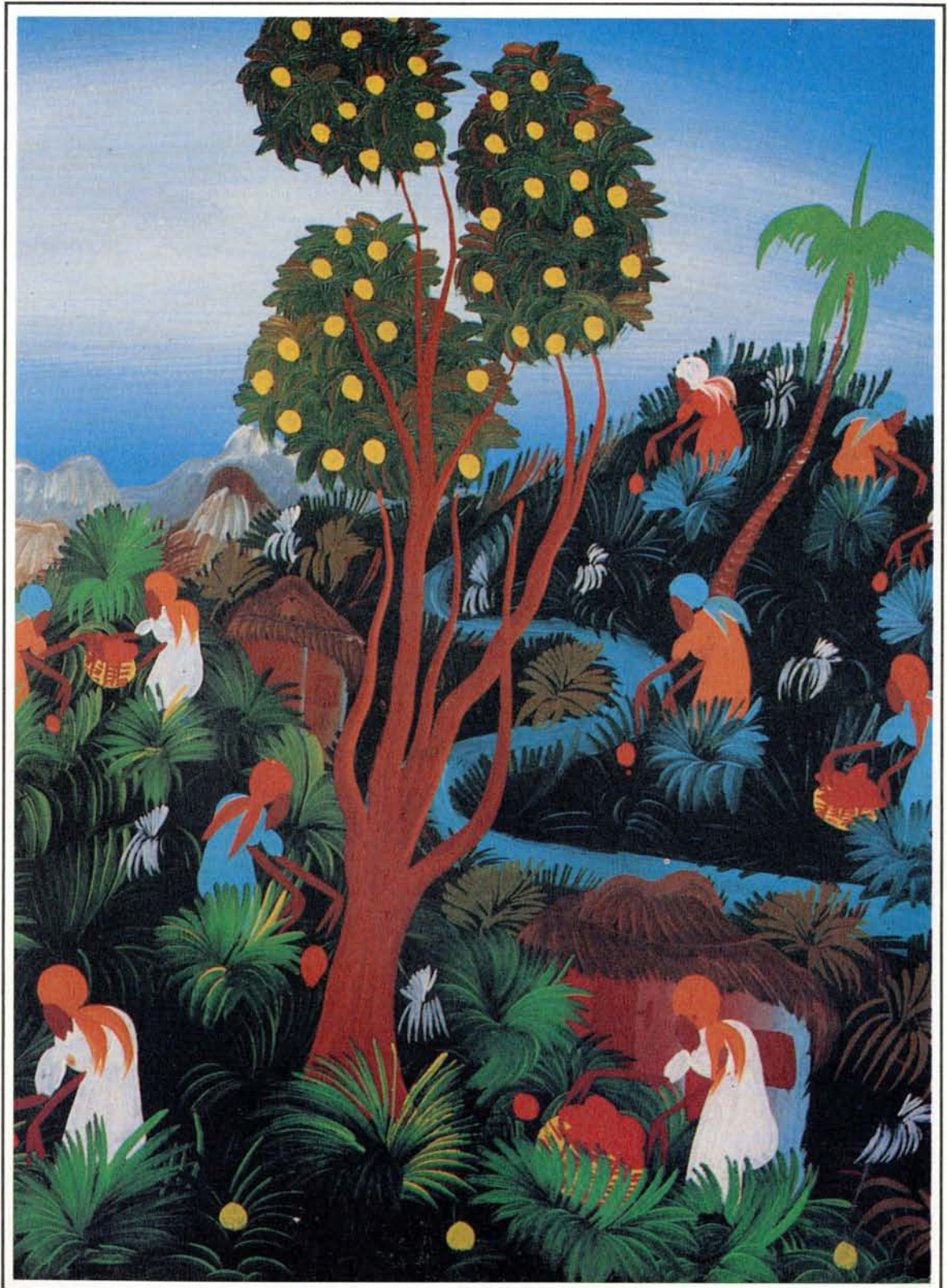


# The Ecologist

Vol 21 No 1 January/February 1991

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- Forestry and Global Warming
- Sea-to-Land Transfer of Radioactive Pollutants
- Japanese Aid and the Environment



**Who Best Defends Biological Diversity?**  
*The Politics of Conservation*



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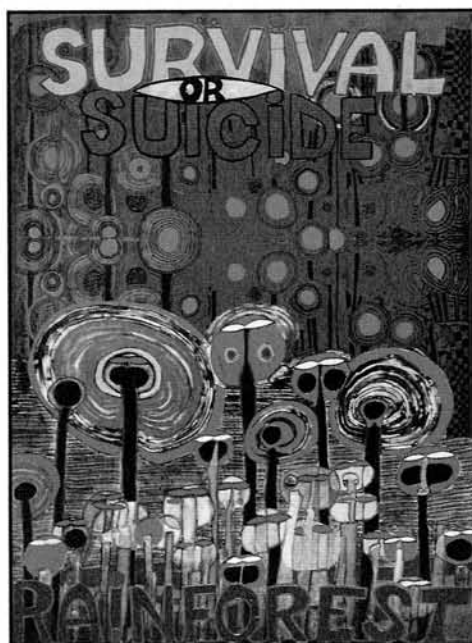
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# The Ecologist

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A study of the politics of conservation in Thailand suggests that it is grassroots village movements which best defend the biodiversity on which their livelihoods depend. International conservation plans, however, aim to hand the defence of biological diversity over to the forces which are responsible for its destruction — corporations and the state.

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The paper industry's claims that by using pulp from "sustainable" plantations in Scandinavia they are helping to counter the greenhouse effect are totally false. In Finland the planned expansion of the pulp industry would drain vast areas of peatlands for forestry, releasing huge amounts of carbon dioxide.

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The British nuclear industry insists that its radioactive discharges into the sea are too small to affect human health. But this assertion is made against a background of basic ignorance about the behaviour of radioactivity in the seas and major uncertainties over the health effects of low-level radiation. The industry has ignored much evidence showing that the coastal population of the UK are exposed to significant doses of radiation originating from marine discharges from nuclear plants.

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The environmental consequences of the massive amount of economic aid disbursed by Japan to the Third World are rarely, if ever, considered. Proposals by the labyrinthine Japanese aid bureaucracy to give more money in the form of "environmental aid" are likely to do much more harm than good.

## Report

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# Liberation Ecology

The chief characteristic of the modern market economy is that it is exploitative. It is exploitative of the environment and it is exploitative of people. Its exploitativeness of the environment is now so well documented that there is no need to restate the case. But its exploitativeness of people has, all too often, been set to one side as a separate issue by environmentalists.

It is time that this issue was thrust to centre stage and that the environmental movement began to make common cause with social activists, both in the South and in the North. It is time, in effect, to recognize that whilst the environmental movement can usefully continue to bring environmental problems to public attention, it cannot hope to address them without also addressing the more fundamental issue of social justice. And that will mean confronting basic issues of how society is organized, who controls resources and decision making, who benefits from current social and economic policies and who suffers from them; and how those policies can best be challenged.

