:

> Nationwide, all-encompassing plans for industrial and agricultural development — indeed, for nearly every aspect of economic life — are an intrinsic feature of the Soviet system. The advantage of such planning in any effort to alleviate environmental problems hardly needs to be demonstrated to anyone familiar with the chaotic environmental situation in the United States — where AEC atomic safety regulations have been challenged by several states; where government officials are engaged in a long, frustrating battle with the auto industry over pollution standards; where the need for ecologically sound agriculture comes in conflict with the economic interests of the producers of fertilisers and synthetic pesticides.[123]

Thus, even during the Brezhnev years, pollution of Lake Baikal was reduced by closing down some industries in the region. By 1989 Moscow had managed to move 174 factories outside the city limits, with the aim of moving another 446 by 2000.

Environmental degradation began to be tackled seriously during the later years of *perestroika,* especially after the Chernobyl disaster. From 1987 to 1988 total expenditure on environmental protection rose by 29 per cent, spending on "protecting the atmosphere" rose by 30 per cent.

As if to provide negative confirmation, the present drive of the Yeltsin leadership to return Russia to capitalism is deepening the environmental crisis. With factories being privatised and state subsidies progressively withdrawn, plants have to cut costs or go bankrupt, with the result that anti-pollution expenditure is being seen as an expendable luxury. The disastrous 1994 Siberian oil slick, the result of a newly privatised energy company's poorly maintained pipeline, is a grave warning sign as are the atrociously dangerous stockpiles of atomic waste from the former Red navy's submarines.

Indeed, the environmental balance to date of the "end of communism" drawn by Roger Manser is that:

> In spite of curbing some of the excesses of communism's pollution economy, the nascent market economy has so far failed to bring fundamental improvements and in the future is likely to reinforce old threats as well as create new ones.[124]

Among the daunting problems are: the size of the clean-up bill (estimated by the Polish Ministry of Environmental Protection at between four and five per cent of

was already fixed and the Soviet Union's very progressive environmental scientists found themselves permanently at loggerheads with the agricultural, energy and military wings of the bureaucracy.

Nonetheless, even during the "stagnation period" under Leonid Brezhnev Soviet ecology and environmental science made considerable progress, culminating in the adoption of very stringent laws and regulations against pollution: environmental rights were even enshrined in the 1977 Constitution.

However, this commitment proved to be largely formal. Without a working people schooled in ecological consciousness and without any real rights for workers and managers to act on environmental problems, the laws mostly remained a dead letter. Where some results were achieved, as with the protest movements to save Lake Baikal from destruction and to prevent the Ministry of Water Resources from rerouting Russia's northward-flowing rivers southwards, the impetus mainly came from Soviet writers.

Given, too, that the overall economic model hadn't changed markedly from Stalin's time, the basic mode of operation of the economy tended to put the environment last. The pressure to meet production targets and the dependence of workers' bonuses on plan fulfilment meant that there was a powerful incentive to keep enterprises going at all costs. Under these conditions workers, technicians and managements were basically "enterprise conscious" and not "society conscious" — that is, they worked under permanent pressure to pollute and waste resources. Combined with the low level of technological renewal in the system, this state of affairs produced the common practice of driving increasingly aging and polluting equipment well past its limit: continuing productivity gains, essential to fund conversion to environmentally benign technologies, proved impossible to attain.

Soviet economist M. Lemechev described this dynamic in the iron and steel industry:

> With modern technology consuming large amounts of natural resources, production works more and more for itself. The example of iron ore alone is sufficient proof of this. In our country, 250 million tonnes … are extracted by the "progressive" method of strip-mining, thousands of hectares of fertile lands are destroyed, and the hydrological cycle of vast regions is disturbed … Then the steel industry causes pollution of the air and the water. The metal thus obtained is used to build giant steel rollers that manufacture sheet metal, which, in turn, is used to build new giant excavators for the mining of iron ore. The productivity of these excavators, the subject of pride for most engineers, is in reality a monstrous destructive force. A vicious cycle is thus created: a new technological cycle begins with disastrously minute results in terms of usefulness for human beings

- *Through "giantism":* Because there was no accounting for environmental costs the Soviet industrialisation model tended towards giant projects aimed at achieving maximum economies of scale, as in the White Canal, Dnieper Dam, the Uzbekhistan irrigation schemes and the massive nickel smelters of Norilsk. (These last have killed 350,000 hectares of forest and emit 2.3 million metric tonnes of sulphur dioxide annually — five times total Swedish emissions.)[120] Such schemes, enormous in their environmental impact, were also driven by the interests of the bureaucrats in charge — the bigger the project the greater their prestige. These gargantuan feats were also celebrated as proof of socialism's capacity to triumph over nature, propaganda backed up with selective quotation from the writings of Marx and Engels.

  At times these projects turned out to be disastrous in narrowly economic terms. This was the case with Nikita Krushchev's plan to convert the Soviet Union's Virgin Lands to farmland, which not only led to vast soil erosion but also squandered huge quantities of investment funds.
- *Through the suppression of all environmental debate and criticism:* In the 1920s the sciences flourished in the young, post-revolutionary Soviet state. This included ecology which, in the hands of Vladimir Vernadsky, author of the term "biosphere" in his 1924 book of the same name, Vladimir Stanchinskii and Daniil Kashkarov, arguably led the world at the time. Stanchinskii's presentation to the First All-Russian Congress for the Conservation of Nature, held in September 1929, resulted in the adoption of a resolution which said:

  > The economic activity of man is always one form or another of the exploitation of natural resources … The distinction and tempo of economic growth can be correctly determined *only* after the detailed study of the environment and the evaluation of its production capacities with the aim of its conservation, developments and enrichment. This is what conservation is all about. (Emphasis in original.)[121]

However, given the rise to power of Stalin's bureaucratic faction and the crushing of independent scientific investigation, it proved impossible for such thinkers to influence the stamp of socialist development. They opposed the damming of rivers without due care as well as the collectivisation and uniform mechanisation of agriculture. This provoked immediate retaliation by the Stalin faction who condemned the conservationists as "organically alien to active youth and especially Soviet youth". Stanchinskii lost his job, his research station was closed down and he was arrested in 1934. As a result, the incipient ecological trend in Soviet science was extinguished for two decades.

When ecological science began to revive in the 1960s, the basic shape of development

development and planning implemented under the bureaucratic dictatorship headed by Joseph Stalin. Due to the isolation of the first socialist revolution in a relatively backward country ravaged by civil war and foreign military intervention and economic blockade, political power was usurped by the bureaucracy of the Soviet state in 1923-24. Under Stalin's leadership, this stratum of administrators and functionaries consolidated itself into a ruling caste, which appropriated a considerable part of the social surplus product for its own personal consumption.

Under the bureaucratic dictatorship the emphasis on the extensive growth of heavy industry to the detriment not only of the environment, but also of the consumption needs of the Soviet people, continued long after the Soviet Union had become a modern industrial power. Although the existence of a planned economy gave the USSR the necessary condition for beginning to tackle both these problems, bureaucratic control of political and economic institutions deprived the mass of Soviet citizens of any direct means of determining the allocation of social resources and thus their quality of life.

In the system of bureaucratic planning imposed by the Stalinist regimes the multiplicity of social, cultural, economic and environmental needs of the people were unified by force in a central plan dictated from above. The fundamental features of this plan had to consist of purely quantitative indices and growth rates, since all the qualitative aspects (including protection of resources and the environment) had been buried along with democracy.

Furthermore, while the Stalinist bureaucracies gave lip-service to the ideals of socialism, their conception of building "socialism" — by "catching up and overtaking" the advanced capitalist countries in purely quantitative indices of production — ideologically rehabilitated capitalism's ecologically devastating consumption and modernisation patterns, which consequently became the determinants of the bureaucratic central plan.

Their anti-environmental complicity with Western capitalist models was sometimes more direct, with leaking toxic dumps in Eastern Europe part of a lucrative trade in Western wastes.[119]

The Stalinist bureaucrats thus made a major contribution to extending the influence of capitalist production way beyond what was objectively necessary. Their model of society combined pre-capitalist, "feudal" elements of privilege and despotism with promises to be more successful than capitalism in meeting the consumption patterns created by capitalism. The Stalinist model of development thus made its own contribution to the environmental degradation of the former Soviet Union. This came about in the following ways:

virtually free. In Hungary immediately after the "end of communism" 70 per cent of energy was used to process raw materials, which provided only 15 per cent of national output.[117]

One of the key reasons for such an approach was outlined by Soviet ecologist Igor Laptev in his 1973 book *The Planet of Reason*:

> There is no doubt that the Soviet Union would have had much greater success in conserving the environment if the construction of socialism had begun in a more favorable international climate … The Soviet people had to win their present position among the peoples of the world through enormous deprivation and huge expense. This included the expenditure of natural resources, which would have been far less if the USSR had not been compelled to develop and master independently not only the design but also the technological process of production of all the machinery and all the commodities it needed.[118]

That is, denied the possibility of economic and technical cooperation with the industrialised Western countries the Soviet state was forced to rely on its own limited resources to industrialise and modernise the backward, semi-feudal society it had inherited from tsarism. In addition, the Soviet Union had to overcome the legacy of two devastating wars — the 1918-21 Civil War in which more than 100,000 foreign troops occupied part of its territory, and the 1941-45 anti-Nazi war in which 20 million Soviet citizens died and one third of the country's accumulated wealth was destroyed. Altogether, war and postwar economic recovery took up nearly 20 years of the history of the Soviet state.

Following the Second World War, the Soviet Union was denied any economic aid by its former Western allies in the struggle against Nazi Germany and was soon ringed by bases for US bombers armed with hundreds of nuclear bombs. In the face of continuous military threats from the major capitalist powers, the Soviet leaders prioritised rapid development of basic industries that could arm and equip a modern military force.

The original backwardness of the country, the need to quickly develop a heavy industrial base and divert large resources to military defence, combined to deny the Soviet Union the possibility of developing alternative, non-polluting technologies. Instead, like many poor Third World countries today, it was forced to utilise cheap, but ecologically damaging, productive technologies similar to those in the industrialised capitalist countries.

However, environmental degradation due to these factors would not, of itself, have produced the environmental disasters typical of the former Soviet Union. The environmental crisis in that country was vastly compounded by the specific model of

However, despite this very bad environmental record, it has to recognised that "socialist" pollution was of a particular type. It was not, for example, "high-tech" pollution typical of the advanced capitalist countries. At the time of its collapse the former socialist bloc was contributing only 10 per cent of world output of ozone-depleting CFCs (as against 25 per cent of GDP). The output of polystyrene foam and plastic packaging was also much lower than in the advanced capitalist economies.

A 1981 comparative study of air quality in the USSR and the US found that, despite very high levels of pollution in many Soviet industrial towns, on average Soviet levels of benzene, carbon monoxide, lead, mercury, nitrogen oxides, ozone and hydrocarbons were between three-fifths and one-fifth the US level. This was overwhelmingly due to the much higher use of public transport in the Soviet Union.[114]

Notwithstanding these differences, the case for sheeting home the environmental crisis to industrialisation per se would seem to be overwhelming. However, the flaw in this line of reasoning is that *it conceives of the traditional "socialist" model of industrialisation via Five Year Plans that privilege heavy industry as the only possible road for non-capitalist development.* To come to grips with this question it is critical to avoid the tendency, so engrained in academia and the mainstream media, of viewing capitalism and "socialism" as models that exist independently of each other, as if in separate test tubes. Rather, in the words of James O'Connor, editor of the journal *Capitalism, Nature, Socialism*:

> Really existing socialism and capitalism have been formed in interaction, often violent, within and between each other in the twentieth century. The primary cause of environmental destruction in this century is war, and the most serious wars (World Wars I and II) have been initiated by capitalist nations, or between imperial powers and Third World liberation movements or fledgling states … Socialist revolution has proven to be far less ecologically harmful than capitalist counter-revolution.[115]

Even where the capitalist world didn't wreak environmental havoc on revolutionary states there have been other massive pressures from capitalism on the post-capitalist societies. The fact that socialist revolutions have taken place in the backward sectors of the world economy has placed a permanent, unrelenting pressure on these states to "catch up" with capitalism's metropolitan centres. Inevitably, therefore, the emergence of the Soviet Union from industrial backwardness was accompanied by many of the symptoms of environmental degradation that prevail in the industrialised capitalist countries. For example, the centrally planned economies provided massive subsidies to their energy systems. As late as 1991, of the estimated $230 billion in global fossil fuel subsidies, fully $172 billion were incurred in the Soviet Union, $14 billion in China and $9.5 billion in Poland.[116] Such practices signalled to managers that energy was

nuclear submarines in the open sea, with unforeseeable effects on marine life and the food chain. On land nuclear waste has been pumped directly into the earth with the threat that this waste may eventually leach into the water table.

A 1987 estimate of Soviet health costs attributable to environmental damage came to 190 billion rubles, fully 11 per cent of gross national product.[113]

The environmental picture is no better in the formerly "socialist" countries of Eastern Europe. The main areas of environmental devastation are:

- *Agricultural pollution:* The rapid expansion in fertiliser application in the 1970s and 1980s has led to a high nitrate content in the water supply. In Czechoslovakia this is so high that water is unsuitable for babies and children in some areas and on present trends 50 per cent of water will be unfit for human consumption by 2000.
- *Air pollution:* Because of the emphasis on heavy industry and the relative inefficiency of energy use in Eastern Europe (two and a half times as much oil is used per unit of output compared to the economies of Western Europe), air pollution has been very high in the European countries of the former Council for Mutual Economic Assistance (Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland and Romania). Sulphur dioxide emissions per unit of GDP are roughly twice those of Western Europe, with the use of low quality, high-sulphur brown coal the main source of the problem.
- *Forests:* The high sulphur dioxide content in air over Eastern Europe has led to a rapid increase in damage to forests. In 1986 57 per cent of forests in the Czech Socialist Republic and 16 per cent of those in the Slovak Socialist Republic had been damaged by air pollution. In Poland the area of forest affected by air pollution has risen from 1800 square kilometres (1967) to 7000 (1987) and is projected to reach 40,000 square kilometres in 2000, equal to about half of all Poland's forests.

Similar problems affect China, whose economy depends heavily on coal for its energy. Air pollution in northern China frequently violates Chinese and World Health Organisation standards for air quality with, for example, suspended particulates in the air at 525 micrograms per cubic metre compared to the WHO standard of 60-90 micrograms. In China 26 per cent of all deaths are linked to chronic obstructive pulmonary disease, due directly to excessive dust and particles in the air. In addition, some 27 billion tonnes of industrial wastewater is discharged each year and less than 30 per cent receives any sort of treatment. Untreated wastewater is used to irrigate land, with the result that 1.4 million hectares are now contaminated with metals and toxins. Some 86 million hectares of land has been degraded due to overgrazing and the expansion of agriculture into marginal lands. Soil erosion extends to around one-sixth of China's total land area.

judgement of Professor Marshal Goldman in his 1972 book *The Spoils of Progress: Environmental Pollution in the Soviet Union*:

> Based on the Soviet experience, there is no room to believe that state ownership of the means of production will necessarily *guarantee* the elimination of environmental disruption. (Emphasis added.)[110]

Yet it remains to be seen whether state (or rather, social) ownership of the means of production is *necessary* to solve the environmental crisis and, if it is, what other factors must be included with it. An analysis of the Soviet and Eastern European failures on the environment helps uncover the answer to this question.