## The Rubbish People

In the South, the intimate connection between the ecological crisis and the broader issues of social and economic justice is clear. Thousands are daily thrown onto the human scrap heap in the pursuit of short-term economic and political gain — their forests are logged by companies whose only interest is to make as big a financial killing as possible off a single cut; their rivers dammed or polluted to promote industrial development which does not benefit them; their lands taken over for growing crops which are then exported to the North; their daily lives burdened by debt, insolvency and, often, political oppression. One New Guinea villager, threatened with resettlement through a dam project, poignantly expresses the sense of oppression that many now feel in the South: "We have become rubbish people."

Here, the problems of social justice and environmental destruction are demonstrably linked to the imposition of development policies that are undermining the livelihoods of the many in the interests of the few. In the North, the link is not as clear, but is no less intimate. High material standards of living — a level of prosperity that is only made possible through the exploitation of the Third World — cocoon the majority of us from the destructiveness of modern industrial society. But, as in the South, that cocoon is not available to the poor: however passionately those living on the dole in a high-rise estate may care about environmental issues, there is often little that they can do about them. Their poverty denies them the "consumer choice" available to the better off: the "Perrier" option is not open to them. Similarly, the threat — or more often the reality — of unemployment means that the poor often have little choice but to accept highly polluting jobs and are frequently wary of demanding healthier working conditions for fear of losing their jobs. Indeed, the poorer the community, the more it is viewed as a dumping ground for polluting industries.

To give just one example: recently, the California Waste Management Board paid a Los Angeles consulting firm, Cerrell Associates, some \$500,000 to identify those communities that would be least likely to resist "Locally Undesirable Land-Use" — the industry's euphemism for toxic waste sites. Such communities, according to the study, are characteristically rural, poor, politically conservative, "open to promises of economic benefits", poorly educated and already involved in "natural exploitative occupations", such as

farming, ranching or mining. In effect, waste companies would be best advised to "target" communities which, in the consultants' view, are too stupid, too disorganized, too poor and too respectful of authority to resist the siting of dumps which would not be accepted in richer, better educated, "professional" communities.

Clearly, the North too has its rubbish people.

## Deprivation and Marginalization

The Cerrell study is revealing for more than the insight it provides into the cynicism of modern bureaucracies. Effectively, the question that the waste industry demanded of Cerrell was: "What makes a community vulnerable to exploitation?" Cerrell could have answered "Low incomes" and left it at that: but it would have been an incomplete and misleading answer, for there are many low income communities in the US which have doggedly resisted the siting of waste dumps.

The study's sophistication lies in having correctly identified low incomes as just one of a cluster of factors that collectively *disempower* a community — that so marginalize people economically, socially and politically that they see no choice but to participate in a system that is exploitative not only of the environment but of their health, their children's health, their community and their self-esteem. It is that state of disempowerment, of marginalization, that sets Cerrell's "target" communities apart from others: and it is a state brought about by forces that cannot be reduced to simple material deprivation.

## The Process of Disempowerment

Disempowerment is not a recent phenomenon. In the North, the process has been inextricably linked with the emergence of the market economy; the replacement of the informal economy by the formal economy; the introduction of wage labour; the alienation from communal use (though not necessarily communal ownership) of land and other key resources; the undermining of local political structures through the encroachment of the state; the adoption of centralizing and resource-intensive technologies; and economies of scale.

Disempowerment is about more than being denied the vote or lacking nominally democratic structures of government. For real power — the power that gives a community the decisive say in decisions that affect its daily life and its future — involves more than simply putting a cross on a piece of paper every five years: it demands that the community as a whole is able to exercise meaningful control over its economic affairs, over its social affairs and over its political affairs.

Disempowerment results when that control is effectively removed from the community and vested instead in interests which are either unrepresentative of the community, or not bound by social obligations to it or which have no long-term interest in its welfare. That shift in power inevitably gives rise to a new set of political, economic and social structures: the society is reorganized as old allegiances and relationships are transformed — and it is this reorganization of society, rather than the polling booth, which determines the extent to which people are empowered or disempowered.

In historical terms, the single most powerful force behind



disempowerment has been the emergence of the market economy. As the vernacular economy has given way to the formal economy, economic activities which were previously embedded in social relations have become monetarized: wages and cash, rather than cooperation and mutual dependence, become the basis for ensuring livelihoods. Subtle social bonds that in many instances enabled the community to act in the collective interest are undermined by new relationships that are more antagonistic or divisive. Similarly, common resources, such as land and water, have become commoditized and access to them is determined not by social relationships but by the market. Increasingly, communities lose control over their economic activities — and with that loss of control, their power diminishes. Their lives become dependent on markets over which they have no influence, determined by decisions to which they are not party (and can never be), and by forces which neither they, nor indeed economists, fully understand.

Disempowerment is a process that feeds back on itself. As the functions previously fulfilled by the community are stripped away, so the community atrophies as a political, economic and political force: it no longer functions as a community precisely because it has fewer and fewer functions to perform. The community loses its cohesion and becomes unable to resist the further intrusion not only of the market but also of the bureaucracies that now move in to take over the functions it once performed — the education of its children, for example, or the care of its old and sick. Indeed, it is one of the ironies of the market that, despite the protestations of free marketeers, it cannot itself function without the state: for it is the state that picks up the human flotsam and jetsam — the “rubbish people” — that the market generates. It is the market that creates much of the appalling poverty that is now a feature of so many cities in the industrialized world but it is the state that must cope with their problems. And, in doing so, it causes further disempowerment, creating dependency on a bureaucracy that has a thousand different demands for its limited resources of time and money and which, by its nature, is too distant and impersonalized to treat people as anything more human than “a problem”.

## Who Has the Power?

The process of disempowerment has been accelerated through the imposition of modern development policies on the South. Those policies are specifically (and openly) intended to restructure Third World societies so that they can be incorporated into the economic, political and social structures that have emerged from the industrialization of the North. Not surprisingly, the chief agents and beneficiaries of the “development” process have been those corporate bureaucracies (including the state) to whom the power once enjoyed by communities in the North has now passed.

This is as true for the market economies of the West as for the command economies of the Eastern bloc. As J.K. Galbraith has remarked: “The decisive power in modern industrial society is exercised not by capital but by organization, not by the capitalist but by the industrial bureaucrat. This is true in the Western industrial systems. It is also true in the socialist societies . . . For organization — bureaucracy — is inescapable in advanced industrial technology.”

Understanding the interests — and the behaviour — of such corporate bureaucracies is vital if we are to challenge the forces that are destroying the environment and marginalizing people. Set up to manufacture or sell specific goods, to provide specific expertise, to perform specific services, corporate bureaucracies are primarily concerned with promoting their own interests, perpetuating themselves and increasing their power and influence. That desire to “keep going” generates a tunnel vision that has a dynamic of its own. Decisions are not made because they are desirable on social or ecological grounds but because they serve particular vested interests. Indeed, time and again, we find that

special purpose organizations have manipulated research, distorted cost-benefit analyses and suppressed information in order to sell products known to be harmful or to continue activities which are detrimental to the environment.

## Lessons

The power enjoyed by corporate bureaucracies — and the concomitant disempowerment of local communities — is a central feature of the modern industrial state, indeed of the whole process that we call “development”. It is key to understanding the systematic creation of “rubbish people” in both the North and the South, key to understanding the destruction of our environment and it is key to understanding the forces that now block change. For such bureaucracies now dominate our lives — indeed, to a greater or lesser degree, we are inextricably bound up in them — and shape our future. They are also the chief obstacles to change. If nuclear power is now being favoured by governments as the “solution” to the greenhouse effect, it is not because there are no other options open to us, but rather that those options do not fit the agendas of those corporations that dominate the energy sector. If organic agriculture has not been widely adopted, it is not because it is impracticable as an alternative but because it has been systematically “trashed” as such by the agrochemical industry.