The catalogue of environmental disasters in the former Soviet Union is long but it can best be summed up in three cases — the Aral Sea, Lake Baikal and the Soviet nuclear industry:

- In the 1950s and 1960s the Soviet agricultural authorities constructed large-scale irrigation works on the Amu Dar'ya and Syr Dar'ya rivers, which feed the Aral Sea. Some 60 per cent of the Aral's water has been lost to these schemes: between 1960 and 1989 the level of the lake fell 13 metres and its area shrank from 69,000 to 39,000 square kilometres. Over the same time the lake's salinity has tripled and each year between 40 million and 70 million tonnes of salt are blown from the exposed seabed onto the 200,000 square kilometres of land surrounding the lake. The fertilisers and pesticides used on the cotton have leached back into the rivers and lake, producing an increase in infant mortality, liver disorders, typhoid and cancer in the nearby population. According to Sandra Postel:

  > The population of Muynak, a former fishing town, is down from 40,000 several decades ago to just 12,000 today. The 28,000 people who have fled are "ecological refugees" in the truest sense.[111]

- Lake Baikal is the most voluminous and deepest freshwater lake in the world, of major scientific and human interest because of its diversity. Indiscriminate logging around the lake in the 1950s and 1960s led to soil erosion and a vast build-up in lost logs in the rivers feeding the lake. As these logs began to decay oxygen depletion set in and, combined with siltation and other pollution, led to a serious loss of fish stocks. While tree planting programs and a ban on using tributaries to transport logs have helped restore the lake, the Baikalsk paper mill was still pumping 230,000 cubic metres of effluent into the lake a day as of late 1991.[112]
- The Soviet nuclear industry has been responsible for some of the greatest environmental disasters to befall the planet. In addition to the near meltdown at the Chernobyl nuclear power plant in 1986 and the explosions in nuclear waste dumps in the Urals in the 1960s the Soviet navy has scuttled decommissioned

expensive and far reaching environmental legislation". This required privately owned electric power utilities to install air pollution devices to eliminate sulphur dioxide emissions by 1975.

> The generalised national interest in reducing the environmental damage attributable to this long-range pollution had to overcome the resistance of both high-sulphur-coal mining interests and the Midwestern utilities that would incur major expenses if they were forced to control sulphur emissions.[109]

Faced with this resistance, the Nixon administration assured the mining and power companies that voluntary cooperation was all that was being proposed. The corporations certainly had no need to fear serious enforcement of the anti-pollution statutes, which provided for fines of up to $US25,000 for violations — a trifling amount to the multibillion dollar power monopolies.

As a result, the 1970 Clean Air Act became a dead letter. In 1982, under pressure of big business warnings that the costs of pollution control would price US products out of the world market, the Reagan administration and Congress allowed the act to expire.

The failure of "market system democracies" to take action on environmental protection, even when this is supported by the overwhelming majority of their populations, is due not simply to the lobbying power (money) that the "injured minority" (big business) is able to mobilise. A more fundamental obstacle is the fact that the officials who head Western governments are either direct representatives or close allies of the corporate polluters. The political and administrative institutions of "market system democracies" are structured and function in such a way as to ensure that their leading personnel either have a personal interest in, or are ideologically committed to, maximising the big corporations' profits regardless of the social cost.

4. The environmental crisis in the former 'socialist' countries

While many Western ecologists and environmental activists now recognise the necessity of social planning, they often reject the need for socialism, pointing to the appearance of major environmental problems in the Soviet Union and other "socialist" countries. Indeed, the environmental catastrophes that continue to afflict the former Soviet Union and Eastern Europe are taken as compelling evidence that environmental degradation is not due to capitalism or socialism but to features common to both worlds — "technology", "urban sprawl", "industrialisation" and the "dominant paradigm of production at all costs".

The environmental devastation in the former "socialist camp" confirms the

and Development and chief executive officer of Browning Ferris Inc, argues that the achievement of an ecologically sustainable economy will require:

> … a modification of society comparable in scale to only two other changes: the agricultural revolution of the late Neolithic age and the Industrial Revolution of the past two centuries … Those revolutions were gradual, spontaneous and largely unconscious. This one will have to be a fully conscious operation, guided by the best foresight that science can provide.[106]

Ruckelshaus notes that while the US has "environmental statutes second to none in their stringency", the USA continues to pollute the environment at an alarming rate. Why?

> The difficulties of moving from stated values to actual motivations and institutions stem from the basic characteristics of the major industrialised nations — the nations that must, because of their economic strength, pre-eminence as polluters and dominant share of the world's resources, take the lead in any changing of the present order. These nations are market-system democracies. The difficulties, ironically, are inherent in the free-market economic system on the one hand and in democracy on the other.[107]

Like MacNeill, he locates the inherent difficulty of effective environment protection under the capitalist "free-market" economy in the fact that "market prices of commodities typically do not reflect the environmental costs of extracting and replacing them, nor do the prices of energy from fossil fuels reflect the risks of climatic change."

While he notes that when "the government owns a resource, or supplies it directly, the price charged can be made to reflect the true cost of the product," Ruckelshaus fails to draw the obvious conclusion — the need for a publicly owned system of production. Instead, he proposes to "modify the market to reflect environmental costs". Ruckelshaus attributes the failure of past attempts to do this through legislation to "the problem of action in a democracy". At the same time, he notes that "for the past 15 years poll after poll has recorded the American people's desire for increased environmental protection". If the majority wants action to be taken to protect the environment, why is democracy — which by definition means majority rule — an obstacle to achieving such action? The explanation, as Ruckelshaus is forced to acknowledge, is that "market-system democracies" are not really democratic:

> Modifying the market to reflect environmental costs is necessarily a function of government. Those adversely affected by such modifications, although a tiny minority of the population, often have disproportionate influence on public policy. In general, the much injured minority proves to be a more formidable lobbyist than the slightly benefitted majority.[108]

As an example, Ruckelshaus cites the US Clean Air Act of 1970, "arguably the most

capable of responding to the needs of our time.

Discussing the problem of increasing food production to feed a world population of 10 billion in an environmentally sustainable way, US researchers Pierre Crosson and Norman Rosenberg conclude that this is technologically possible. However, they acknowledge that "developing new technology is not the most difficult problem facing the world's agriculture; society is.

> In order for new, less damaging techniques to have an effect, they must be used. For them to be introduced at the level of the individual farm, they must benefit the farmer. In a market system, such benefit generally takes the form of profit. Yet markets are not well equipped to protect resources such as water and genetic diversity, in which it is difficult to establish property rights.[103]

In its 1986 report *Our Common Future* the UN World Commission on Environment and Development acknowledges that "problems of resource depletion and environmental stress arise from disparities in economic and political power" and that these are problems "which current national and international political and economic institutions have not and perhaps cannot overcome." The ecological crisis, it notes, can only be solved when individuals "act in the common interest," but with "the spread of commerce and production for the market, the responsibilities for decision making are being taken away from both groups and individuals."[104]

Jim MacNeill, former Canadian deputy minister for urban affairs and principal architect of *Our Common Future*, points out that the "most important condition for sustainable development is that environment and economics be merged in decision making." The capitalist market economy, however:

> … cannot take into account the external environmental costs associated with producing, consuming and disposing of goods and services. The market treats the resources of the atmosphere, the oceans and the other commons as free goods. It "externalises", or transfers to the broader community, the costs of air, water, land and noise pollution and of resource depletion. The broader community shoulders the costs in the form of damage to health, property and ecosystems.[105]

MacNeill's only answer to this problem is to propose taxes on resources and pollution. But since the corporations have no intention of absorbing such taxes into their costs and thus cutting their profits, the outcome of that proposal would simply be an increase in prices passed on by the corporations to consumers. Where charges have been imposed the decline in pollution has generally been trivial, due to the fact that taxes that would make severe inroads into the problem have met entrenched resistance from corporations with billions invested in polluting capital stock.

William Ruckelshaus, a member of the UN World Commission on Environment

> are invoked to undermine traditional agricultural biodiversity and systems of land management.

Such is the historical environmental result of an international division of labour that has concentrated industrialisation in the advanced capitalist countries and the production of raw materials and export crops in the "periphery". This "environmental imperialism" has seen the decimation of entire species (such as bison, seals, whales and beavers), the global expansion of industrial agriculture (with its high price in "genetic erosion" and cornering of plant genetic resources by multinational firms); and even direct aggression against the environment (as with the use of Agent Orange to defoliate Vietnam and depleted uranium weaponry in the 1991 Gulf War). Falling export prices fuel an intensifying attack on the environment of the majority of countries and their peoples — caught in the vicious cycle of dependency.

The prevention of environmental degradation requires extensive social planning and regulation, which is incompatible with the utilisation of natural resources for private profit. Capitalist governments are therefore condemned to a policy of containment and repair of the effects of pollution, which can only have limited successes.

At bottom, capitalist production enters into fundamental conflict with nature and its cyclical processes of development and reproduction. Driven by the compulsion to organise matter in forms and through methods that produce profit-yielding commodities as cheaply as possible, production for private profit accelerates the tendency to a universal and random distribution of energy and matter (the law of entropy) to an unprecedented degree. Over the last 150 years, the capitalist system has produced enormous changes in soil and water quality and distribution as the rate of entropy increase climbs towards levels incompatible with the continued existence of the biosphere and human communities.

As a result, many Western scientists, and even some business leaders, have begun to recognise that the capitalist system is the key obstacle to solutions to the ecological crisis. Commoner, for example, locates the causes of the environmental crisis in the private ownership of modern technology and its blind application to nature for immediate profit:

> In effect then, we now know that modern technology which is *privately* owned cannot survive if it destroys the *social* good on which it depends — the ecosphere. Hence an economic system, which is fundamentally based on private transactions rather than social ones, is no longer appropriate and is increasingly ineffective in managing this vital social good. The system is therefore in need of change.[102]

Even Italian Fiat executive and Club of Rome founder Dr Aurelio Peccei stated in 1974 that he did not think that "the present neocapitalist structure and philosophy" were

that meets not only the current needs of all members of society but those of future generations as well:

- If resources in capitalism are "freely" available, like water, air and soil, then they are treated as "external inputs" whose cost of reproduction is ignored. If, however, they are incorporated into the costs of production of capitalist firms (for example through government taxes and charges on the use of these resources) the burden of these extra costs is simply passed on to the consumer. Moreover, no capitalist government will impose taxes and charges on the use of natural resources that the major corporations deem "excessive" to their ability to maximise profits.
- The compartmentalisation of production under capitalism (in which each particular natural resource is the independent object of profit-making) and the self-centered rationality of each individual capitalist firm make it "cheaper" to throw away or incinerate industrial by-products than to recycle them. Thus mountains of waste and toxic waste are the inevitable result of the capitalist version of the "affluent society".
- Capitalism's need to maximise short-term profits also leads it to impose irrational patterns of consumption on the mass of consumers through the commodification of rational needs (for example, substitution of private automotive transport for mass public transport systems) and through manipulative advertising. To this extent, the behavior of individual consumers is a factor contributing to the ecological crisis. Capitalist ideology plays directly on this factor with its credo that "people are responsible for the crisis" or with the claim that it is caused by "excessive consumption" on the part of ordinary working people in the imperialist countries. Such arguments are a convenient means of diverting attention from the fundamentally anti-environmental nature of the capitalist mode of production — and the patterns of consumption it forces working people to adopt.
- Today's capitalism, with its entrenched exploitation of the "South" by the advanced capitalist "North" also places an unequal burden of pollution and environmental degradation on those economies which are newly industrialising. In a world marked by excess capacity in most major branches of industry even palliative environmental protection measures can make struggling industries uncompetitive. The economic "miracle" countries of South East Asia have also been those most blighted by environmental degradation and natural resource depletion. Uncontrolled "development" of the remaining frontier in countries like Brazil, Thailand and Burma shows no sign of differing from the destructive historical model of "slash and burn". Indeed, the rules applied by international trade organisations, such as the World Trade Organisation and the North American Free Trade Association,

> thing applies to the natural effects of the same actions. What cared the Spanish planters in Cuba, who burned down forests on the slopes of the mountains and obtained from the ashes sufficient fertiliser for one generation of very highly profitable coffee trees — what cared they that the heavy tropical rainfall afterwards washed away the unprotected upper stratum of soil, leaving behind only bare rock! In relation to nature, as to society, the present mode of production is predominately concerned only about the immediate, the most tangible result.[100]

Marx made the same point in 1867 in relation to the detrimental effects of capitalist production on soil fertility:

> Capitalist production collects the population together in great centres, and causes the urban population to achieve an ever-growing preponderance. This has two results. On the one hand it concentrates the historical motive power of society; on the other hand, it disturbs the metabolic interaction between Man and the earth, i.e., it prevents the return to the soil of its constituent elements consumed by Man in the form of food and clothing; hence it hinders the operation of the external natural condition for the lasting fertility of the soil. Thus it destroys at the same time the physical health of the urban worker, and the intellectual life of the rural worker. But by destroying the circumstances surrounding that metabolism, which originated in a merely natural and spontaneous fashion, it compels its systematic restoration as a regulative law of social production, and in a form adequate to the full development of the human race. In agriculture as in manufacture, the capitalist transformation of the process of production also appears as a martyrology for the producer; the instrument of labour appears as a means of enslaving, exploiting and impoverishing the worker; the social combination of labour processes appears as an organised suppression of his individual vitality, freedom and autonomy … Moreover, all progress in capitalist agriculture is a progress in the art, not only of robbing the worker, but of robbing the soil; all progress in increasing the fertility of the soil for a given time, is a progress towards ruining the more long-lasting sources of that fertility. The more a country proceeds from large-scale industry as the background of its development, as in the case of the United States, the more rapid is this process of destruction. Capitalist production, therefore, only develops the techniques and the degree of combination of the social process of production by simultaneously undermining the original sources of all wealth — the soil and the worker.[101]

3. Capitalist production & the environmental crisis

Thus, the capitalist private profit system is the root cause of the environmental crisis. With its inherently anarchic exploitation of both human labour and natural resources for short-term profits, capitalism is incapable of utilising natural resources in a way

people, like someone standing outside nature — but we, with flesh, blood and brain, belong to nature, and exist in its midst, and that all our mastery of it consists in the fact that we have the advantage over all other creatures of being able to learn its laws and apply them correctly.

And, in fact, with every day that passes we are acquiring a better understanding of these laws and getting to perceive both the more immediate and the more remote consequences of our interference in the traditional course of nature. In particular, after the mighty advances made by the natural sciences in the present century, we are more than ever in a position to realise and hence to control even the more remote natural consequences of at least our day-to-day production activities.[99]

The advances in science and technology that have accompanied industrialisation have not only increased human power to transform nature in a way unimaginable to pre-industrial societies, they have also made it possible for the first time to understand our interaction with nature and regulate it so that the vital needs of both are harmonised. But, scientific knowledge about the biosphere and the effects of our activities on it is not sufficient to protect us from environmental catastrophe. As Engels explained:

It requires a complete revolution in our hitherto existing mode of production, and simultaneously a revolution in our whole contemporary social order …

All hitherto existing modes of production have aimed merely at achieving the most immediately and directly useful effect of labour. The further consequences, which appear only later and become effective through gradual repetition and accumulation, were totally neglected. The original common ownership of land corresponded, on the one hand, to a level of development of human beings in which their horizon was restricted in general to what lay immediately available, and presupposed, on the other hand, a certain superfluity of land that would allow some latitude for correcting the possible bad results of this primeval type of economy. When this surplus land was exhausted, common ownership also declined. All higher forms of production, however, led to the division of the population into different classes and thereby to the antagonism of ruling and oppressed classes. Thus the interests of the ruling class became the driving factor of production, since production was no longer restricted to providing the barest means of subsistence for the oppressed people. This has been put into effect most completely in the capitalist mode of production …

As individual capitalists are engaged in production and exchange for the sake of immediate profit, only the nearest, most immediate results must first be taken into account. As long as the individual manufacturer or merchant sells a manufactured or purchased commodity with the usual coveted profit, he is satisfied and does not concern himself with what afterwards becomes of the commodity and its purchasers. The same

primarily manifested in the fact that the development of the labour process on the one hand increasingly frees society from control by nature's elemental forces and on the other brings closer unity with nature through discovery of new substances and sources of energy and application of them.