Seeking to reform those bureaucracies may postpone the environmental crisis, but it will do nothing to solve it. The solution will only come if we are prepared, as a movement, to confront the more fundamental issue of disempowerment — to shift power away from the bureaucracies back to the community. In effect to take seriously the demand from those communities in the Third World and elsewhere for local people to have “first call on their own resources”.

To do that, the green movement cannot operate in isolation. Nor can it succeed if its campaigns do not address broader social issues. Focusing our campaigns on the issue of disempowerment may be one way forward — not only enabling the movement to build wider alliances but also helping it to counter the view that the environmental crisis is a purely technical one. In putting forward solutions, we should not merely be asking “Will this remove a threat to the environment or promote environmental restoration?” but “Will this solution further the interests of corporate bureaucracies or local people?”: in short, “Will it impede or encourage communities in empowering themselves or will it further marginalize them?”

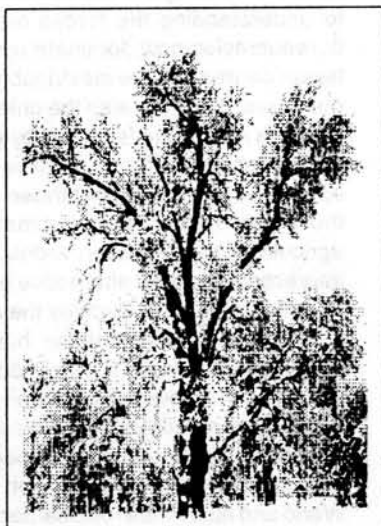
For, ultimately, it is only through the direct and decisive involvement of local peoples and communities in seeking solutions to the environmental crisis that the crisis will be resolved. As Lois Gibbs, coordinator of the Citizens' Clearing House on Hazardous Wastes, a grassroots environmental group in the US, puts it: “Change does not come about through slick lobbying techniques, clever research or ‘magic facts’ but through trusting in people’s common sense and willingness to act once they are aware of the issues.” Environmental groups can never match the financial power of those vested interests against which they are invariably pitted. But they have one resource whose strength, once tapped, should not be underestimated. People.

Liberation theologians have long argued that the church has little relevance unless it is prepared to address the issues of power and oppression. Environmentalists need to address the same agenda. That of “liberation ecology”.

*Nicholas Hildyard*

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Villagers protesting against the Kaeng Krung Dam in South Thailand in 1990 erect their own version of a Royal Forest Department sign, declaring the area a "People's Park". (Photo: Sophon Phetthae/The Nation)

# Who Defends Biological Diversity?

## Conservation Strategies and the Case of Thailand

by

Larry Lohmann

*It is often assumed that giving economic value to biological diversity will motivate business, governments and villagers to preserve it. However, this approach tends to justify handing the defence of biodiversity over to the forces that have proved its worst stewards — corporations and the state. As the Thai example makes clear, emphasizing the market value of biodiversity gives short shrift to its most effective defenders — those villagers whose livelihoods depend upon protecting their local environment from economic development.*

### I. THE FORCES OF DESTRUCTION

A complex and uneasy alliance between two groups has been mainly responsible for the huge losses in biological diversity which Thailand has suffered over the last 40 years (see Box). The first group consists of business interests, both national and foreign. The second is the state bureaucracy and the army, guided by and allied to foreign governments and international organizations. Together, these two broad and interlinked groups have progressively usurped from villagers the control of forests, land, agriculture and water.

For the past century and a half, the expansion of agricultural land — often combined with timber harvesting — has been a

leading cause of forest loss in Thailand. Contrary to myth, this expansion has been driven not simply by population increase but also by the invasion of business and by economic policies handed down from the country's capital. This trend was visible as early as 1855, when Britain, through the Bowring Treaty, pushed Thailand to increase its exports in exchange for a degree of national autonomy. In the succeeding century the growth in the area deforested to make way for agriculture consistently outstripped population increase, partly as a result of the 2500 per cent increase in rice exports between 1855 and 1930. Following World Bank and US missions to Thailand in the 1950s, a huge increase in agricultural clearance for non-rice cash crops, grown almost exclusively for export or non-local needs, accelerated this trend. Repeated monocropping of plants such as cassava and maize in areas of low fertility, moreover, led to the loss of soil nutrients, erosion, weed invasion, lowered yields, the need for expensive

Larry Lohmann is currently researching landlessness and forest loss. He is an Associate Editor of *The Ecologist*.

inputs and debt. As a result, many of the migrants who cultivated them became impoverished and were forced to clear more forest elsewhere. Such clearance has meanwhile led to flooding, droughts and siltation downstream. This has displaced other farmers, augmenting the vicious circle of impoverishment, migration and environmental deterioration.

When business interests have gained direct access to forests in Thailand similar devastation has resulted. By 1968 more than 500 logging concessions had been given out, covering half the country's land area.<sup>1</sup> Regulations calling for replanting, 30-year harvesting cycles, rehabilitation and protection from encroachment, were promulgated but nowhere acted upon. Widespread illegal logging outside concession areas, often backed by sawmill interests, has been more scattered in impact. It was only after catastrophic deforestation-related floods in Southern Thailand and the opening up of the Burmese timber trade to Thailand that the remaining 300-odd concessions were finally cancelled in 1989.

The corporations now attempting to take control of as much as eight per cent of the country's land area — much of it in former logging concessions — to plant *Eucalyptus camaldulensis* monocultures, have little stake in maintaining a commercially non-functional wealth of species and strains of flora and fauna, nor in preventing farmers resident on their concessions from being forced to flee and clear forest elsewhere. In some cases eucalyptus firms are even cutting natural forest to provide space for the fast-growing Australian trees.<sup>2</sup>

Nor is it in the interest of other types of agribusiness to preserve biological diversity. Tiger-prawn ponds have replaced huge areas of the country's rich mangrove forests in order to grow a single species, *Penaeus monodon*, for luxury seafood markets abroad,

with crushing effects on local fisheries. The giant Dole pineapple plantation established in Prachuab Khiri Khan in the 1970s with government support and investment by top government technocrats is notorious for having wiped out forests, damaged soil fertility and village crops, polluted streams and caused flooding.<sup>3</sup> In the same province, Sankyo Ltd.'s plantation of *Croton sublyratus*, a medicinal herb used by the Japanese to treat ulcers, is, ironically, impoverishing the very ecosystem in which the genetic stock used on the plantation evolved.<sup>4</sup>

In all such examples business is merely being true to its own imperatives in the modern world: producing and trading uniform goods on a mass scale while ensuring that as many liabilities as possible, including the depletion of biodiversity, are borne by others. The value of a biological organism to a business tends to bear little relation to the organism's importance in a local ecosystem or community. If something else can fulfil an organism's economic role, business is likely to be indifferent to its survival, and even if an organism is economically essential, it is often put at risk in its natural habitat. Moreover, a company has little incentive not to deplete the biodiversity in the area in which it is operating, if it can exchange the profits gained from that depletion for different resources elsewhere.