Because labour involves cooperation between human beings, human activity in the transformation of nature is always social.

> In order to produce, [people] enter into definite connections and relations with one another and only within these social connections and relations does their action on Nature, does production, take place.[97]

Thus labour is a process of perpetual reproduction of social life by means of a continuous transformation of the environment. As such it also determines the development of society and the individuals composing it. As Marx and Engels observed:

> This mode of production must not be considered simply as being the reproduction of the physical existence of the individuals. Rather, it is a definite form of activity of these individuals, a definite form of expressing their life, a definite form of life on their part. As individuals express their life, so they are. What they are, therefore, coincides with their production, both with what they produce and with how they produce.[98]

In the development of society and in its changing interaction with nature, the determining factor has been changes in the material means of production, in the tools and techniques of production. Their development from the first primitive implements to the complex machines of the present day has enormously amplified humanity's power over nature. But, as Frederick Engels warned in his unfinished 1876 essay *The Part Played by Labour in the Transition from Ape to Man*:

> Let us not, however, flatter ourselves overmuch on account of our human victories over nature. For each such victory nature takes its revenge on us. Each victory, it is true, in the first place brings about the results we expected, but in the second and third places it has quite different, unforeseen effects which only too often cancel the first. The people, who, in Mesopotamia, Greece, Asia Minor and elsewhere, destroyed forests to obtain cultivable land, never dreamed that by removing along with the forests the collecting centres and reservoirs of moisture they were laying the basis for the present forlorn state of those countries. When the Italians of the Alps used up the pine forests on the southern slopes, so carefully cherished on the northern slopes, they had no inkling that by doing so they were cutting at the roots of the dairy industry in their region; they had still less inkling that they were thereby depriving their mountain springs of water for the greater part of the year, and making it possible for them to pour still more furious torrents on the plains during the rainy season … Thus at every step we are reminded that we by no means rule over nature like a conqueror over a foreign

more intensive to compensate. Removal of the forests reduced the soil's ability to retain water. Wind blew away the dried topsoil exposing bare rock and sand. Following the collapse of the Roman empire, the arrival of central African tribes with cattle and goats completed the destruction of what had once been rich lands.

Similar practices impoverished other areas around the Mediterranean. Before the introduction of agriculture and livestock raising, 65 per cent of Greece was covered by forest. Large-scale deforestation and intensive cultivation degraded much of the land to such an extent that it became suitable only for goat herding. Able to exist on about half as much as a calf, the goat has the ability to pull up grass by the roots and its sharp hooves reduce the topsoil to dust, which even a gentle wind immediately carries away. Long before the arrival of the industrial age, Greece became a devastated land, with only two per cent of its ancient arable land remaining.

While the environmentally destructive effects of human economic activities in pre-industrial societies often took a long time to manifest themselves, because of the long period in which they were practiced their impact on the Earth has been considerable. Of the 45 million square kilometres of deserts on the Earth's surface, ill-considered human activities in the pre-industrial era created about 9 million square kilometres — an area equivalent in size to continental Europe!

It is utopian to appeal for the abandonment of modern technology in order to preserve or restore the natural equilibrium of the biosphere. All human activities inevitably disrupt this equilibrium. Indeed, every form of life alters the natural environment by its activity. The present state of our planet (the oxygenous atmosphere, sedimentary rock, etc) was created largely by the existence of plant life.

b. Nature, humanity & labour

Of course, plants and animals change the natural environment unintentionally while human beings alter it deliberately through labour directed toward the satisfaction of their preconceived needs. Human beings, Karl Marx wrote, only "begin to distinguish themselves from animals as soon as they begin to produce their means of subsistence".[95]

At the same time, while labour separated humans from the world of unconscious nature, it also reunited them with it, because labour is a "process in which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature," and because it is "the universal condition for the metabolic interaction between man and nature, the everlasting nature-imposed condition of human existence".[96]

The contradiction between humans and nature is constantly removed and constantly arises anew in the labour process, developing with this process. This contradiction is

to death by starvation. Nor is it likely that the few hundred millions who would be able to survive would be content to eat just enough to appease their hunger, let alone willingly forego the general quality of life that modern industry, science and technology makes possible. Deindustrialisation would therefore require the global imposition of a permanent totalitarian regime so malevolently inhuman it would make Pol Pot's genocidal tyranny in Cambodia appear benign by comparison. In the face of massive popular resistance, including from the highly skilled and organised workers of the industrialised countries, such a regime could only come to power and maintain itself by using the fiendish weapons and technical instruments of social control that industrial production and technology make possible, thus defeating the very rationale for its own existence.

Lastly, a return to a pre-industrial, agrarian society would not even provide an automatic guarantee against environmental destruction. The advocates of this solution often have a romanticised view of pre-industrial societies as simple, natural and harmoniously integrated with nature. But pre-industrial societies often caused severe environmental problems. For example, hunter-gatherer tribes in Africa, North America and Australia destroyed vast areas of woodland through repeated burning in order to increase pasture for the animals they hunted. Burning was also one of their techniques of hunting.

Primitive pastoral communities inflicted even greater damage. Not possessing any means of transportation, afraid of wild animals preying on their herds from the shelter of forests, the primitive pastoralists tried to keep domesticated animals as close as possible to their settlements. In addition, these patriarchal societies measured a man's social status by the size of his herds. As a consequence of these two factors, pastures were overgrazed, forests were cut down to create new pasture and to provide firewood. The degradation and even desertification of the vast open spaces of Central Asia and the Middle East is to a considerable extent the result of the activities of herdsmen over thousands of years. It is justifiably said that the nomad is not so much the son of the desert as its father.

The development of cultivation brought with it even more drastic changes to the natural environment. It created the need for new land, and this accelerated the burning of forests. Primitive farming methods quickly exhausted the soil, forcing early agriculturalists to move on, leaving deforested areas and burning new ones. In ancient Egypt, such practices turned fertile land into desert, finally confining agriculture to the banks of the Nile.

In North Africa, the clearing of woodlands and the use of intensive cultivation methods by the Romans led to a deterioration of soil fertility, with cultivation becoming

than expending money on ways to prevent pollution, the big corporations, with their profits still overwhelmingly dependent on a massively polluting capital stock, prefer antipollution programs that aim to reverse some of the damage after it has been done. Such programs can be carried out at a pace that protects profits, at taxpayers' expense, and can even become another source of profit for the polluters.

Under capitalism, the very path of scientific research, the eventual application of scientific discoveries in new products and techniques and the methods of mass reproduction of these products is overwhelmingly conditioned by the need for capital to make an adequate return on its investments. This reality alone can explain: the universalisation of the automobile-freeway complex and the enforced destruction of public transport systems; agricultural biotechnology that makes crops increasingly dependent on the application of the products of the agrochemical companies; and the fact that nuclear power continues to receive far larger government subsidies than all renewables.

2. Society, technology & nature

a. No 'return to nature'

The power and environmental impact of modern technology is so intense and wide-ranging that its shortsighted application to nature can have, and is having, catastrophic results. This has led some environmentalists to urge the abandonment of industrial technology and a return to a pre-industrial, self-sufficient, agrarian, village-based economy as the only way to preserve the natural equilibrium of the biosphere. Such a proposal is not only reactionary in the most literal sense of the term, but also totally untenable.

Firstly, it would mean the death, through starvation alone, of much of the world's current population. Modern industrialised agriculture produces cereal crop yields of 6000-8000 kilograms per hectare. Using such industrial farming techniques, each hectare of cultivated land can support 25-35 people at the minimum level of 230 kilograms per capita. Non-industrial farming techniques produce only enough to support about one person per hectare.

Using currently cultivated land, pre-industrial methods of cereal production would be sufficient to provide the minimum daily calorie requirements for about 1400 million people, that is, less than one-third of the world's present population. Indeed, prior to industrialisation, the world's population reached a maximum of 600 million, one-eighth its present number.

Secondly, the great majority of the world's population would not voluntarily submit

phase oxidation of sulphur dioxide at high temperatures not only stops the emission of this dangerous gas into the atmosphere but is hundreds of times more efficient per unit of volume of the basic reaction equipment than the old method of producing sulphuric acid.

Commoner cites a further example of this kind of technological development, the recycling of human wastes:

> Suppose … that the sewage, instead of being introduced into surface waters as it is now, whether directly or following treatment, is instead transported from urban collection systems by pipeline to agricultural areas, where — after appropriate sterilisation procedures — it is incorporated into the soil. Such a pipeline would literally reincorporate the urban population into the soil's ecological cycle. This would restore the integrity of that cycle and incidentally end the need for inorganic fertiliser, which puts a stress on the aquatic cycle. The urban population is then no longer external to the soil cycle and is therefore incapable either of generating a negative biological stress upon it or of exerting a positive biological stress on the aquatic ecosystem. But note that this state of zero environmental impact is not achieved by a return to primitive conditions; it is not the people who are returned to the land but the sewage. This requires a new technological advance: the construction of a sewage pipeline system.
>
> Ecological survival does not mean the abandonment of technology. Rather, it requires that technology be derived from a scientific analysis that is appropriate to the natural world on which technology intrudes.[93]

In their 1998 book *Factor Four: Doubling Wealth — Halving Resource Use,* Ernst von Weizsäcker, Amory B. Lovins and L. Hunter Lovins list 50 examples of technologies that would quadruple resource productivity, ranging from "hypercars" that cross the US on one tank of fuel, various forms of super-insulation, low energy refrigeration and air conditioning, drip irrigation and various energy-efficient transport systems. These examples confirm that the technological preconditions for sustainability already exist.[94]

An experiment at Penn State University by Louis Kardos indicated that piping sewage into agricultural areas would not only produce a qualitative reduction in phosphate and nitrate pollution of the water, but would also produce per hectare yields twice as large as those obtained with chemical fertilisers.

Of course, the introduction of a sewage recycling system would threaten the profits of the chemical and agribusiness monopolies. Indeed, it can be expected that the owners of industry will mount intensive resistance to the adoption of thorough recycling of key resources since they find it less expensive and thus more profitable to utilise primary raw materials and to dump the waste products into the environment. Rather

sulphur oxides during combustion), and had opposed the installation of pollution-control equipment.

Capitalist companies have found it cheaper and therefore more profitable to pollute the air, water and land with industrial wastes than to invest in pollution control technology. Esposito cites a graphic example:

> The Monsanto Corporation claims to have an invention that will clean sulphur oxides out of waste gases, and is even willing to guarantee its operation … Monsanto itself, whose sulphur dioxide emissions are considerable, refuses to install its own device … The reason is clear. Despite the fact that it sells control devices, Monsanto has made the calculation that it is cheaper to continue to pollute than to expend money for control.[91]

The specific purpose of pollution control technology is not primarily to increase the output of saleable goods per unit of labour (the driving force in the introduction of new technology under capitalism) but to protect the natural environment and the health of workers and the community as a whole.

However, as Commoner notes:

> The technology required for pollution controls, unlike ordinary technology, does not add to the value of saleable goods … Since continued increase in productivity is closely linked to profitability, it is essential to the health of a private enterprise economy. Therefore, there appears to be a basic conflict between pollution control and what is often regarded as a fundamental requirement of the private enterprise system — the continued maximisation of productivity.[92]

To prevent the discharge of pollutants into the atmosphere, rivers and ocean, efficient waste-treatment systems have been designed, but because their installation would cut into corporate profits they have not been widely used. For example, for more than two decades highly efficient methods have existed for cleansing air of sulphur dioxide, providing purity levels up to 95 per cent, yet thermal power stations, steel and non-ferrous metal industries continue to release millions of tonnes of sulphur dioxide into the air every year in the developing world, almost offsetting whatever gains have been achieved in the advanced capitalist countries through increased energy efficiency, cleaner technologies and the switch to cleaner fuels, such as natural gas.

Purification is not the only, nor even the most effective means of preventing pollution. Technical progress has long since made it possible to use all substances involved in any technological process, thus mimicking nature's ecosystems in which the waste produced by one organism serves as a source of energy or body-building material for other species. The development of such waste-recycling technologies would not only safeguard the environment, but would increase the efficiency of production. For example, a new method of obtaining sulphuric acid through the trickle-

the environment. It is true that many technological processes and new types of production have sharply intensified pollution in the industrialised countries. On the other hand, the same technological progress creates many opportunities to prevent environmental pollution through efficient waste treatment processes and more efficient use of inputs.

However, it is equally wrong to believe that technological developments alone can solve the ecological crisis. The use of technology is determined by society. And it is the social system that decides whether resources are allocated to limit the harmful effects of any technological process. Commoner has shown that the rapid increase in pollution in the industrialised countries since the 1940s is due to changes in productive technology, that is, the replacement of low-pollution technologies by ecologically destructive technologies in many industries. He has also demonstrated that the motor force of these changes has been the drive by the big corporations to maximise immediate profits, a blind necessity of the capitalist system that does not take account of the impact of such changes on the environment.

As an example of the ecologically harmful use of new technologies in a major industry, Commoner cites the replacement of soap by synthetic detergents, despite the adequacy of soap for virtually all uses to which detergents are now put. One outcome of this shift is the flow of 120,000 tonnes of phosphate per year into Lake Erie, one of the largest bodies of fresh water in North America. This flow of phosphate has been a prime factor in the exhaustion of the lake's aquatic oxygen to the point that it will no longer support marine life. In 1947, when soap was still the dominant cleaning product, profits represented 30 per cent of sales. By the late 1960s, profits had increased to 52 per cent of sales. This increase was made possible by a 25 per cent reduction in labour costs accomplished by the switchover from soap to detergent production.

Automobiles are the major source of air pollution. It is clear that well-planned, electric, mass urban transit systems would not only eliminate much automobile exhaust pollution, but would cost society as a whole less and would be more efficient than the present proliferation of private cars. But for the motor vehicle companies and a host of other firms that supply them with components and raw materials, the production of millions of cars each year is vastly more profitable than the one-off construction of public transit systems.

Although the internal combustion engine is an important source of carbon monoxide, nitrogen oxide and hydrocarbon emissions, among the most deadly pollutants are sulphur oxides, which have their primary source in coal-fueled electric power plants. In his 1970 book *Vanishing Air* John Esposito revealed how US electric power companies have maximised profits by using poor quality coal (which produces

> with synthetic detergents rather than soap; he lives and works in buildings that depend more heavily on aluminium, concrete, and plastic than on steel and lumber; the goods he uses are increasingly shipped by truck rather than rail; he drinks beer out of non-returnable bottles or cans rather than out of returnable bottles or at the tavern bar. He is more likely to live and work in air-conditioned surroundings than before. He also drives about twice as far as he did in 1946, in a heavier car, on synthetic rather than natural rubber tyres, using more gasoline per mile, containing more tetraethyl lead, fed into an engine of increased horsepower and compression ratio.
>
> These primary changes have led to others. To provide the raw materials needed for the new synthetic fibres, pesticides, detergents, plastics, and rubber, the production of synthetic organic chemicals has also grown.[90]

Commoner, Corr and Stamler found that while US population had grown by 43 per cent and Gross National Product by 126 per cent, per capita consumption had increased only 6 per cent in the period from 1946 to 1970. Yet pollution over the same period had increased about 1000 per cent, or seven times over per person!

Their findings also refute the idea that economic growth as such is responsible for the growing pollution problem. Instead, they found that there was a correlation between pollution and a small number of specific industries and chemical processes. In the period studied, production of plastics increased 1024 per cent; use of mercury in industry increased 2150 per cent; production of synthetic organic chemicals, 495 per cent; production of nitrogen fertiliser, 534 per cent; use of detergents, 300 per cent; production of electric power, 276 per cent.

Presenting their findings in the April 1971 issue of *Environment* magazine, the three scientists concluded:

> The predominant factor in our industrial society's increased environmental degradation is neither population nor affluence, but the increased environmental impact per unit of production due to technological changes … Thus in seeking public policies to alleviate environmental degradation, it must be recognised that a stable population with stable consumption patterns would still face increasing environmental problems if the environmental impact of production continues to increase. Hence, social choices with regard to productive technology are inescapable in resolving the environmental crisis.

c. 'Technological development'

All explanations of the ecological crisis contain some reference to technology. This is understandable as humanity interacts with nature through the technical means of production. But it is wrong to regard technological development as the main enemy of

ordinary working American

> … eats somewhat more than an Asian peasant, owns more clothes and has more varied entertainment, but none of these advantages requires extravagant amounts of resources. From an ecological perspective, it is the amount of and mode of movement that principally distinguishes the American town dweller from the Asian peasant.[88]

Automobiles lead all other means of transportation in polluting the environment. Automobile exhausts account for 67 per cent of the 78 million tonnes of carbon monoxide released into the atmosphere of OECD countries every year.[89] Motor vehicle exhausts are the principal factor in the poisoning of the air basins over the world's major cities. A special commission of the US National Academy of Sciences concluded that air pollution by automobiles is responsible for a quarter of all illnesses in North America's large cities, and directly or indirectly accounts for thousands of deaths each year. In addition, tens of thousands of Americans are killed every year in automobile accidents. A petrol-fueled automobile driven over a distance of 950 kilometres will consume the same amount of oxygen as a person in a year. Already, in the USA some 170 million motor vehicles consume twice as much oxygen as is generated by the country's plant life.

Reliance on private motor vehicles rather than electrically operated public transport systems is also a major drain on the world's energy resources. Today there are over 500 million registered motor vehicles, which consume one third of the world's oil production. The US transportation system alone consumes enough oil to provide for all of Japan's annual energy needs.

A 1971 study by Barry Commoner and two other researchers, Michael Corr and Paul Stamler, refuted the assumption that increased consumption by increasing numbers of average Western consumers is responsible for the growth of pollution. They examined the factors that had led to the growth of pollution in the US in the postwar period. Commoner has summarised the results of this research in his books *The Closing Circle* and *Making Peace with the Planet*:

> In general, the growth in the United States economy since 1946 has had a surprisingly small effect on the degree to which individual needs for basic consumer goods have been met. That statistical fiction, the average American, now consumes, each year, about as many calories, protein, and other foods (although somewhat less of vitamins); uses about the same of clothes and cleaners; occupies about the same amount of newly constructed housing; requires about as much freight; and drinks about the same amount of beer (twenty-six gallons per capita!) as he did in 1946. However, his food is now grown on less land with much more fertiliser and pesticides than before; his clothes are much more likely to be made of synthetic fibers than of cotton and wool; he launders

incomes. Periods of low growth, such as occurred between the two world wars or such as world capitalism has experienced since the early 1970s, are accompanied by constant intensification of inequality and stagnation and decline in the living conditions of the mass of working people. It is an idle fantasy to believe that the capitalist powers would freely hand out thousands of dollars per head to the world's population and then accept this sum in payment for some fixed portion of the industrial output of the USA, Western Europe, and Japan.

The no-growth proposal rests upon two false assumptions:

- That the "average consumer" in the West is the cause of these countries' overconsumption of global resources;
- That economic growth *per se* leads to uncontrollable destruction of the environment.

The first assumption also ignores the great income disparities within the Western industrialised countries. Large numbers of people in these countries have extremely meagre living standards. In the USA, for example, 40 million people — including one third of the black population — live in poverty, 20 million suffer from malnutrition, and three million are homeless. More than 26 per cent of US housing is regarded as inadequate or unfit for habitation. In Australia, some three million people live in poverty.

Stagnant real wages, cutbacks in education, welfare and health services and growing household consumer debt — these realities, which are the common experience of the great majority of people in the Western countries, belie the image of the supposedly average consumer suffering only from excessive consumption of food, housing, clothing, and conveniences. The elimination of poverty and the provision of adequate diet, medical care, housing and education for all are tasks that remain to be completed in the industrialised capitalist countries as well as in the underdeveloped world.

Consumption does play a part in the destruction of the environment, but this is not due to the supposed affluence of the great majority of consumers in the industrialised capitalist countries. *Rather, it is due to the irrational and wasteful ways in which the system forces consumers to meet their needs.* Capitalism commodifies social necessities and services, leading to unnecessary packaging, planned obsolescence, use-and-discard products, and other forms of waste.

The rule of the automobile is the prime example of the irrational, wasteful and ecologically destructive consumption patterns capitalism imposes on consumers. As a system capitalism deliberately promotes use of private motor vehicles rather than public transport. Professor Nathan Keyfitz, head of the Population Program at the Austrian-based International Institute of Applied Systems Analysis, notes that the

their no-growth proposal would worsen this ratio since almost all industrial production would be concentrated in the already industrialised countries. They argued that the non-industrialised Third World countries should devote their resources to the service of Western industry, maintain their non-industrial methods of agriculture, and halt any further industrialisation of their economies. This would worsen the already unfavorable terms under which these nations trade with the industrialised West, thus setting off a sharp decline in their already backward and distorted economies.

Unlike Malthus, who regarded poverty and starvation as natural methods of population control, the Meadows group drew back from the grim consequences that would flow from ending economic growth. They suggested that their no-growth or "steady state" policy be accompanied by a redistribution of income adequate to "maintain everyone on (at least) a subsistence level". They proposed a world per capita income of US$1800 per year — about half the average income in the United States at that time. Unsurprisingly, they provided no indication as to how this redistribution would be carried out in a world pervaded by economic inequality.

The Meadows group did not envisage any need to change the socioeconomic system in order to achieve their steady state economy. Indeed, in their no-growth economy "corporations could expand or fail," the laws of the market would still reign, and the anarchic capitalist pursuit of private profit would continue.

The no-growth advocates gravely misunderstand the driving forces of the capitalist economic system. Previous economic systems, such as the agrarian economies of ancient Egypt, Mesopotamia, India, China and feudal Europe, existed for long periods without substantial growth. Capitalism, based on industrial (machine) production with its inherent potential for rapid expansion, is forced into its own mode of growth by the competition of different owners of capital for available markets. No corporation dares to remain satisfied with a given share of the market or a static level of industrial technique for fear that its rivals — domestic or international — will improve their technique or expand their sales and drive them out of business. Thus the expansion of production and the introduction of labour-saving machines is not a matter of choice for the capitalist corporation but an elementary law of economic survival. Under capitalism, no-growth periods are produced by the inherent tendency of capitalist production to outstrip the market. During such crises (commonly called recessions) the owners of industry show no inclination to distribute the necessities of life to workers thrown on the scrapheap by production cutbacks. Capitalism is not capable of deliberately freezing production at any particular level. Such a policy would bar profitable reinvestment of capital and would quickly culminate in economic collapse.

Nor is capitalism capable of carrying out the Meadows scheme for equalising

than five per cent of the world's population, accounts for 25 per cent of energy consumption and produces 22 per cent of carbon dioxide emissions from industrial processes.[85])

Growing awareness of these facts forced the neo-Malthusians to modify their arguments, attributing the ecological crisis to "overconsumption" of resources by the peoples of the industrialised countries. The most widely promoted version of this line of argument is expounded by Anne and Paul Ehrlich in their book *The Population Explosion*. The problem as the Ehrlichs see it is summarised in the formula I = PAT. Using this formula, by which environmental impact (I) is equal to a function of population (P), by "affluence" (A), by technology (T), the Ehrlichs come to the conclusion that the average impact of an individual in a technologically advanced country is far greater than that of someone in a poor nation.

> According to the AT factor a baby born in the United States represents twice the destructive impact on Earth's ecosystems … as one born in Sweden, 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.[86]

Refusing to look at the social relations that determine what technologies are used and how consumption is organised in advanced capitalist societies, the Ehrlichs are unable to isolate the primary cause of environmental harm. The environmental impact of an advanced technology therefore becomes a constant for the Ehrlichs, regardless of social context; regardless of the design or intention, technology is bound inherently to be a multiplier of environmental impact.

A variation on this theme is the basis for the economic Malthusianism espoused in a 1972 book, *The Limits to Growth,*[87] written by Donella and Dennis Meadows, Jørgen Randers and William Behrens — a team of researchers at the Massachusetts Institute of Technology. Their study was part of a larger "Project on the Predicament of Mankind", sponsored by the Club of Rome, a group of prominent business executives and economists from the USA, Western Europe and Japan, brought together by Fiat executive Aurelio Peccei.

The Meadows group argued that increasing consumption produces economic growth, which in turn produces pollution. Their argument rested on the assumption that each unit of economic growth increases pollution by a given amount. Taking current practice in the use of natural resources and extrapolating it automatically into the future, the Meadows group claimed that unless economic growth was halted the world was headed for environmental catastrophe.

The Meadows group bemoaned the fact that the average US citizen consumed seven times the resources used by the average inhabitant of this planet. However,

The populationist argument, which takes food distribution among and within nations as given, directs attention away from the responsibility of the international capitalist system as the root cause of rapid population growth, poverty and environmental degradation in the Third World. This is why populationism is so popular with the representatives of transnational capital and their apologists. It also infects mainstream environmentalism nationally and internationally: biologic pseudoexplanations enjoy strong support in such organisations as the Sierra Club and the Australian Conservation Foundation; the 1994 UN Conference on Population and Development, held in Cairo, while noting the obvious fact that men and women will, under certain conditions, voluntarily limit their own fertility, still regarded "population" as the core environmental problem. The proposed solution — birth control — merely treats a symptom and leaves the fundamental problem untouched. As Barry Commoner has commented, this is "equivalent to attempting to save a leaking ship by lightening the load and forcing passengers overboard. One is constrained to ask if there is not something radically wrong with the ship."[83]

This truth is dramatised by the environmental situation of such developing countries, like China and Thailand, which have practiced successful birth control policies: the achieved decline in population growth rates has had little impact on the burgeoning environmental crisis.

While it is true that the Earth's human population cannot be allowed to continue growing indefinitely at its present rate, and measures must be taken to achieve a stable or even declining population, the populationists skate over the main means of accomplishing this: an environmentally benign economic system that can underpin secure living standards for all.

b. 'Overconsumption' & 'too much growth'

Under the impact of opposition to the United States war against Vietnam, increasing numbers of people in the industrialised capitalist countries began to recognise that inequitable economic relations between rich and poor nations were the main cause of deepening poverty and rapid population growth in the Third World. Awareness spread of the enormous disparity in the shares of world consumption between the developed and the developing countries. (The former, with only 26 per cent of the world's population, account for 61 per cent of global commercial energy consumption and up to 80 per cent of raw materials use.[84])

At the same time, the emergence of the environmental movement in the 1960s began to increase popular awareness that the rich, industrialised countries were the chief polluters of the world's air, water, and land. (For example, the USA, with less

raisers of the region were forced into more arid areas, where they cut down large numbers of trees for firewood.

Between 1968 and 1973 there was hardly any rain in the Sahel and the grasslands began to dry out and shrink. The cattle herds first destroyed the remaining grass cover and then died of starvation. Having lost their herds, the nomads themselves began to starve. This tragedy resulted in the loss of 250,000 human lives and the death of 20 million cattle — nearly two-thirds of the herds in Chad, Niger, Mali, Mauritania, Upper Volta and Senegal. An immense area of land — 685 million hectares — stretching from Mauritania to Ethiopia was threatened with transformation into desert by the subsequent erosion of the exposed topsoil.

Rapid population growth is, of course, a serious problem for poor countries, since it undermines their ability to maintain, let alone improve, living standards. In the context of an international economic system that consistently drains wealth from the Third World, deepening poverty and rapid population growth leads many Third World peoples to overexploit their natural resources, resulting in environmental degradation that imperils not only their own survival but that of humanity as a whole.

For example, it is in the poor countries that deforestation is occurring most rapidly — at a rate 80 times greater than in the rich, industrialised countries, where net deforestation has practically stopped. If present trends continue, during the first quarter of the 21st century all the physically accessible forests in the Third World will have disappeared. For Third World countries, the impact of this destruction is felt in the form of uncontrolled flooding and drought, soil erosion, loss of river and underground water resources, declining agricultural production and accelerating desertification. As a result of deforestation in the Third World, an area larger than the African continent and inhabited by more than one billion people is at risk of desertification.

However, if the poor nations and humanity as a whole are being brought to the brink of environmental disaster, the responsibility for this cannot be laid at the door of the peoples of the Third World. Rather, the responsibility rests squarely with the ruling classes of the industrialised capitalist countries. The governments and big corporations of the First World have imposed on the Third World an international economic system that takes more out of these countries than it puts in and that forces the latter to deplete their environmental resources at an alarming rate.

The economic exploitation of Third World countries by transnational capital, and the accompanying military-political intervention by Western governments to maintain this exploitation, is the fundamental obstacle to the social and economic changes required to eliminate poverty in those countries, bring about a decline in their population growth and take pressure off their environment.

These pressures increase the urgency of treating the problem of hunger at its roots — unequal access to resources, and the inability of the poor to purchase them, rather than from overpopulation or insufficient production.

Nor is poverty in the Third World a product of overpopulation. If anything, rapid population growth is a consequence rather than a cause of poverty. In conditions in which poor sanitation and lack of medical care greatly reduce a child's chances of survival to maturity, and in which welfare provisions are non-existent, a high birth rate is often a family's only guarantee of a minimum standard of living and a moderate level of security in old age.

Experience in the industrialised countries in which population growth rates are less than 0.5 per cent (implying a doubling time of more than 150 years), shows that lower birth rates and a state of equilibrium between births and deaths are results of urbanisation, adequate nutrition, improved heath, education and social services, and higher social status for women, all of which accompany industrialisation. As the 1974 World Population Conference observed, "development is the best contraceptive".

The inability of most Third World countries to achieve such development is a result of the imposition, through colonialism and postwar neocolonialism, of a pattern of development that treats some countries as sources of cheap labour, material resources (minerals and export crops), markets and profits for monopoly corporations of the industrialised capitalist nations.

To take just one example, in Indonesia the population explosion was set off by the introduction of new living conditions by the Dutch colonialists. The latter fostered a decline in death rates and a deliberate rise in birth rates to secure a growing supply of cheap labour for Dutch-owned rubber plantations. At the same time, the extraction of wealth from Indonesia by Dutch capital depended on holding back and distorting Indonesia's own economic and social development.

After Dutch colonial rule ended in the 1940s, indirect United States military involvement, as well as all sorts of indirect political pressure on the part of foreign capital, were deliberately used to frustrate attempts at fundamental structural change that would permit higher living standards and thus remove the conditions making for rapid population growth.