## Extending State Control

In Thailand, as in many other countries, this economics-driven erosion of biological diversity has been greatly helped by the activities of the state and international agencies. Throughout the period of massive agricultural expansion, unwritten government

# The Loss of Biodiversity in Thailand

The forests of Thailand have disappeared at a startling rate during the past few decades. Early in this century up to three-quarters of the country was covered by forests of remarkable variety. Today only scattered patches occupying perhaps 15 per cent of the nation's land area (or less than 80,000km<sup>2</sup>) remain to any reasonable degree naturally forested.<sup>1</sup>

The major cause of this loss of biodiversity has been the pursuit of economic development through integration into the global economy:

- Between 1961 and 1985, at least 125,000km<sup>2</sup> of forest land (about a quarter of the country's land area) was denuded, largely by logging companies and large landholders and settlers growing upland export crops;<sup>2</sup>
- Between 1950 and 1978, the cultivation of cassava, maize and sugar-cane, overwhelmingly for export to Japan, Taiwan, the EEC and other regions, in-

creased by 800 per cent, at the expense of over 50,000km<sup>2</sup> of upland forest;<sup>3</sup>

The construction of dams has directly wiped out many species-rich lowland riverine areas; six hydroelectric dams alone inundated more than 2000 square kilometres.<sup>4</sup>

The biological diversity formerly maintained in the country's agriculture has also declined. Modern livestock breeds have supplanted many village races, and the growing of crops for export has often overshadowed traditional rice and mixed agriculture with its numerous local food plant varieties. Green Revolution rice varieties have, in addition, brought with them demands for pesticides and fertilizers that have driven fish out of Thai paddies.<sup>5</sup> The structure of the soil and the organisms that live in it have also been damaged by chemical inputs. Following a massive expansion of cultivation in recent decades, more than one-quarter of the land is affected by severe or very severe soil erosion.<sup>6</sup> The storehouse of traditional medicinal

plants, together with the knowledge required to make use of them, has suffered a similar decline.

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policy was to increase export income through forest clearance rather than through intensification and diversification which would benefit local people in rice-growing areas. Money was put into railroads and roads in preference to agricultural improvements, since these provided more returns to élites and helped extend state control over the countryside.<sup>5</sup> A rice export tax has kept rice productivity low at the expense of farmers while adding to state coffers and subsidizing urban wages for the benefit of industrial development. Upland export crops have meanwhile been widely promoted by the government as a means of "diversification" and an opportunity to exploit "comparative advantage".

State-promoted deforestation accelerated drastically from the late 1950s, as a series of dams and roads was built to foster commerce, suppress insurgency and encourage foreign investment. The roads opened still more forests to destruction by logging companies, pioneers contracted to open land for large landholding interests, and other settlers planting the new upland export crops. Total road mileage expanded more than 250 per cent between 1960 and 1980, and paved mileage more than seven times over the same period.<sup>6</sup>

As crops flowed over the new roads and out of the ports to world markets to help finance industrial development, consumer goods entered the most remote villages. To pay for them, farmers had to sell more produce, plant more cash crops, apply more chemicals and fertilizers, rent more tractors, clear more land and take out more loans. As a result, the average Thai farming family's debt now exceeds its yearly income. Loss of local control over land, crop choice and other resources has been an inevitable result, increasing insecurity among the poorest and pressures on unclaimed forest land.

Modern large-scale irrigation systems installed under government programmes supported by international agencies have increasingly transferred the control of water into the hands of big business, the electricity authority, urban developers, larger landowners and the Army, and out of the hands of the small farmers who have both the most interest and the most experience in preserving watershed ecosystems. Modern irrigation methods have caused considerable environmental damage, including flooding.<sup>7</sup> The replacement of wooden dams in traditional *muang faai* irrigation systems in the North with "improved" cement structures has often torn apart the complex forest/stream/rice field labour relationships which villagers have maintained for centuries as an ecological guarantee of subsistence. This has in some cases led to the abandonment of the *muang faai* system, together with the system of forest management which forms a part of it, leading to more forest and watershed destruction.<sup>8</sup>

## Speculation, Subsidies and Corruption

Forest colonization has been exacerbated by land speculation fuelled by the expansion of big business into rural areas. This has in turn been encouraged by the multilateral development banks' increased attention to the economic development of outlying provinces; by the growing influence of business in recent Bangkok administrations; and by land tenure arrangements which favour corporations. Increasingly, speculators are persuading small farmers to sell usufructory rights, then reselling them at a profit to resort developers, plantation tycoons or commercial interests who plan to profit from booms created by state-supported industrial estates. In 1989 a total of 3.6 million land transfers was recorded in Thailand — 56 per cent more than in the previous



*Monks in North Thailand ordain a tree in Buddhist robes in an effort to prevent its being felled by loggers (Photo: The Nation)*

year.<sup>9</sup> Many displaced villagers move on to other forests to establish new farms or just to wait for the next wave of land speculation.

Thailand's state bureaucracy is selectively encouraging precisely those business activities which will accelerate this process — not out of ignorance, but according to well thought-out plans to boost export income and feed the bureaucracy's own needs. Special privileges have been granted to eucalyptus planters, including tax breaks and the opportunity to rent state land for US\$1 per acre per year. Many other projects which deplete biodiversity, such as shrimp farms and chemical factories, also receive public subsidies.

As in most countries, bureaucracies in Thailand support illegal business activities which deplete biological diversity with hardly less enthusiasm than they encourage legal depredations. In 1980, for example, the then Prime Minister Prem Tinsulanonda ordered a halt in the commercial extraction of salt from subsurface brine in Mahasarakham province, following reports that it had rendered a local reservoir saltier than sea water and had contaminated the Sio River. The mining continued, however, with efforts at enforcement consistently stifled by influential people in the distant soda ash and glass industries which needed the salt. The river became depleted of fish along its entire 225km length. As much as 480km<sup>2</sup> of farmland was salinized, affecting 300,000 people and doing untold damage to local vegetation and soil. Yet letters



Students with banners, and villagers taking part in protests against the Nam Choan Dam in 1988. Prominent among objections were claims that previous dams had adversely affected local climatic conditions, soil fertility, and water and fishery resources. The successful anti-Nam Choan campaign forged alliances between academic conservationists, local groups, students and the media which are still growing and serving the environmental movement. (Photo: The Nation)

and petitions to local officials proved fruitless, and when villagers finally took to the streets in April 1990 to undertake a last-ditch defence of their ecosystems, they were attacked by 600 armed riot police. The police were reportedly sent on the orders of Minister of the Interior Banham Silpa-archa, who, together with Industry Minister Pramarn Adireksarn, had set up the soda ash and glass companies which were the most prominent beneficiaries of the Mahasarakham salt supply.<sup>10</sup> The complicity of high officials in Thailand's Royal Forest Department in the booming illegal trade in rare animals and animal skins is meanwhile well-known to those fighting the traffic around the world.