That overpopulation is not the fundamental cause of hunger and environmental degradation is also shown by the fact that both can occur in thinly populated lands such as the wide tropical forest-steppe belt of the African Sahel, to the south of the Sahara. In the 1960s, transnational companies encouraged the governments of this region — one of the poorest in the world — to promote the cultivation of cotton as a means of earning foreign exchange. As a result, the impoverished nomadic cattle

production of cereals and root crops, the primary sources of food, amounted to 322 kilograms per head of population — well above the minimum requirement set by the FAO.[77] Yet in the 1990s each year more than 840 million people go hungry or face food insecurity,[78] 180 million children under the age of five suffer from malnutrition and 14 million die before reaching that age.[79]

In the mid-1970s a study by a group of scientists under the guidance of Professor Hans Linnemann at the Institute of Economics and Social Studies of the Free University of Amsterdam concluded that present levels of world food production were high enough to provide everyone with an adequate diet if food were distributed equally among all people. Hunger and starvation occurred because food is distributed by and large on the basis of income or buying power; hence, levels of food consumption differ widely between countries and between people.

In its 1986 report, *Our Common Future*, the United Nations World Commission on Environment and Development reached the same conclusion:

> Growth in world cereal production has steadily outstripped world population growth. Yet each year there are more people in the world who do not get enough food. Global agriculture has the potential to grow enough food for all, but food is not available where it is needed … Food security requires attention to distribution, since hunger often arises from lack of purchasing power rather than lack of available food.[80]

The FAO has published a study[81] which forecasts that production increases can accommodate rises in effective demand and rising world population, as well as continuing to reduce malnutrition. This is despite a decline in the growth rate of world grain output in the 1990s. Studies by other food research institutes generally support the FAO position, although they are more pessimistic about improving nutrition.[82]

What is unclear, however, is how high an environmental price will have to be paid to sustain the necessary growth in grain output. Among the negative factors are urban pressure on existing cropland area, declining irrigation water supplies and increased salinisation as water tables fall, continuing soil erosion, the shrinking backlog of unused agricultural technology (and hence the difficulty in maintaining growth rates in yields), as well as the loss of biodiversity, increased carbon dioxide emissions and reduced carbon dioxide absorption capacity that comes with converting existing forest to cropland.

These pressures are further intensified as ocean fisheries and rangelands, supplying the world's animal protein, also reach environmental limits. While meat and fish production continues to rise, an increasing proportion of meat is produced in feedlots while chronic overfishing continues to threaten the productivity and viability of entire marine ecosystems.

system) preventing breeding.

In the industrialised countries, Malthus's claims that population growth would inevitably outstrip food supplies were discredited by the rapid expansion of agricultural production as result of the scientific and technological advances generated by industrialisation. However, Malthusianism was revived in the 1960s to explain the persistence of poverty and hunger in the Third World, and to argue for population control as the solution to these social problems.

Western governments saw rapid population growth as a threat to political stability in the Third World. Neo-Malthusians like Ehrlich argued that food aid to poor nations should be conditional on their adoption of population control policies, and the US government, which saw population control as a substitute for economic aid, enthusiastically took up such views. US President Lyndon Johnson, said: "Let us act on the fact that less than five dollars invested in population control is worth a hundred dollars invested in economic growth."

Garret Hardin, a popular spokesperson for the US ecology movement in the late 1960s, went even further, arguing that the rich countries should resist "uninformed" liberal values and stop providing aid to the hungry masses in the Third World:

> It is unlikely that civilisation and dignity can survive everywhere; but better in a few places than in none. Fortunate minorities must act as the trustees of a civilisation that is threatened by uninformed good intentions.[74]

The "population bomb" argument, based on pseudoscientific conceptions of fixed "carrying capacity", has even found support from ecological economist Herman Daly, who has written in support of "current efforts to gain control of our borders and bring an end to illegal immigration".[75]

Hunger and malnutrition in the Third World today are no more the result of overpopulation than they were in England in Malthus's day. Since 1945 (and, indeed, as far as can be ascertained from the available data, since the time of Malthus) world food production has grown faster than population. There has never been a year when per capita production of protein or calories has fallen below the minimum levels set by the World Food and Agricultural Organisation (FAO). For example, while India's population grew on average by 2.1 per cent between 1950 and 1990, its food output grew by 2.7 per cent, such that the country is now a food exporter. A 1984 World Bank report suggested that it would be technically possible to feed a world population of 11.4 billion on a diet that provided 6000 calories daily — twice the typical South Asian diet today.[76]

According to the FAO, the production of 230 kilograms of cereals a year is required to meet the minimum daily calorie requirement for an average person. In 1997, world

> come fills the hall with numerous claimants. The order and harmony of the feast is disturbed, the plenty that before reigned is changed into scarcity; and the happiness of the guests is destroyed by the spectacle of misery and dependence in every part of the hall, and by the clamorous importunity of those who are justly enraged at not finding the provision which they had been taught to expect. The guests learn too late their error, in counteracting those strict orders to all intruders, issued by the great mistress of the feast, who, wishing that all her guests should have plenty, and knowing that she could not provide for unlimited numbers, humanely refused to admit comers when her table was already full.[72]

Malthus wrote his *Essay* in explicit opposition to the egalitarian aspirations of the French Revolution. He went on to confess that the purpose of his writing was the hope that:

> If the great truths on these subjects were more generally circulated … the greatest part of the mischievous declamation on the unjust institutions of society would fall powerless to the ground. The poor are by no means inclined to be visionary. Their distresses are always real, though they are not attributed to the real causes. If these causes were properly explained to them, and they were taught to know how small a part of their present distress was attributable to government, and how great a part to causes totally unconnected with it, discontent and irritation among the lower classes of people would show themselves much less frequently than at present; and when they did show themselves, would be much less to be dreaded. The efforts of turbulent and discontented men in the middle classes of society might safely be disregarded, if the poor were so far enlightened respecting the real nature of their situation, as to be aware that, by aiding them in their schemes of renovation, they would probably be promoting the ambitious views of others without in any respect benefitting themselves.[73]

Thus the Malthusian theory had a direct political motivation: to justify the continued existence of a miserable and underfed working population in the England of his day. Malthus specifically opposed any measures to alleviate suffering among the poor, aged, or sick. Such measures, he argued, merely perpetuated poverty by permitting the poor to survive and breed!

Malthus's ideas found widespread acceptance among the British propertied classes in the early 1830s, the time of industrial capitalism's first major recession. In particular, they provided ideological justification for the infamous Poor Law Act of 1834. This act established the workhouse system for the poor, under which every able-bodied inmate was "subject to such courses of labour and discipline as will repel the indolent and vicious". It was designed to cure poverty by relieving the state and the factory owners of its horrific consequences, and by discouraging and even (through the workhouse

> thermonuclear bombs and DDT this mass of humanity now threatens to destroy most of the life on the planet … No geological event in a billion years — not the emergence of mighty mountain ranges, nor the submergence of entire subcontinents, nor the occurrence of periodical glacial ages — has posed a threat to terrestrial life comparable to that of human overpopulation.[70]

Similar arguments have also been used to explain a wide range of other social problems. Back in 1979, Ehrlich joined with other representatives of US academia and big business including Paul Getty, C.W. Cook (Chairman of General Foods Corporation), Burt Goodman (Vice-Chairman of Heinz & Co), Henry Luce (Vice-President of Time Inc), and Zbigniew Brzezinski (President Carter's National Security Adviser) to place a full-page advertisement in major newspapers and magazines, declaring that: "Exponential population growth is basic to most of our social problems … inflation, unemployment, food and energy shortages, resource scarcities, pollution and social disorder."

This attempt to explain a range of social problems as a result of population growth outstripping limited resources (carrying capacity) has a long tradition within Western thought. The first to formulate such a view was English pastor T. R. Malthus in his 1798 *Essay on the Principle of Population*. According to Malthus, who summarised his findings with this question:

> Must it not then be acknowledged by an attentive examiner of the histories of mankind that in every age and in every state in which man has existed or does now exist;
>
> The increase to population is necessarily limited by the means of subsistence;
>
> Population invariably increases when the means of subsistence increase, unless prevented by powerful and obvious checks;
>
> These checks, and the checks which keep the population down to the level of the means of subsistence, are moral restraint, vice, and misery?[71]

Poverty and social inequality were therefore inevitable according to Malthus, and social reforms to produce an egalitarian society were doomed to failure. In a notorious passage removed from later editions Malthus wrote against the radical democrat Tom Paine:

> A man who is born into a world already possessed, if he cannot get subsistence from his parents on whom he has a just demand, and if the society do not want his labour, has no claim of *right* to the smallest portion of food, and, in fact, has no business to be where he is. At nature's mighty feast there is no vacant cover for him. She tells him to be gone, and will quickly execute her own orders, if he do not work upon the compassion of some of her guests. If these guests get up and make room for him, other intruders immediately appear demanding the same favour. The report of a provision for all that

II. Symptoms & Causes of the Environmental Crisis

The rise and spread of capitalism has been accompanied by the greatest increase in population, the greatest advances in humanity's capacity to harness energy and matter to its own ends and the greatest increase in growth rates in human history. Exclusive focus on one or other of these symptoms has led to three false classes of diagnosis of the environmental crisis.

1. Three false diagnoses

a. 'Too many people'

Accompanying the development of the environmental crisis has been an explosive growth of the world's human population. At the beginning of the 20th century there were 1.6 billion people, by mid-century there were 2.5 billion, in 1987 the world's population passed five billion and by 2000 it will reach six billion. The increase in the past 40 years has equalled the total increase over the four million years from the first appearance of humankind until 1950. According to United Nations projections, the next 40 years (to 2030) will bring a further increase to 10 billion. Of the additional 5 billion, the UN estimates that 4.75 billion — 95 per cent — will be in the world's poorest countries.[69]

Unsurprisingly, many Western ecologists blame the environmental crisis on this rapid growth in world population, which by placing increasing demands on scarce resources is degrading the global ecosystem. Professor Paul Ehrlich, author of the *Population Bomb,* is a leading advocate of this "too many people" thesis. In his 1972 book *Population, Resources, Environment — Issues in Human Ecology* Ehrlich argued that:

> The explosive growth of the human population is the most significant terrestrial event of the past million millennia. Three and one-half billion people now inhabit the Earth, and every year this number increases by 70 million. Armed with weapons as diverse as

developed countries of the "North". Yet, between 1982 and 1990, in debt service alone, the "South" sent the advanced capitalist world $418 billion more than it received in all forms of northern aid — equivalent to six Marshall Plans.■

one per cent of existing nuclear stockpiles, would be sufficient to make our planet uninhabitable.

3. What hope for a solution?

Humanity has thus created two possible roads to its own extinction and the transformation of the Earth into an uninhabitable desert — a radioactive nuclear winter or a suffocating global summer. Moreover, in the process of creating the destructive means to travel down one road we are also squandering the resources that could be used to halt and reverse our journey down the other.

By 1996, the world's nations were producing goods and services with a combined annual value of about $28,000 billion (in 1995 dollars). At the same time, annual world military spending was about $701billion, 2.5 per cent of gross world product.[67] Half a million of the world's scientists and engineers are employed worldwide in weapons research. Expenditure on weapons research and development accounts for nearly $100 billion, or half of the world's total expenditure on scientific research and technological development. More than 100 million people — three times the global number of teachers and doctors — are directly or indirectly involved in military activities of no direct economic use to society.

The enormous resources consumed each year by global military activities would be more than sufficient to solve some of the most pressing problems of humanity's mounting ecological disaster. For example, the United Nations' plan for the conservation of the world's tropical forests would require some $1.3 billion a year over five years, and the UN plan to combat desertification would cost an annual $4.5 billion for 20 years. These sums amount to what is spent around the world on military activities every 16 hours and every 53 hours respectively.

US ecologist Dr Barry Commoner estimated in 1974 that it would cost some $600 billion to convert US industry to ecologically pure production processes.[68] This was equivalent to what the Pentagon spent every two years. In 1988, the Worldwatch Institute calculated that over the following decade it would cost $32 billion to reforest the Earth to an environmentally sustainable level; $114 billion to protect the world's cropland topsoil from degradation and erosion; $94 billion to develop renewable energy sources, and $118 billion to raise energy efficiency to a level that would assure environmentally sustainable development by the end of this century. In total, these programs would require less than five per cent of what will be spent on military activities over the same period.

The total annual funding for Agenda 21, adopted at the 1992 Rio Earth Summit, is $560 billion a year, with $125 billion (0.7 per cent of their GDP) to be paid by the

zones along the US-Mexican border and in the southern provinces of China — among the most polluted areas on Earth. In the Asian "miracle" economies like Taiwan the lower reaches of nearly all rivers are biologically dead, cancer rates have doubled since 1960 and a government report has warned that parts of the island could be uninhabitable by the year 2000.[65]

Clearly the capitalist mode of production consistently violates the fundamental principles of environmental sustainability (see Box 1). Indeed, "like an autoimmune disease, in which a body's own defense system attacks healthy tissue, our economy is assaulting the very life-support systems that keep it functioning."[66]

2. Nuclear war

Humanity's future is permanently threatened by the existence of an enormous stockpile of nuclear weapons with a destructive potential equivalent to 12,000 million tonnes of TNT (2.2 tonnes of high explosives for every person on the planet). By some estimates there have been 15,000 wars in the past 6000 years, with a death toll of at least 3000 million lives. An all-out nuclear war would directly kill or fatally injure a similar number of people — equivalent to more than half the world's present population.

In addition, the lives of billions more would be threatened by the after effects of such a war, including the collapse of the world's economy as a result of the destruction of the key centres of industrial production, transport and communications, and the release of vast amounts of radioactive material into the world's atmosphere.

A nuclear war would also have a dramatic impact on the Earth's atmosphere and climate. Enormous atmospheric pollution from vaporised dust and smoke would result both from the nuclear explosions themselves and from the inevitable burning of forests, cities and oil and gas fields that would follow the explosions.

Studies by both US and Soviet scientists have predicted that within a few weeks of an all-out nuclear war the aerosol particles injected into the atmosphere would so reduce the amount of solar radiation reaching the surface that the Earth would rapidly be plunged into a year-long global winter in which most animals and plants would be frozen to death.

Moreover, the nuclear explosions would produce large quantities of nitrogen oxide, which would destroy up to 70 per cent of the stratospheric ozone layer that protects all living things on Earth from the Sun's ultraviolet radiation. As a result, when the nuclear night receded and the atmosphere became relatively transparent again, any surviving organisms would be subjected to lethal doses of ultraviolet radiation. While numerous scientific studies predict that all-out nuclear war would turn our planet into a radioactive desert, others suggest that even a limited nuclear war, involving the detonation of only

levels of toxic chemicals.[57]

e. Passing thresholds of sustainability

The demands made by the present system of production on the global environment increasingly exceed the thresholds of sustainability. Humanity now uses an estimated 25 per cent of the ecosystem's net photosynthetic product (plant mass fixed by photosynthesis) as well as 40 per cent of land.[58] As human beings claim more of the primary productivity of the Earth for themselves, less is left for other species and the human race in turn faces a prospect of increasing life degradation as natural systems decay further.