## Military Involvement

The direct contribution of the military to the depletion of biological diversity in Thailand has also been significant. During the campaign against the Communist Party of Thailand, the army actively encouraged villagers and others to destroy forest as a way of denying refuge to insurgents, and still looks with misgivings on remote tree-clad areas. Today Khor mountain, one of the last Communist strongholds, which was covered with rich forest through the 1970s, is treeless and saturated with pesticides from

government-promoted cash-crop schemes on its slopes. The need for funds to sustain patronage networks, as well as the need to gain credit with the public in peacetime, has meant that military commanders take a keen interest in "development" schemes in the countryside, where the army is a powerful, sometimes overwhelming, force in local politics. Recently the army has participated in eucalyptus-planting schemes in the North East and has also played leading roles in illegal logging schemes, plantation operations and timber deals with the military dictatorship in Burma. The latter alone have denuded hundreds of square kilometres of undisturbed primary forest in the last two years and promise to ruin much more.

In addition, military units are active in efforts to suppress tribals, whose societies are already under severe ecological pressure due to the migration of millions of marginalized lowland Thais into the hills of the heavily-forested North. In 1988, for example, the paramilitary Border Patrol Police, a unit which had served to absorb potentially disaffected rural youth into the power base of its patron, former Army Commander-in-Chief Chaowalit Yongchaiyudh, burned villages and fields of the Akha tribe and drove the residents over the border into Burma. The military have also participated in the forced resettlement of tribal peoples from watershed and other protected areas onto infertile, poorly-watered or otherwise inappropriate land which, as experience has shown, cannot support them.

It is now increasingly difficult for the Akha, Hmong and other tribes to live in the customary ways which provided substantial protection for biological diversity. Due partly to pressure from lowland Thais, security worries, and lack of territorial and citizenship rights, there remain few Akha villages in Thailand where traditional forest belts around villages (maintained for protection against marauders and as a source of game and other essentials) can be preserved, and knowledge of medicinal herbs is disappearing nearly as fast as the forest which supplied them. Threats to tribal societies such as those found in Thailand are an especially powerful threat to biodiversity, given the close links between cultural diversity and biodiversity and the fact that 90-95 per cent of the world's cultural diversity is to be found in tribal societies.



## II. THE DEFENDERS OF BIODIVERSITY

Despite repeated expressions of concern by the government and several official programmes to mitigate environmental damage, events of the last five years suggest that by and large biodiversity's most powerful national defenders are ordinary farmers — untutored in academic biology and sometimes innocent of the word "environmentalism" — with occasional support from the media, non-governmental organizations and maverick government scientists.

To say that grassroots movements are by their nature more effective than government or corporations in defending biological diversity, however, is not to say that all or most rural villagers — who in Thailand constitute three-quarters of the population — are environmentalists, nor even that village activists do not also contribute to biodiversity depletion. The economic pressures of modernization have pushed many villagers into participating in, as well as occasionally resisting, the destruction of biological diversity, just as they have pushed most Westerners of all shades of environmentalist and anti-environmentalist opinion into doing so. It was villagers, after all, who constituted the bulk of the work force of the teak-extracting British Borneo Company a century ago. It is villagers who are hired by intermediaries to poach the rare animals which find their way to urban or foreign markets. It is villagers who are contracted by local firms to degrade forests to provide excuses for companies who wish to rent the forests from the state. And it is, of course, villagers who, motivated by the need to regain their own means of subsistence, by opportunities for new income from export crops, and by population growth, have pushed forest frontiers back from original settlements in river valleys.

Where solid positive steps have been taken, however, they have generally been either taken by villagers directly or have been forced on the government or corporations by pressure from the village level. The reasons for this are not difficult to find. The same economic pressures which suck villagers into cycles of environmental degradation eventually also threaten directly the environmental sources of many rural livelihoods. At various times and places villagers may be forced into migrating into new forests along new roads, hired by sawmills to supply illegal wood, or induced to attempt to boost their status through consumption or participation in government development projects. But if business or the state are perceived to have gone too far in seizing or undermining the environmental base of their subsistence without providing alternatives, they are likely to act. This point is being reached along several fronts today as forests, remote watersheds, and recently-cleared land which used to be only of peripheral interest to élites are drawn into their economic orbit. Areas which formerly supported self-reliant village agriculture or acted as refuges for the disaffected or marginalized are increasingly becoming battlegrounds where social classes fight over who has the right to use and benefit from the country's dwindling areas of high biological diversity.

### Anti-Dam Struggles

The national electricity authority's takeover, one by one, of forests and streams to provide power to the industrial and commercial sectors began years ago to push provincial populations to the point of protest. Local opposition to resettlement schemes connected with dams was visible as early as the 1960s. Later, as more and more villagers began to suffer from the destruction of

local natural support-systems which the dams entailed, dissent grew. In 1988, protesters succeeded in forcing the government to shelve the Nam Choan project in Western Thailand (see *The Ecologist*, Vol. 17, No. 6, 1987).<sup>11</sup>

The years since have seen an explosion of popular resistance to other planned dams across the country. Villagers' protests have stalled the progress of projects aimed at harnessing the Mool and Yom rivers in the North East and North, and in July 1990 strong

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*Some Northern villages, having exhausted their patience with fruitless appeals to the authorities, were blocking logging roads as long as 15-20 years ago.*

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local opposition forced the government to retract a Cabinet decision giving the go-ahead for the Kaeng Krung Dam in a primary forest in the South of Thailand. In June villagers from existing and proposed dam sites across the country met in Bangkok to demand a nationwide moratorium on all further dam construction. Conservationists, development workers, academics and other city-based intellectuals have increasingly lent their voices and expertise to this movement, with their concerns reaching an ever-wider audience as a result. Opposition arising from within the government, business or universities alone has never given dam builders as much trouble as the current movements consisting of large numbers of ordinary farmers.

### Resistance to Logging

The most powerful curbs on logging, too, have been those arising from resistance by farmers who cannot afford to see sources of water and other essentials disrupted.<sup>12</sup> Many Northern villages in particular have long opposed commercial timber harvesting in the hills overlooking their rice terraces, on the grounds that it dries up streams and silts waterways so extensively that it is impossible to maintain traditional irrigation systems. Such logging also tends to prevent villagers' access to important wild sources of game, vegetables, fodder, fruit, bamboo, mushrooms, insects, firewood, house construction material and herbal medicine. In addition, it disturbs local graveyards and the residences of spirits of place.

For these reasons, some Northern villages, having exhausted their patience with fruitless appeals to the authorities, were blocking logging roads as long as 15-20 years ago. As deforestation accelerated during the 1970s and 1980s, villagers became more desperate. Farmers tried to stop forestry officials from stamping trees for felling, held rallies, ordained trees in Buddhist monks' robes to deter loggers from cutting them down, and occupied local forests. They also enlisted the support of students, scientists, environmentalists, lawyers, development professionals and the media and began linking up with and learning from farmers in other parts of the country fighting similar battles. By 1988 they were in a powerful enough position nationwide to contribute significantly to the successful campaign to pressure the government into banning logging.

Some of the most impressive village-based movements on the Thai scene are those which are challenging plans to turn much of the country into eucalyptus monocrop (see Larry Lohmann,

'Commercial Tree Plantations in Thailand: Deforestation by Any Other Name', *The Ecologist*, Vol. 20, No. 1, 1990). Eucalyptus groves cannot provide the range of foods, medicines, fodders and building materials which many villagers on the edges of the market economy need to fill out their subsistence and which can be supplied by patches of secondary forest. Resistance in many areas is accordingly centered on the need to retake control of local areas to restore more varied ecosystems. It is significant that

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*The restoration of biological diversity is typically not connected with attempts to find an industrial market for the products of biologically diverse areas. Rather it is tied to conscious and creative attempts to disengage from the wider market economy.*

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where villagers are attempting to preempt or replace plantations with trees of their own, these are typically not monocultures but rather mixed stands of native, fruit or rubber trees.

Some farmers, with support from progressive community hospitals and NGOs, are also attempting to restore the traditional place of native medicinal herb gardens in village life. This particular move toward rebuilding local biological diversity comes as a response to the growing awareness that dependence on the wider market economy for medicine has led to both financial insecurity and health risks. A decade ago Ban Sok Khumpoon in Yasothorn province, which, together with many such villages in the North East, had been swiftly integrated into the cash economy in the 1960s and 1970s, was spending over US\$500 a year on commercial drugs. These included pain-relievers whose use led to the deaths of several residents from stomach ulcers. Now, however, following years of community efforts, medicinal herbs are growing again in quantity around the village, the drug bill has been cut by three-quarters, the village is greener, and local peoples' health is better.<sup>13</sup>

## Increasing Self-Reliance

In many places around the country, villagers whose lives have been made insecure by overdependence on the market economy have become increasingly wary of the cultivation of single crops and its requirements for costly and dangerous chemical inputs. A few farmers are experimenting with organic mixed farming and agroforestry in search of ways of securing their families' subsistence without relying excessively on the market. They raise dozens of types of crops, trees and livestock together in carefully-managed systems, and are attempting to return fish to the rice paddies. They supply most of their own needs without money yet are capable of producing small cash surpluses at any season to meet emergency needs.

Such efforts are important for biodiversity preservation not only because they help bring back variety and fertility to the village ecosystem. More significantly, they reduce the threats of indebtedness and landlessness and enrich and reintegrate community life. The need to move to the cities, or to colonize

unoccupied forests elsewhere, thus diminishes, along with the pull toward the adoption of unsustainable urban lifestyles.

One example famous within Thailand is that of Wiboon Khemchalerom of Ban Huaihin in Chachoengsao province. Years ago, as the owner of a large cassava farm, Wiboon found himself caught in a hopeless downward spiral of debt. As crop prices fell, inputs increased in cost. It became necessary to sell increasing amounts of cassava just to stay afloat year to year. That meant pushing the land to produce more and more, using more and more chemical fertilizers and pesticides. The result was ecological, as well as economic and spiritual, degradation.

In the end Wiboon decided to sell most of his land to pay off his debts and start afresh. On the tiny one-and-a-half hectare plot that remained, he began planting a variety of crops, trees, and medicinal herbs, eschewing chemical help and distancing himself from the consumer economy. As Wiboon puts it, "I decided to farm for security in life instead of profit."

He became an expert and adviser on herbal medicines. Within five years, his hectare and a half contained more than 500 species of trees and other plants as well as small animals. For Wiboon, this diversity is connected with security and peace of mind, which in turn is connected with a return to Buddhist values and comparative independence from the market. "Life has become much simpler," Wiboon says. "I feel contented and secured. I regret that I didn't think of this before I lost my land." It is significant that the restoration of biological diversity associated with Thai programmes such as Wiboon's is typically not connected with attempts to find an industrial market for the products of biologically diverse areas. Rather it is tied to conscious and creative attempts to *disengage* from the wider market economy, and to put it in a subordinate place in social and cultural life.<sup>14</sup>

Other Thai farmers who have not gone as far as Wiboon did in embracing modern agriculture have not had to start from scratch in their efforts to rebuild biological diversity. Hundreds of villages in the North, North East and South of the country already have community forests which they have carefully maintained over the years. And as villagers in many provinces come to the conclusion that industrialization and modernization are not likely to remove the need to maintain older patterns of gathering and ecosystem maintenance as security for poorer farmers, they are eager to extend such locally-controlled woodlands.<sup>15</sup>

Each village has to evolve its own specific model for community control, based on local climate, water regimes, species, and social conditions. Farmers in Ban Toong Yao in Lampoon province, for example, have, over 60 years, developed a set of written community laws which dictate how the local forest is to be used. Trees can only be cut for genuine necessities, such as to build houses for newlyweds. Those who chop down trees for sale on the market or for other purposes face penalties handed down by the village government. These penalties cannot be treated as mere "costs" by budding timber entrepreneurs, moreover, as they might be within the modern market economy, since they also involve a considerable social stigma. The group of villagers who govern the local traditional irrigation system also inspect the forest, keeping tabs on who is using it, for what, and when, and preventing outsiders from exploiting it. But all villagers are responsible for doing whatever is necessary to ensure that the forest is protected as a source of water, food, medicine and wood. In carrying out this task, Ban Toong Yao villagers do not desire the assistance of the government. "All the government has to do is recognize our rights to it," says one leader. "We want to take care of it ourselves, and we can do that better than anyone else."<sup>16</sup>





Six thousand farmers demonstrate against the proposed Kaeng Sua Ten Dam in North Thailand, May 1989. The dam, sited in a forested National Park, would have flooded several rice-growing villages. (Photo: The Nation)

## The Potential of Village Conservation

Critics point out two important limitations in such village conservation efforts. The first is that their impact has so far been small in comparison with underlying trends involving logging, extension of land under commercial agriculture, economic expansion, colonization and the transfer of land ownership. While this is undeniable, it is necessary to add that village initiatives, by their very nature, show greater potential than other programmes aimed at rehabilitating degraded forest land or checking further colonization. One important reason for the failure of official programmes is the incompatibility between the informal local tenure systems to which villagers remain committed and the land-use patterns the government attempts to impose. The result has often been "increased immigration and forest deterioration", while "legislation controls over land ownership have been a significant factor in the accelerated depletion of forest resources".<sup>17,18</sup> Internationally-backed programmes, while occasionally more successful, are difficult to replicate due to high cost.<sup>19</sup> Commercial "reforestation" efforts are meanwhile widely acknowledged to have been counterproductive so far in terms of conservation.

A second limitation of village conservation efforts is that they typically do not embrace all of the concerns of wildlife biologists. The sort of biological diversity many Thai farmers want for their own local areas tends to be of the moderate to high level which can support their livelihoods (although many with direct experience of climatic changes or degradation of water and soil regimes are also strongly in favour of maintaining intact forests at a considerable distance from their fields). Farmers tend primarily to be interested in the conservation of species used locally, and may not support the establishment of strictly protected areas from which they are banned. In addition, they may be indifferent to the question of whether to establish protected areas of the large size required for comprehensive biodiversity protection. Their ultimate objectives may thus differ from those of conservation managers intent on preserving areas of extremely high diversity in an untouched state.

In the short term, however, committed conservation-orientated scientists are more likely to be able to form fruitful strategic alliances with village-based movements than with old university classmates who are now working in, say, government electricity authorities or the World Bank. This is because, as has been suggested above, many grassroots groups tend to have an immediate stake in defending the practices that conserve some level of biodiversity and self-reliance, while staff of government ministries, international agencies or corporations tend to have a vested interest in encouraging the policies that lead to vicious circles of environmental degradation and impoverishment. Village movements which are concerned with issues of land rights, for example, inevitably reach deeper into the roots of deforestation — including deforestation in protected areas — than official approaches which confine themselves merely to, for example, National Park policy, sponsorship of research, or suppression of encroachment.