Humanity now moves more earth than volcanoes and weather combined and vastly overstress the Earth's capacity to absorb this avalanche of matter.[59] US industry alone creates at least 6.9 billion metric tonnes of solid waste from extraction processes as well as 7.7 billion metric tonnes of solid waste from metal and mineral processing.[60] In the last century of industrialisation humanity has consumed more energy than in the whole of its previous history.[61] World consumption of commercial energy rose over 60 times between 1860 and 1985, with per capita energy consumption in the advanced capitalist countries now running at 80 times that in sub-Saharan Africa.[62] Even under the most optimistic scenario of the World Energy Council global energy consumption is set to increase by 30 per cent by 2020 and 58 per cent by 2050, with only a 17 per cent fall in carbon emissions compared to 1990 envisaged in the best case.[63]

At the same time automobile manufacture shows no sign of stopping, with the world car fleet passing 501 million in 1997 and basic pollution controls like catalytic converters omitted on most models that will sell in the emerging markets of Asia, Latin America and Eastern Europe. If the US pattern of automobile use became global by 2050, there would be five billion cars, petrol use would run at 360 million barrels a day (compared with current production of 67 million barrels) and the effects on land use and pollution would be unimaginable.[64]

The environmental crisis intensifies the injustices of capitalism. The poorer the society, the greater the ambient pollution and environmental degradation. This is true within societies (Hispanic and black areas are the most polluted in the United States) as well as between the richer economies and the rest of the world.

The advanced capitalist countries take up an "environmental space" many times larger than their own territory, using increasingly greater undervalued natural resources from the Third World, creating ever greater waste and incurring an expanding environmental debt. The multinational firms of the advanced capitalist world also extend their "ecological footprint" through such horrors as the export processing

At the same time, human-made poisons are penetrating into the remotest reaches of the biosphere, with effects that are only now becoming fully apparent. While US industry officially dumps 2.2 million metric tonnes of toxic chemicals into the environment each year, the real figure for some important toxins, according to the Congressional Office of Technology Assessment, may be understated by as much as a factor of 10.[55] At the same time many toxic substances which are not waste enter human systems through products like PVC wrapping which are not inert, but leach into foodstuffs.

Over 200 industrial chemicals and pesticides are now commonly found in the body tissue of 95 per cent of US citizens tested.[56] Recent research reveals an epidemic of birth deformities, breast and testicular cancers and falling sperm counts as well as retarded child brain development — all attributable to the rising concentration of organochlorines and other industrial chemicals that rise in concentration along the food chain.

Other species also concentrate these human-made poisons in their systems: seals in the North Sea are contaminated by organic solvents and polychlorinated biphenyls (PCBs); fish in the Mersey Estuary contain over 300 chemicals; alligators in pesticide-contaminated lakes in Florida are impotent; and it takes only one month's release into the "wild" between the US and Canada for healthy ducks to accumulate dangerous

Box 1: The five principles of sustainability

- *Principle of zero irreversibility.* Irreversible damage and cumulative pollutant emissions must be reduced to zero.
- *Principle of sustainable harvesting:* The rate of harvesting renewable resources must not exceed their rate of regeneration.
- *Principle of sustainable depletion:* The rate of depletion of non-renewable natural resources must not exceed the rate of creation of renewable substitutes.
- *Principle of sustainable technology choice:* Technology choice should favour those technologies which extract maximum value per unit of resource rather than those where growth rates dictate resource throughput. Technology choice should promote the replacement of non-renewable by renewable resources.
- *Precautionary principle:* Uncertainty and the risk of potential environmental disasters dictates an attitude of prudent foresight which identifies and discards in advance any production technique or method which could have catastrophic consequences, even if the chance of such an outcome is small and alternatives are more troublesome and costly.

the ocean surface. Fortunately, bacteria break down most of this vast quantity of oil. However, although petroleum is almost entirely biodegradable, it takes the microbes that break it down a long time to accomplish this task. In the meantime, an oil spill's effects are lethal for a variety of birds, marine mammals, fish larvae, and phytoplankton, the microscopic plants that are the basis of the food chain for marine life.

Since the early 1970s the tonnage of oil released into the ocean has nearly trebled. The capacity of oceanic bacteria to degrade this vast amount of oil is being placed under increasing strain, as shown by the dramatic loss of animal life after the *Exxon Valdez* disaster and the oil released into the Persian Gulf during the 1991 Gulf War.

d. Poisoning & destroying the species

The destruction of forest and marine habitats and the contamination of gene pools via the unwitting introduction of alien species is speeding up the rate of extinction of large numbers of plant and animal species. Of course, the extinction of species is a natural process that has occurred since the emergence of living organisms on our planet some 3.5 billion years ago. However, the natural evolution of the biosphere is a process in which some species disappear and are replaced by new, more complex life forms. The fossil records of marine invertebrates testify that in the past one to three species died out on average every year. At that "background rate" it was possible for new species to replace disappearing species, and for the biosphere to gradually adapt to this change. However, the present rate of extinction of species due to human destruction of forest habitats does not allow for such replacement and adaptation.

Most estimates of the current situation are that at least 1000 plant and animal species are lost a year, an extinction rate 1000 times the background rate.[51] For vertebrates, which provide a good indication of the general health of natural communities because of their position at the top of food chains, the proportion of species threatened with extinction ranges from 11 per cent for birds to 34 per cent for fish.[52] Sharks, which continue a lineage of vertebrates some 400 million years old, are at their lowest numbers ever and, like other marine predators with low rates of reproduction, are especially vulnerable to overexploitation.[53] Bioinvasions, mainly the result of exotic marine species being carried in ships' ballast water to foreign destinations, are wiping out entire marine ecosystems.

If present trends continue, one fifth of all plant and animal species will disappear over the next 20 years and the diversity of the biosphere will be reduced to its lowest level since the destruction of the dinosaurs at the end of the Mesozoic era, 65 million years ago. This would entail a massive loss of extremely valuable genetic stock and placing at risk the local ecosystems that make life possible.[54]

and vast expanses of biologically dead waterway, such as the Mississippi Delta and the Aral Sea.[42]

Similarly, despite the mass of legislation following on the publication of Rachel Carson's *Silent Spring*, the application of chemicals developed for use as pesticides in the US have climbed from 293 million kilograms a year in Carson's day (1964) to 441 million in 1997, one fifth of the world usage by active ingredient.[43] According to the World Health Organisation pesticides continue to kill 20,000 agricultural workers each year.[44]

c. Depleting & polluting the waters

Humanity's need for food continues to increase pressure on fresh water systems. From 1940 to 1990 withdrawals of fresh water from rivers, lakes and underground acquifers increased fourfold, leading to falling water tables on every continent, with the most dramatic declines in those countries, like China and India, that most depend on irrigation to feed their peoples. The water table under the North China Plain, which produces 40 per cent of China's grain harvest, is falling by roughly 1.5 metres a year while acquifers in India are being pulled down by between one and three metres a year. Around the world rivers are shrinking or drying up completely.[45]

Fisheries are also being pressed to their limit. The global fish take has increased five times since the 1950s and now exceeds sustainable yield in 11 of the world's 15 most important fishing areas. Seafood catch per person has been falling since 1989, as humans extract 35 per cent of primary productivity from non-tropical continental shelves.[46] And industrial acquaculture, the supposed alternative (which absorbs huge amounts of grain) has done nothing to prevent the degradation of oceanic fishing grounds.

More than half the world's coastlines and 60 per cent of coral reefs are now threatened by human activities — 10 per cent of all mangroves in South East Asia were destroyed between 1983 and 1994 alone.[47] Meanwhile the oceans are turning into the "last frontier" — prospecting for biological and other resources is completely unregulated.[48]

In addition, despite some gains in river purity in the advanced capitalist world, industrial plants were discharging 661.8 cubic kilometres of untreated water each year in the late 1980s, forecast to rise to between 962.5 to 993 cubic kilometres by the year 2000.[49] An estimated 3.6 million tonnes of oil finds its way into the world's oceans each year, mainly as a result of shipping accidents but also due to oil tanker discharges that the oil industry regards as normal or inevitable.[50] This is a quantity of oil sufficient to spread an iridescent film over an area of 90 million square kilometres, or one third of

of Japan. The Amazon river basin forests, which alone account for 20 per cent of the world's annual supply of free oxygen produced by plant life, are being cleared at a rate of at least 4.2 million hectares a year.[40]

- Environmental stress afflicts the world's dwindling forests. Healthy rainforests will not burn, but in recent years previously immune rainforests have caught fire in Indonesia, Mexico and the Amazon.

Deforestation is also a major factor contributing to the desertification of large areas of our planet. Deserts and semi-deserts already account for more than a third of the Earth's land surface, some 4.5 billion hectares. As a result of the clearing of forests and ill-considered agricultural and grazing practices, the area covered by desert increased by a further 120 million hectares between 1970 and 1990, more than the amount of land currently cultivated in China. Since then, the onslaught of sand has been conquering six million hectares of fertile soil a year. An estimated 60 per cent of the 3.3 billion hectares of arable land not found in the world's humid regions is effected by desertification to some degree. Excessively large herds have degraded an estimated 73 per cent of rangelands, most disastrously in Africa, where livestock numbers have more than doubled since 1950.

Deforestation and desertification have reinforced each other. For example, Ethiopia was half covered by forests at the beginning of the 1900s, but today trees cover only three per cent of the land.

Fertile land is also being degraded through soil loss. On average, 3.75 tonnes of fertile soil per hectare is formed around the world each year through natural processes, afforestation and land improvement. But 30 tonnes are irretrievably lost through removal with harvests and through water and wind erosion — 25 billion tonnes a year throughout the world. In the years 1970-90, at least 480 billion tonnes of topsoil were lost, equivalent to India's entire cropland.

As we enter the new millennium the leaps in agricultural productivity that drove the "green revolution" are being exhausted: world grain production per head has stabilised at around 300 kilograms annually; world irrigated area per head has levelled off at 0.044 hectares; annual yield gains have fallen from 2.1 per cent in 1990 to 1.1 per cent by 1997; and crop losses to pesticide-resistant insect species continue to climb (today, farmers in some areas of Asia apply pesticides at up to eight times the dosage originally recommended in order to ensure an effective kill).[41] In addition, modern agriculture returns to the soil almost none of the nutrients taken out in the form of food. This loss is compensated by intensive use of inorganic nitrogen and phosphate fertilisers, which in turn run off to pollute water resources. Global fertiliser per person has quadrupled since 1950, from 5.5 to 22.4 kilograms in 1997, producing algal blooms

organisms. Ground level concentrations of ozone have often been recorded at 10 times their natural level in Western Europe, California, the eastern United States, and Australia. At the same time, the use of chlorofluorocarbons (CFCs) as refrigerants, aerosol propellants, and solvent agents has begun to destroy the Earth's stratospheric ozone. In 1995, as the CFCs produced in previous decades made their way into the stratosphere the hole in the Antarctic ozone layer reached its greatest extent — more than 22 million square kilometres. At the same time a springtime ozone hole appeared for the first time over the Arctic. While CFC production under the 1987 Montreal protocol continues to fall (down to 10 per cent of their 1987 level by 1997), the destruction of stratospheric ozone will continue at least until 2060, leading to a rise in the amount of damaging ultraviolet radiation reaching the Earth's surface. Moreover, other ozone-depleting compounds such as methyl bromide and hydochlorofluorocarbons (HCFCs) continue to be produced as an interim substitute for CFCs and the full extent of damage done by ultra-violet radiation to the genetic structure of living things is still to emerge.

b. The land: deforestation, desertification & pesticides

Almost half of the forest that once blanketed the Earth — three billion hectares — has gone. Recent UN Food and Agricultural Organisation assessments[39] of the world's forests have revealed that:

- Between 1960 and 1990 the world lost 450 million hectares of its tropical forest cover, over one fifth of total remaining coverage. In the 1980s 154 million hectares of tropical forests (almost three times the land area of France) were converted to other land use, eight per cent of natural tropical forest cover;
- Global loss of above-ground biomass from deforestation in tropical countries is estimated at 2.5 billion tonnes between 1985-94, equivalent to 4.1 billion tonnes of carbon dioxide, 80 per cent of total US carbon dioxide emissions from energy use and cement production in 1990. Tropical deforestation releases approximately 1.5 billion tonnes of carbon into the atmosphere each year — about 19 per cent of total global carbon emissions;
- Total wooded area — tropical and non-tropical — declined by two per cent — or 100 million hectares, an area about the size of Egypt — from 1980 to 1990. Almost all of this loss took place in undeveloped tropical countries. A 1989 study for the International Tropical Timber Organisation revealed that less than 0.1 per cent of tropical forestry took place on a sustained-yield basis.
- Tropical rainforest is shrinking at an annual rate of between 12 and 17 million hectares, between the combined area of Switzerland and the Netherlands and that

volume since 1850, North Greenland's ice cap is thinning by about 2.5 centimetres a year, and a quarter of Antarctic sea ice has disappeared since 1950. Over the last 100 years sea levels have risen between 10 and 25 centimetres.[36]

Such changes are unprecedented in human history. During the warmest period of the past 700,000 years, temperatures only 2.5°C warmer than the present gave Europe a climate similar to that of present-day Africa. A 0.8-3.5°C warming would cause a similar alteration in the Earth's climatic patterns, but would take effect between 10 and 100 times faster, causing massive and perhaps catastrophic disruption to world agricultural production and lifting sea levels.

By the late 1990s, fossil fuels burned for heating, electricity generation, automobile transport and industrial activities were releasing 6.3 billion tonnes of carbon, 70.7 million tonnes of sulphur dioxide, 28.2 million tonnes of nitrogen oxides, and more than 250 million tonnes of ash and dust into the atmosphere.[37]

Carbon monoxide undermines the self-cleansing ability of the atmosphere by removing hydroxyl molecules, without which the concentrations of other trace gases (sulphur dioxide, nitrogen oxides, methane and chlorofluorocarbons) would increase until the atmosphere assumed totally different chemical, physical and climatic properties.

Two-thirds of the sulphur dioxide pumped into the atmosphere each year comes from coal-fueled power stations. The burning of petroleum products in automobiles and heaters is responsible for 70 per cent of the nitrogen oxides.

These emissions of sulphur and nitrogen oxides dissolve in water vapor to produce acid rain, which damages lakes, soils, vegetation and buildings. Already it is estimated that 14 per cent of Europe's forestland has been damaged by acid precipitation, with 50 per cent of West Germany's forests displaying visible leaf damage. While sulphur dioxide emissions from fossil fuel burning are now falling in Europe (from 59 million tonnes in 1980 to 26 million tonnes in 2000) and the United States (from 24 to 15 million tonnes), in Asia they have more than tripled (from 15 million tonnes to 53 million tonnes). As a result acid rain has produced large-scale die-offs in China and Japan's forests. The Chinese National Environment Protection Agency also estimates that 40 per cent of agricultural land is affected, while Japanese government sources believe that if present trends continue the nation's lakes and ponds will become too acidic for freshwater life within 30 years. Vast tracts of soil in Europe may already have been acidified beyond repair. In the eastern United States, corrosion damage due to acid rain is estimated to cost US$7 billion annually.[38]

Solar radiation acts on nitrogen oxides and hydrocarbons from vehicle exhausts to produce surface-level concentrations of ozone gas that are destructive to living

are essential for the life of others.

The process of photosynthesis is the starting point of this biological cycle. Energy in the form of visible light from the Sun is absorbed by photosynthesising plants, which in turn break down atmospheric carbon dioxide, water and mineral substances to form organic compounds and free oxygen. As a result of this process, 160 billion tonnes of organic matter and 300 billion tonnes of free oxygen are generated by green plants each year.

The primary products of green vegetable organisms — their biomass and free oxygen — in turn sustain animal life, which returns carbon dioxide to the atmosphere. Volcanoes, animal respiration and plant and animal decomposition release approximately 220 billion tonnes of carbon dioxide into the atmosphere each year. About 120 billion tonnes of this is removed from the atmosphere by photosynthesising plants, while the oceans absorb the remaining 100 billion tonnes. Through these processes, carbon dioxide and oxygen levels in the atmosphere have remained relatively stable over the past 600 million years.[35]

a. The atmosphere: greenhouse, acid rain & ozone depletion

While carbon dioxide makes up only 0.03 per cent of the chemical composition of the atmosphere, this small amount is vital to life on our planet. Together with other trace gases, carbon dioxide plays an important role in the greenhouse effect, which shapes the Earth's climate. While allowing sunlight to reach the Earth's surface, carbon dioxide and other trace gases trap heat in the atmosphere by absorbing infrared radiation. Without the heating effect of these greenhouse gases the Earth's average surface temperature would be about –18°C, 33°C less than it is now, and far too cold to sustain living organisms.

Over the past 100 years, human beings have increased the atmospheric concentration of carbon dioxide by 25 per cent by burning fossil fuels (coal, oil and natural gas) and by clearing forests (an activity that releases carbon dioxide as vegetation decays or is burned). Every year humankind burns what nature long ago took one million years to create and bury. As a result, over six billion tonnes of carbon dioxide is being added to the Earth's atmosphere every year. The consensus of the most recent studies is that carbon dioxide concentration in the atmosphere, which stood at 280 parts per million when fossil fuel burning began and now (1997) stands at 364 ppm, is unmistakably enhancing the greenhouse effect and leading to an increase of 0.8-3.5°C in the Earth's average surface temperature. Between 1950 and 1997 the global average sea surface temperature rose from 13.86°C to 14.4°C and the 1990s were the hottest decade since record-keeping began in 1866. As a result, European alpine glaciers have lost half their

Environment, Capitalism & Socialism

I. The Threat to Human Survival

Humanity today stands at the most important crossroad in its evolution. For the first time, we possess the technical knowledge and productive potential, if used rationally, to assure every person the basic means of life. On the other hand, the present irrational use of this same knowledge and productive potential threatens not only to bring about the destruction of human civilisation but also the extermination of all life on our planet, through the economic activities that inflict irreversible damage to the Earth's biosphere or through nuclear war.

The crisis is all-pervasive. The atmosphere heats up relentlessly, holes open in the ozone layer, forests are laid waste, waterways become cesspools, the remotest wilderness streams and lakes turn toxic, groundwater becomes contaminated and waste dumps proliferate. The poison reaches deeper into the biosphere as jungles fall to the axe, the sea is littered with toxic and radioactive waste and dwindling aquifers fill with filth. Each year the average air temperature rises, and the atmosphere unleashes more and more energy in tornadoes and cyclones of unprecedented destructiveness.

1. Destroying the biosphere

All life on our planet exists and reproduces itself in a narrow belt known as the biosphere. The biosphere is limited to the surface and soil of the Earth's rocky crust (the lithosphere); its oceans, lakes and rivers (the hydrosphere), and the lower levels of its atmosphere.

Within the biosphere, life is sustained by a series of delicately balanced and interconnected ecosystems, characterised by definite relationships between living organisms and their chemical and mineral environment. The stability of the biosphere is dependent upon a biological cycle in which the waste products of some organisms

The central issue is that of working class political consciousness, of imparting, through all our struggles for the environment, the true picture of a capitalism whose "werewolf hunger" for profit is not only devouring the working and living conditions of hundreds of millions of working people but the underpinnings of life itself.

No realist will have any illusions about the difficulties involved. There is, however, no other path than persistence. The future of our planet depends on consolidating — through every struggle for social justice and a livable environment — a red-green army powerful enough to displace a poisonous and barbaric capitalism from the command posts of society and civilisation.■

try to ignore it, reform or "democratise" it or replace it with something more democratic.

It's true that the environment movement has brought a new vocabulary and "discourse" into political life, and red-green politics has often enough to be conducted in this language. However, this terminology also exudes ambiguity, as typified by every partisan interpretation of important concepts like "sustainable development" and "democracy".

By the same token, much of the language of the traditional revolutionary Marxist movement has, after Stalinism, been rendered politically self-defeating for building a genuinely mass, genuinely radical, red-green movement. Like any political force that wants to be listened to, ecosocialists have to find the language that won't turn people off.

However, these realities notwithstanding, the DSP's central message remains that of the classical revolutionary movement against capitalism. The environmental struggle too has to be organised with the perspective of elevating the majority of society — workers, environmentalists, working farmers, the unemployed and pensioners — to political supremacy.

Any proposal to save the environment that doesn't adopt this approach, like the ultra-utopianism of works like *Sharing the World*, is doomed to be reduced to a set of "interesting proposals" in speedy transit to irrelevance, or to providing the newest wave of bamboozling eco-chatter, or to supplying the next menu items for a futile gradualism that falls further and further behind in its tasks.

The very fact that *Sharing the World* has to confront our crisis of civilisation and environment by trying to foist onto the shoulders of a cruel and destructive capitalism the goals that only socialism can achieve, surely confirms the urgency of grasping the truth that sustainability means revolution.

This perspective brings with it two particularly urgent challenges. First, how to build the alliance for sustainability between the working class (organised and unorganised) and environmentalists, especially when business is increasingly using jobs-or-the-environment blackmail. Secondly, how to organise internationally, both against global environmental disasters, but also so any national revolutionary advance is defended and extended.

Consolidating a red-green alliance requires of the "green" side not only that it support the struggles of labour against capitalist restructuring. It should also take the initiative in developing programs of industrial conversion where business pays the price, as well as championing economy-wide solutions for unemployment, like the shorter working week without loss of pay and the expansion of a public sector to take the lead in projects of environmental conversion.

at ever greater speed. The second is toward the organisations "that have the power to do something" — government environmental agencies and ministries and increasingly, the greener corporations.

What is at stake in this discussion is not whether governments can't be induced to change their mind on this or that dam or their objection to the very idea of a carbon tax, but whether any capitalist government, representing the "common affairs of the bourgeoisie", can subordinate the overall interests of capital to those of the environment for any length of time.

Once that impossibility is truly grasped then environmentalists have no choice but seriously to measure their present ideas against the basic concepts of revolutionary theory and politics. For many whose motto is "Think globally, act locally" this is not easy, for the slogan's direct implication is that each and every local initiative in recycling, economising on water and energy use and cutting waste can, summed together, make a critical difference. Politics, insofar as it's needed, can be membership of a Green party, sometimes involving serious commitment to campaigns, but almost always involving confusion about strategic goals and vulnerable to drowning in parliamentary tomfoolery.

Yet 20 years of thinking globally and acting locally, while yielding a host of small victories, has not been able to reverse any major trend in environmental degradation. That's because it offers no pathway from the local to the global, no feasible strategy for making local action begin to count globally.

This is all the more true because the local is hardly ever purely local, but linked to national and international webs of production, trade and investment shaped by the national and international division of labour. The "local" is forged by an increasingly global capitalism, which protects its interests through national and international state and semi-state bodies.

Indeed, with the penetration of multinational capital into every last nook and cranny, with its relentless pursuit of new profit-bearing technologies (including "biotechnologies" and "ecotechnologies"), it becomes increasingly difficult to practice denial before these realities. The frontiers are disappearing and environmental movements themselves increasingly contest the expanding circle of exploitation. An ever stronger state is required to drive through "development".

This steadily rising clash between the environment movement and a state acting on behalf of business will see the classic debates over strategy towards the state continue to resurface within green and environmental politics. The concerned environmentalist has to choose between an ecological version of communism, anarchism, anarcho-syndicalism or social-democracy. For when confronted with the capitalist state, we can

shouldn't be made more responsive to popular aspirations, nor that any post-capitalist state is more democratic than any capitalist state, nor that environmentalists boycott parliament, nor that they don't make demands of capitalist governments, nor that democracy is a tool to be used until "power is seized" and then discarded, nor any other of the scores of malicious parodies of Marxism that remain in circulation in the environment movement.[33]

Nor does it mean that the struggle for our environment doesn't begin locally, nor that environmental repair and development can't and shouldn't be advanced at the level of local governments, cooperatives and sometimes entire regions — even while state power is still in the hands of the ruling rich.

Even less does it mean that struggles around urban environmental and working conditions, like those of the New South Wales Builders Labourers Federation under Jack Mundey (the "green bans" movement), and eco-production alternatives like those developed by the Lucas Aerospace Combined Unions Committee, aren't essential in pointing the way forward.[34] Indeed, initiatives such as the US Oil, Chemical and Atomic Workers' proposal for an employer- and government-financed Superfund to underpin the conversion or closure of the polluting industries in which OCAW members typically work is an example for the union movement everywhere.

The Marxist viewpoint simply means that, until the working majority sets the rules of the political and economic game, any gains in such battles are provisional and vulnerable to cooption and reversal. After all, the NSW BLF was taken over by its national office — under pressure from the construction industry bosses — and the Lucas plans never reached production stage under the British Labour governments of Harold Wilson and James Callaghan.

The hesitation, indeed revulsion, of so many radical greens and environmentalists before Marxism in the advanced capitalist societies derives from a number of political leanings rooted in the typically middle-class formation of most environmental activists — exacerbated by the weakness of radical environmental currents in the trade unions and labour movement more generally.

Combine these trends with the fact that the environmental crisis tends to manifest itself either in the form of local outrages (motorway proposals, polluted rivers) or as impossibly vast global problems (hole in the ozone layer, global warming, fishery depletion, global deforestation), and it's not surprising that environmental activists overwhelmingly get tugged in one of two directions (and away from any revolutionary perspective).

The first is towards case-by-case guerilla warfare against specific environmental outrages, which the crisis will supply to the movement as if on a conveyor belt running

Cuban and Nicaraguan examples). Moreover, while this effort can begin in one country it will need to secure the "commanding heights" of the North if it is to make lasting gains for planetary sustainability.

That's why the DSP is a revolutionary red-green party *of a special type,* one which holds that the environmental crisis reconfirms the basic political proposition of Marxism and whose practice is guided by it. This is simply that if capitalism is destroying the ecosphere and rules through its own state institutions, then the social precondition for an ecologically sustainable order is the overthrow of such institutions and their replacement with the "dictatorship of the proletariat" — the rule of society's working majority. Hence the unavoidable need for revolution, the "'act' of taking possession of the means of production in the name of society".[29]

This was, despite endless attempts to prove otherwise, Marx's own position. In his famous 1852 letter to Josef Weydemeyer he wrote:

> And now as to myself, no credit is due to me for discovering the existence of classes in modern society or the struggle between them. Long before me bourgeois historians had described the historical development of this class struggle and bourgeois economists, the economic anatomy of the classes. What I did that was new was to prove: (1) that the *existence of classes* is only bound up with *particular, historical phases in the development of production*, (2) that the class struggle necessarily leads to *the dictatorship of the proletariat*, (3) that this dictatorship itself only constitutes the transition to the *abolition of all classes* and to a *classless society*.[30]

Why do so many red-green currents flinch at this viewpoint? Why has the development of environmental consciousness been accompanied by a revival of pre-Marxist (and anti-Marxist) political conceptions?[31] Has green political theory uncovered new strategies to which classic Marxism was blind?[32]

The revulsion from Marxism (and, even more, from Lenin's contribution) is, of course, partly due to its identification with the horrors of Stalin's rule, but with the passing of time and the diffusion of a truer understanding of Stalinism's specific historical roots and role as massive intellectual travesty of the work of Marx and Lenin, this explanation increasingly loses validity.

Certainly the problem is hardly ever simply verbal. Admittedly, after a century of Hitlers, Mussolinis, Suhartos and Pinochets it has become impossible to use "dictatorship" in its old sense of "class monopoly of power", but the central concept can always be summarised and explained readily enough.

It's essential in tackling this issue honestly, to forestall the usual crop of (often deliberate) misunderstandings. The outlook argued for in *Environment, Capitalism and Socialism* doesn't mean that any given capitalist state or parliament can't or

Indeed, what has most weakened the *environment* movement over the past 10-15 years has been organised *labour's* retreat before the agenda of capital. In the words of Phil Shannon:

> With the labour movement hunkered down in defensive bunkers, resisting with more or less (mostly less) success the assaults of a desperate capitalist class during the 1980s recession, green strategies took on a wistful and ineffective hue. Green self-improvement versions of the Biblical injunction to "change thyself" (half a brick in the toilet cistern, recycling and so on), elitist Greenpeace heroics, green consumerism, and the perennial ballot box came to dominate the outlook of most of those with environmental concerns … The greens are too often fuzzy about power in society and disdainful about class struggle and revolution, naively moving with gastropod-paced progress along "proper (middle class) channels" of institutional and personal tinkerings, continually grounding on the sandbars of capitalist interests and power.[28]

Reversing the "retreat from class" of environmentalism and green politics is therefore critical if a winning alliance for environmental sustainability is to be built. And as the environmental fight gets tougher the question of which social force can successfully sustain it will come increasingly to the fore. That means that the need for an environment movement allied to and driven by an aware working class movement will come to be much less abstract than it may seem today.

Equally critical will be the program and line of march of such a red-green alliance. For, while it certainly possible to struggle and win gains in the belief that the capitalist leopard can be made to change its spots (and it will even shed a few spots if that's the condition of its survival) the movement will make more headway the more it grasps that it's actually dealing with a predator. Otherwise, whatever gains are made in the short-term are always vulnerable to being devoured by the system.

Such is the real history of US environmentalism, as told by Barry Commoner in *Making Peace with the Planet*. It has also been possible to force a reduction in the Third World debt burden through anti-debt movements in the North and South. However, the realities that led to the accumulation of the debt in the first place — the widening productivity gap between the South and the advanced capitalist world, the impossibility for most Third World countries of breaking out of the existing global division of labour, the huge power of blackmail the debt gives the World Bank and the International Monetary Fund — all cry out that sustainable development in the South requires the eradication of the existing world-system, North and South.

These facts of life all point to a clear conclusion: only a revolutionary, popular government that puts real power in the hands of an environmentally aware majority can make serious inroads against the environmental crisis (the appendix discusses the

> including those of the environment. The working classes, mainly the working class of the industrial countries, have to continue to see themselves as a revolutionary subject … because they are the part of humanity most indispensable for our survival.[25]

Yet it's precisely here, in *politics,* that big business today holds nearly all the cards.

In all the major advanced capitalist countries the big corporations own and operate two parties and face weak and divided green parties. These flop in and out of the corporate camp on key issues. Indeed, what better confirmation could there be that the salad days of the green parties are gone than the German Greens' support for the 1999 NATO bombing of Yugoslavia?

At the same time in many countries the socialist and communist left *still* really hasn't grasped the centrality of the environmental struggle to the overall anticapitalist fight (we recall the long-standing support of the French Communist Party for France's nuclear power program). And, while growing, ecosocialist currents remain weak.

The retreat of the trade union movement before the austerity offensive of capital has inevitably reinforced in parts of the working class the conviction that defence of the environment can only come at the expense of jobs and livelihoods. Green party indifference to workers' concerns has also helped drive some workers (especially in rural industries) into the arms of radical right parties, with their vicious baiting of "greenies".