The Thai experience indicates that reasoned conservationist argument sways officials and those in business only when combined with demonstrations and uprisings at the grassroots or the threat thereof. Mutually beneficial alliances between groups who understand and are respectful of the differences between each others' interests and motivations have grown more and more important in the Thai environmental movement in recent years.

## III. GLOBAL CONSERVATIONIST PLANS

Experience suggests, in sum, that in Thailand it is rural village groups and movements opposed to the schemes of governments, corporations and international agencies who are generally the most powerful and committed defenders of biological diversity. The proposers of current global conservation plans, however, seem unwilling to acknowledge this view. All assume *a priori* that conservation must take place within a supposedly neutral, all-encompassing social matrix consisting of the expanding global market economy, existing relations of state-village authority, and official national development programmes; that, in short, "con-

servation can be regarded as a form of economic development" provided for "through appropriate policies from the central government".<sup>20</sup>

The World Bank's new forestry policy, for example, insists that conservation is being thwarted because biodiversity is "undervalued" and does not appear in "national income accounts".<sup>21</sup> Similarly, think tanks in the US and Europe are producing books and papers on how to persuade governments and local people to "recognize" the value of biodiversity by looking into its economics.<sup>22</sup> The fact that biodiversity is in fact already highly valued by communities such as Ban Toong Yao who depend on it for their subsistence is ignored; vernacular systems of valuation and the conservation movements to which they give rise are implicitly regarded as beyond the pale.

## Choosing the Wrong Allies

The notion that the political leadership provided by grassroots groups in countries like Thailand might be central to conservation movements is also treated as if it were too exotic even to mention. There are probably several reasons for this. One is that many conservation planners interested in Southern countries tend naturally to try to become advisers to élites in governments and international agencies, out of a natural affinity with the culture of these élites and a belief in their potential positive influence. According to *Conserving the World's Biological Diversity*, a volume published in 1990 by the World Bank and four environmental organizations, the best potential allies in conservation plans are not villagers opposing the encroachments of the market economy and development programmes but rather their adversaries: industry, commerce, the state, the military, concessionaires, international conservation organizations, the World Bank, USAID and the Bank-housed Consultative Group on International Agricultural Research.<sup>23</sup> In the minds of many Western planners, moreover, conservation is associated more with protected areas funded by the biodiversity-destructive urban economy than with the maintenance of symbiotic relationships between rural livelihoods and local forests and streams and the necessity of preventing dispossession. They thus tend to ally themselves with the potential funders of protected areas while neglecting, say, land tenure issues or the practices of farmers such as Wiboon Khemchalem.

Such alliances require that planners avert their gaze from the biodiversity-destroying tendencies of the dominant economic and political order. In 193 double-column pages, *Conserving the*

*World's Biological Diversity* neither acknowledges, nor recommends countering, the threats to biodiversity posed by dams, roads, logging, tree plantations, trade policies, and programmes that lead to forest colonization. Instead, it advocates what amounts to a Sisyphean exercise of implementing scattered, top-down projects in the wake of these destructive forces — corporate-funded programmes, schemes to siphon a bit of funding out of large development projects for "mitigation" or watershed protection, foreign ecotourism, debt swaps, capital investment in biological resources, set-asides and projects which give "total management control" to the "private or NGO sector".<sup>24</sup> Nor does the book criticize military regimes which are devastating the environment. On the contrary, the Burmese Army, together with several others, is described as "having a positive influence on conservation of biological resources" — one which can be enhanced by training programmes for "impressionable post-adolescent male" recruits from a rural background who "have a particular affinity for nature and the outdoors".<sup>25</sup> It would obviously be inconsistent with this overall approach for planners even to recognize the existence of village conservation movements opposing development projects or military exploitation, much less to acknowledge their effectiveness in pressuring governments and corporations.

## Passive Cooperation

Where village movements do become visible in planning documents, they tend to be reduced to the role of obedient lieutenants in externally-directed programmes. In *Conserving the World's Biological Diversity*, for example, local people appear less as creative agents in conservation efforts than as relatively passive adjuncts whose "cooperation" and "collaboration" should be secured and who must be "provided with tools" for conservation by outsiders.<sup>26</sup> Similarly, the recent World Resources Institute critique of the Tropical Forestry Action Plan says that the participation of forest peoples' organizations in conservation planning is a "means to an end" the end presumably being determined by others.<sup>27</sup> In a more subtle attempt to dismiss the importance of grassroots groups, many planners insist that they are inherently weak forces which must be instructed and "empowered" by outsiders. This type of political understanding would be incapable of coming to terms with recent events in Thailand, where if anything it is villagers who have "empowered" NGOs and other conservationists in the nation's environmental movements.

Another way in which planners attempt to domesticate village conservation movements is to treat them as if their practices and

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values can be assimilated into those of the market economy. This enables the planners both ostensibly to advocate "maximum possible cultural diversity", and, at the same time, to endorse expanded roles for the market and technocratic management in peasant and tribal societies.<sup>28</sup> Thus, while local knowledge is praised, it is treated not as something villagers use to defend biological diversity in their own social context but rather as raw material to be translated "into forms useful to development planners and managers of biological resources".<sup>29</sup>

Correspondingly, the knowledge held by village women is to be "mobilized" for universal use through being translated into and "recognized" by the supposedly neutral language of Western science. Local practices are to be given an economic meaning as "appropriate prices" are assigned to biological diversity and "cost-benefit analyses . . . carried out as a basis for designing incentive systems".<sup>30</sup> Authorities can then "bring the benefits of conservation" to local people by choosing those aspects of traditional knowledge that "can contribute to conservation and development".<sup>31,32</sup> Similarly, it is assumed that any incentives local people might have for conserving biodiversity must be based on the market economy and government intervention. According to *Conserving the World's Biological Diversity*, it is not local systems besieged by modernization but rather "prosperity" to be achieved through the market economy which will enable communities to "protect the resources".<sup>33</sup>

## The Acid Bath of the Market

The market economy in Thailand is not a neutral medium in which a variety of village conservation activities can be lovingly cultured, however, but rather a corrosive acid bath which dissolves most of the diversity-protecting practices it comes into contact with. The incentives which villagers have to defend biodiversity in Thailand are generally not centred on anticipated market or development benefits, but on subsistence guarantees (as in the case of struggles over land, plantations and traditional irrigation systems), long-term safety and security (as in anti-dam campaigns), or the need to preserve independence (as in some community forest and ecological agriculture movements).

Even if the more flagrant abuses of developers and bureaucrats could be checked, there is no reason to believe that industrial society could assimilate the conservation practices of a largely vernacular society such as that of Ban Toong Yao. Those practices derive their significance and viability from being part of a web of other practices specific to that society. To transfer those practices or their accompanying theories into a society dominated by market economics would be to attempt to put them into relationship with a new set of practices. This would result in either the practices being regarded as quaint or lacking in purpose or in their being transformed into practices indistinguishable from those well-established in industrial society. Either result entails violence to local ways, including local ways of protecting biodiversity.