The effects on both camps are pernicious. Symptomatic, if extreme, is Dave Foreman, co-founder of Earth First!, which came to prominence in the early 1980s with its direct action defence of the forests of the US Pacific Northwest:

> One of my biggest complaints about the [timber] workers up in the Pacific Northwest is that most of them aren't "class conscious". That's a big problem … The loggers are victims of an unjust economic system, yes, but that should not absolve them for everything they do … Indeed, sometimes it is the hardy swain, the sturdy yeoman from the bumpkin proletariat so celebrated in Wobbly lore who holds the most violent and destructive attitudes towards the natural world (and towards those who would defend it).[26]

No recognition here that the jobs of the patronised timber workers ("bumpkin proletariat") were being threatened by the environmentalists' defence of the forests. Not the faintest inkling that environmentalists' refusal to address workers' concerns must hand them over bound and gagged to the timber companies.[27]

The equal and opposite vice comes in the person of Kevin Reynolds, the West Australian secretary of the Construction, Forestry, Mining and Energy Union (CFMEU), who is happy to ally his union in protests against "greenies" with the timber companies, which are devastating that state's magnificent old-growth karri forests.

strategies and programs to clean up existing environmental disasters and prevent new ones, over how to reduce environmental damage through applying new technologies, over sufficient funding to implement them and over who — the ruling elites or the mass of the people — should be paying for it all.

In principle, of course, all agree that "the polluter pays", but if ever there was a principle more honoured in the breach than the observance, this surely is it.

For instance, in 1993 the then-new Clinton administration, with Al Gore (author of the "visionary" *Earth in the Balance*) as vice-president, tried to pass a very mild tax on non-renewable forms of energy, only to be smashed into line by the fossil-fuel lobby. And as Saul Landau comments on another flagrant example:

> We punish sinners like Exxon, whose oiler [the *Exxon Valdez*] did not have proper safety equipment, by making it pay for the cleanup and fining it. But modern corporations have delay experts, called corporate lawyers, who find loopholes to forestall both the cleanup and the penalty procedures. Indeed, Exxon has barely felt the cruel lash of justice as it offers $80 billion to buy oil giant Mobil.
>
> The tipsy Captain Hazelwood [the *Exxon Valdez* skipper who was found to have been drunk in command] will make amends by spending his next four summers picking up garbage from city streets and other places. Imagine if he had been caught with some crack or even a marijuana joint. He'd be spending those summers as well as the rest of several years in pokey.[24]

Such is the present balance of political forces over the environment that to force the implementation of adequate programs for which the polluter really does pay will take an exponential increase in the power of red-green movements and parties. This is made clear in general terms by Spanish ecological Marxist Manuel Sacristán who conceived the central role of the working class in the environmental struggle in these words:

> From 1848 Marxism proposed to the industrial working class an understanding of itself (a class self-consciousness) based on its negative social position, on its having nothing to lose … For the industrial societies the necessary revision of the idea of the working class as a revolutionary subject will have to base the self-consciousness of the working class not exclusively on this negative position (which a part of the class has overcome in these countries, through its own struggles and the evolution of the system), but also on its positive condition as sustainer of the species, conserver of life, essential bearer of the metabolism between nature and society. The age of capital has added to this positive position of the working classes of all societies the capacity for scientific understanding and method and, as a consequence, skilful flexibility in work and the potential awareness — at the present time largely clouded over — of global problems,

Impose green taxes and provide government support for "eco-innovating" entrepreneurs. Entrenched consumerism and individualism? Make community life more attractive than private consumption through community development initiatives, getting people involved in national lobbying campaigns for sustainability, enriching life at work and strengthening the role of "civil society". Closing the North-South divide and lifting the Third World debt burden? Have partial debt write-offs for the South, a whole raft of international taxes which could also be used to fund Rio's Agenda 21 program, with the whole thing reinforced by bottom-up pressure from citizens' groups and NGOs.

All these trends have made necessary this updated version of *Environment, Capitalism and Socialism,* which was adopted at the 16th DSP Congress in 1995.

In adopting the amended document the congress reaffirmed the DSP's particular place within the "red-green" political spectrum. Firstly, like all red-greens, we hold, to quote John Bellamy Foster that:

> The answers to today's ecological problems do not lie in the direction in which the world is rapidly proceeding — toward the ever greater privatisation of nature and the conditions of human existence. Instead they are to be found in the direction of the "socialisation" of nature and production, and the creation of a more democratic, egalitarian world order, one that incorporates into its logic an abiding concern for other species and future generations.[23]

From this viewpoint the dreams of a "steady state" capitalism beloved of an ecological economist like Herman Daly and environmentalists like Lester Brown and the authors of *Sharing the World* are simply that — dreams. They accept that the market system is untouchable and look for salvation in changing the behaviour of individual consumers and inducing the corporations to adopt the latest techniques such as the "dematerialisation" of production.

However, since capitalism is hooked on expanding turnover, and devotes vast resources to this effort, there's no reason at all to expect that gains in resource efficiency will go into *reduced* usage of resources and not into increased throughput and growth rates. This position is argued out in detail in the appendix, "Can green taxes save the environment?", which analyses the latest panacea of environmental reformism — ecotaxation, supposedly capable of inducing business to convert to clean, green production.

However, even as *Environment, Capitalism and Socialism* reaffirms the basic incompatibility between the capitalist technosphere and the biosphere, it's obvious that the vast majority of fights for the environment are not conducted in this perspective. Rather, the ongoing struggle still takes the form of a chain of battles over specific

of land and resources.[18]

But is this all that today's Environmental Revolution (described by Lester Brown as ranking "with the Agricultural and Industrial Revolutions as one of the great economic and social transformations in history") amounts to?[19] Will such a plan really turn the tide of impending environmental disaster? The contrast between the horrendous tales of impending catastrophe and the paltriness of such mainstream environmental plans for redemption almost seem like a form of denial that recalls the typical fire-and-brimstone sermon. In it "the horror of the predicted catastrophe contrasts sharply with the mildness of the admonition with which we are allowed to escape".[20]

Doesn't capitalism still have some bearing on the environmental mess? What both sides of the Cold War were happy to call "communism" may be dead, but does this justify forgetting those classic pages in *The Closing Circle* in which Barry Commoner unfolds with devastating clarity and iron logic how capitalism is anti-environmental to the core?[21]

Ask many environmentalists the reason for this amnesia and the answer you almost always get is that the need to do something practical now is so great and capitalism so much a fact of life that the only feasible course is to fight to make it work for environmental goals. Many say: "Look, socialism and central planning have failed and we don't have time to have arcane arguments about whether capitalism does or doesn't need consumerism and inequality to survive. We simply have to act by all methods at our disposal to reduce consumerism and *force business* to install the latest in non-polluting and resource-efficient technologies. Such technologies now abound and there are capitalists who want to make a contribution to solving the environment crisis by using them. They should be supported against the others. And the best anyone can realistically hope for as far as governments go are Social Democrat-Green coalitions. Some at least are imposing eco-taxes."[22]

Such is the approach of the Sustainable Europe Campaign of Friends of the Earth. Their book *Sharing the World* sets out plans for how the planet's "environmental space", under rising stress and totally dominated by the industrialised North, can be protected, fairly shared and made the basis of "total quality of life" for all six billion global citizens. The task is gigantic: European resource usage alone has to fall between 50 and 100 per cent by 2050, with interim targets at 2010 set between 3.2 and 50 per cent. Environmental reformism has set itself a massive agenda, which effectively acknowledges that capitalism has to be turned inside out.

Sharing the World doesn't flinch from proposing solutions to what, in classic Marxism, would have been the job of post-revolutionary, socialist society. Conversion of polluting and resource-intensive capital stock to environmentally benign alternatives?

> seen in shrinking forests, falling water tables, eroding soils, disappearing wetlands, collapsing fisheries, deteriorating rangelands, rivers running dry, rising carbon dioxide levels, rising temperatures, and disappearing plant and animal species. These environmental indicators make it clear that the western fossil fuel-based, automobile-centred economy is not a viable model for the world.[15]

Chapter One of *Environment, Capitalism and Socialism* provides a summary of the state of the environment, which bears out the judgement of the UN's first Global Environmental Outlook (GEO-1):

> From a global perspective the environment has continued to degrade during the past decade, and significant environmental problems remain deeply embedded in the socioeconomic fabric of nations in all regions. Progress towards a global sustainable future is just too slow. A sense of urgency is lacking. Internationally and nationally, the funds and political will are insufficient to halt further environmental degradation and to address the most pressing environmental issues — even though technology and knowledge are available to do so … *As a result, the gap between what has been done thus far and what is realistically needed is widening.*[16]

In the face of this immensely threatening scenario, the 1990s mainstreaming and institutionalisation of environmentalism has been further deepened by the collapse of Soviet "really existing socialism" and China's rush to embrace capitalism. The revelation of the environmental atrocities in the Soviet Union and the former "planned economies" of Eastern Europe have been a godsend for capitalist elites previously "scared shitless" by the movement. No opportunity is being lost to point out to the young environmentalist that "under Marxism, the environment is 'sacrificed' to production goals [whereas] under capitalism, the environment is 'balanced' with production goals".[17] For most environmentalists Margaret Thatcher was essentially right — There Is No Alternative.

So as we approach the year 2000 the Worldwatch Institute's David Malin Roodman sums up a broad consensus:

> What, then, will it take to construct a sustainable, modern society? Governments will need to aggressively demarcate and defend environmental limits, working domestically and cooperating internationally. And they will have to do so in ways that stimulate rather than stifle the creativity of corporations. Businesses will need to anticipate the transition and position themselves to exploit the huge investment opportunities created. Nonprofit organisations ranging from international environmental groups to neighbourhood churches — collectively called "civil society" — will need to press both governments and businesses forward. And undergirding all their efforts will be educated citizens operating in their capacities as voters, consumers, charitable donors, and owners

for building critical feedback into production and consumption systems".

Over the last decade too, at least one new ecosystem has flourished — that of "global environmental governance". Just three years after the 1992 Rio Earth Summit (the United Nations Conference on Environment and Development — UNCED) adopted Agenda 21, 324 international, regional and national environmental action plans and strategies had been produced and 171 were in preparation.[12] At the time of writing there are 215 international environment agreements in place.

UNCED and other institutions like the UN's Commission for Sustainable Development (CSD) and the World Bank's Global Environment Facility (GEF) provide a framework for closer monitoring of the environment, for turning the spotlight on leader and laggard countries in areas where agreements are in force and for spreading awareness of scientific environmental studies. However, most of the treaties and agreements are inadequate to the problems at hand and are policed by toothless institutions that match ambitious and noble mandates with paltry authority and funding.

For, despite all the effort since Rio, the 1997 UN special General Assembly dedicated to reviewing progress (Earth Summit +5) was able to point to only two *global* areas in which the spiral of environmental decline had been reversed — emissions of chlorofluorocarbons (CFCs) and acid rain-generating sulphur dioxide. Notwithstanding many partial gains — in cleaning up rivers, stopping the ivory trade, reviving whale populations, reducing smog in the cities of the North — in every other global sphere, and hence for the entire interrelated ecosphere, environmental degeneration continues.

The 1990s have proven to be the opposite of the "turnaround decade" hoped for at Rio. UNCED deputy secretary-general Nitin Desai may well stress that "our present condition is the result of at least two centuries of unsustainable development, which can hardly be corrected in five years"[13] but that's hardly the point: we face a global emergency demanding emergency measures.

If anyone is inclined to think that this is doomsaying, let them study the state of the world's icecaps and glaciers. Antarctica is hotter now than at any time in the past 4000 years, already producing the collapse of small ice shelves and threatening that of ice sheets so vast that a six-metre rise in sea levels would result. Arctic sea ice is up to a third thinner than 20 years ago and across the world's mountain ranges glaciers have shrunk by between 22 and 92 per cent this century. These titanic changes could easily produce complex interactions between a warming atmosphere and melting ice capable of triggering calamitous changes in climate and sea level.[14]

State of the World, the Worldwatch Institute's unofficial medical report on the planet, states in its 1998 edition:

> The key environmental indicators are increasingly negative. The signs of stress can be

have learned to chant "sustainable development" — whatever peculiar meaning they give to the term. Yet, despite this change in rhetoric, the 1990s have overwhelmingly been a decade of massive corporate counterattack that has produced profound shifts and confusion in environmental and green politics.

Powerful sections of big business have shifted ground, abandoning "it-isn't-happening" lobbies like the Global Climate Coalition (GCC) for green umbrellas like the World Business Council for Sustainable Development (WBCSD). More farsighted corporates like British Petroleum,[2] which in May 1997 became the first — besides the punch-drunk reinsurance corporations — to end denial about global warming, have stepped up their snooping for green profit opportunities and "moved solar energy up to the big table", along with exploration, oil and chemicals.

Notorious ecosystem wreckers like DuPont (chlorofluorocarbons), Asea-Brown Boveri (nuclear power and dams) and Ford have decided that if there's going to be any sustainable development around this planet they won't be kept out of the game. DuPont chairman Edward Woolard says:

> The green economies and lifestyles of the 21st century may be conceptualised by environment thinkers, but they can only be actualised by industrial corporations.[3]

Henry Ford's great-grandson Bill (a "passionate environmentalist") sees his mission in life as getting rid of the internal combustion engine:

> There is a rising tide of environmental awareness. Smart companies will get ahead of the wave. Those that don't will be wiped out.[4]

An entire layer of former environmental activists and leaders are now making their way in the world as environmental executives and consultants. Most sincerely believe that there's no other way of saving the planet. In the words of one woman middle manager:

> The corporations have the talent, the resources, the R&D, and the ability to make a difference. If they can't be brought on board, there's no hope of reversing the environmental crisis in time.[5]

Nearly every prominent environmentalist now agrees, helping spawn over the past decade a torrent of pro-market texts with names like *The Ecology of Commerce*,[6] *Green, Inc*,[7] *The Economy of Nature*[8] and *Factor Four: Doubling Wealth — Halving Resource Use*.[9] David Suzuki and the Worldwatch Institute's Lester R. Brown also embrace this eco-capitalism, championed in *Factor Four* as "saving the earth for fun and profit through advanced resource efficiency".[10]

This trend isn't restricted to the old capitalist frontier. Friends of the Earth's Sustainable Europe Campaign, outlined in *Sharing the World: Sustainable Living and Global Equity in the 21st Century*,[11] embraces the market as "the most efficient means

Preface

By Dick Nichols

The big corporations, our clients, are scared shitless of the environmental movement … They sense that there's a majority out there and that the emotions are all on the other side — if they can be heard. They think the politicians are going to yield up to the emotions. I think the corporations are wrong about that. I think the companies will have to give in only at insignificant levels. Because the companies are too strong, they're the establishment. The environmentalists are going to have to be like the mob in the square in Romania before they prevail.

— Frank Mankievicz, senior executive at transnational public relations firm Hill and Knowlton[1]

A lot has changed since the first edition *of Environment, Capitalism and Socialism,* the Australian Democratic Socialist Party's viewpoint on the environment crisis, was published in 1990 under the title *Socialism and Human Survival.*

Just ten years ago, the main tactic of the big corporations was still to combine public denial about the environment crisis with legal and extra-legal harassment of their critics. The environmental organisations — from mainstream bodies like the Sierra Club or the Australian Conservation Foundation to Greenpeace and Friends of the Earth — were still mainly seen as making their contribution to a movement that was gradually advancing against the recalcitrant polluters and their political backers. The green parties still more or less adhered to the four principles of the German Greens — social justice, environmental sustainability, grassroots democracy and peace and nonviolence.

However, over the past decade — which has produced the hottest years and most violent storms since meteorological records began in 1866 — the environment has become so potent a political factor that even US Republicans and multinational polluters

Dick Nichols was a longtime leader of the Democratic Socialist Party.


AGAINST NUCLEAR
MULTINATIONALS

Boxes

Note

In this book the term North is used to refer to the advanced capitalist economies that dominate the world economy, while the term South (sometimes called the Third World) refers to the underdeveloped countries dominated by the imperialist North.

All dollars are US dollars unless otherwise specified.

Contents

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