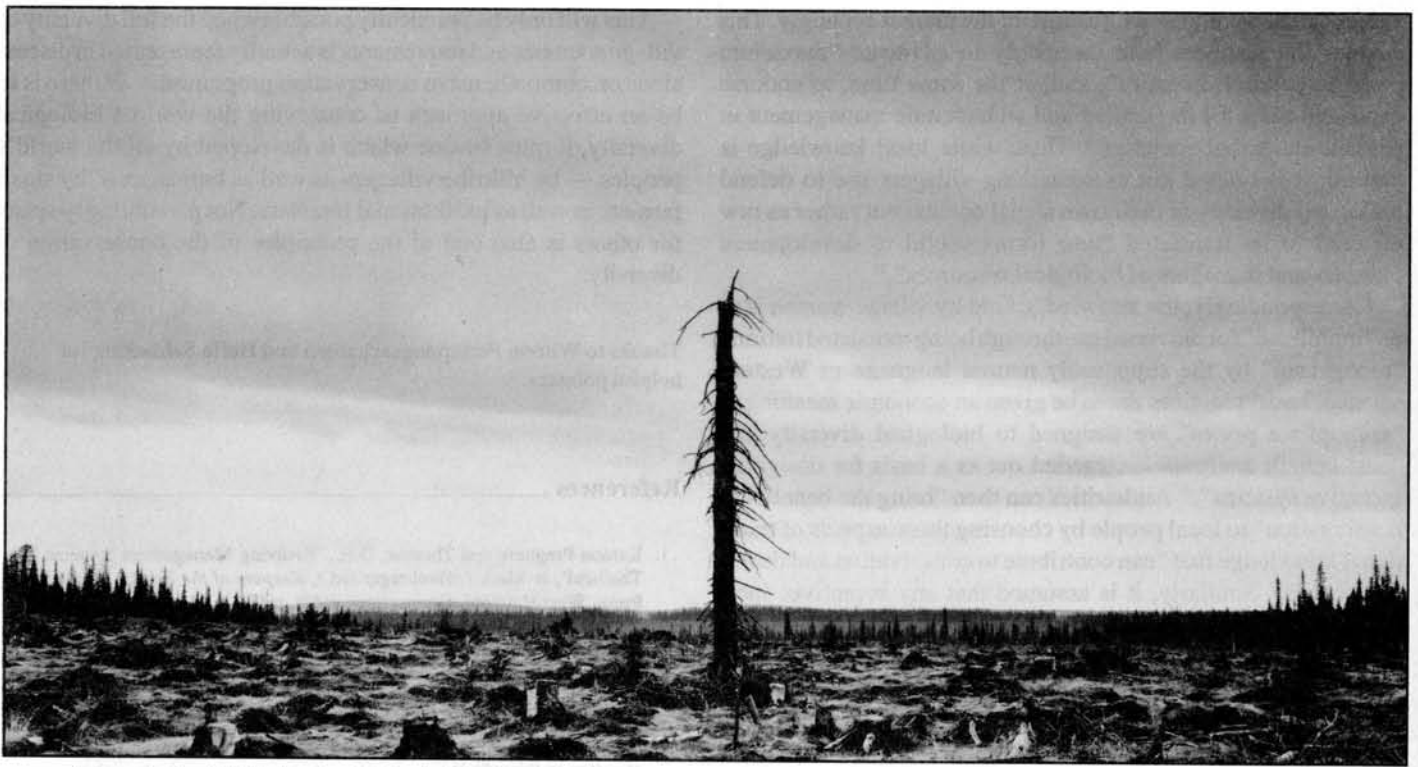
Current global conservation plans, then, seem structurally incapable of making room for the movements which in Thailand offer the best hope for the maintenance of biodiversity. The plans will remain so at least until they discard the assumption that the market, national development plans and top-down management constitute a neutral matrix within which all efforts to preserve biodiversity must take place; and until they recognize that neither industrial society nor any other society is capable of providing such an all-encompassing matrix.

This will only be practically possible when the full diversity of village societies and movements is actually represented in discussions on comprehensive conservation programmes. If there is to be an effective approach to conserving the world's biological diversity, it must be one which is developed by all the world's peoples — by hilltribe villagers as well as bureaucrats, by small farmers as well as professional foresters. Not presuming to speak for others is also one of the principles of the conservation of diversity.

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Clear fell in Kittilä, Lapland. Finnish Lapland covers about 100,000 square kilometres and contains about one-quarter of Finland's entire forest area including most of the country's surviving old-growth forest. Environmentalists and Sami activists are campaigning against plans to log a huge area of this primary forest. (Photo: Veikko Vasama)

# Paper, Pollution and Global Warming: Unsustainable Forestry in Finland

by

Risto Isomäki

*Forestry in Scandinavia is often portrayed as a prime example of the sustainable use of natural resources. But the expansion of commercial forestry is leading to the replacement of most of the region's natural forests with uniform plantations, threatening many species with extinction and disrupting the livelihood of the indigenous Sami people. Moreover, far from helping to combat the greenhouse effect, the draining of vast areas of Finnish peatlands for forestry has resulted in huge increases in carbon dioxide emissions. The related paper and pulp industries are also both highly polluting and energy-intensive.*

The paper industry in the UK counters environmentalists' demands to increase the use of recycled paper by claiming that its virgin pulp comes from "ecologically sustainable" sources in Scandinavia. According to the industry, because using more paper in Britain means planting more trees in Scandinavia, increasing the consumption of non-recycled paper will improve the environment and even help counter the greenhouse effect.<sup>1</sup>

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It has often been claimed that Finland has the best record in Scandinavia of combining modern forestry with conservation.<sup>2</sup> Finnish forestry practises, however, are an excellent example of the difference between "sustainable yield" and "sustainability". Forestry in Finland has been "sustainable" only in that, except in some parts of Lapland where efforts to regenerate forests after logging have failed, it has so far been able to produce a sustained yield of timber. Yet, commercial forestry and forest-based industries are doing more damage to the environment than any other sector of the Finnish economy.

Until the recent economic downturn, every paper company in Finland was planning to build new mills, increasing the production capacity of Finnish paper mills by up to 30 per cent.<sup>3</sup> If the economic climate improves, the companies will again start pushing their investment plans; if they are realised they will increase the pressure on Finnish forests, boost the country's emissions of carbon dioxide through the drainage of wetlands, and make it likely that Finland will build a fifth nuclear plant to power its pulp mills (see Box). Finnish paper companies also have ambitious plans to exploit forests in some



Soviet republics, and to establish eucalyptus plantations in Portugal.

## Conifer Plantations

The spread of huge, uniform conifer plantations at the expense of natural forests containing both coniferous and broad-leaved trees, has led to the decline of hundreds of animal and plant species.<sup>4</sup> It is feared that unless the unlogged forest area is increased and less intensive methods are adopted in commercially logged areas, many of these species will eventually disappear from Finland. Some researchers have also voiced concerns that present forestry practices are narrowing the genetic basis of economically important tree species.

According to forest researchers Yrjö Norokorpi and Matti Oikarinen, only a third of the plantations which were established on logged areas in northern Finland between 1956 and 1965 survived for more than 20 years, the rest being destroyed by the region's harsh climate.<sup>5</sup> Even though there has probably been a lower proportion of disastrous failures in the last two decades, the regeneration of logged forests is still a major problem in the north of Finland.

## The Destruction of the Last Forest Wilderness

According to one, probably over-optimistic estimate, almost three per cent — or

600,000 hectares — of Finland's primary forest remains, most of this in Lapland.<sup>6</sup> However the National Board of Forestry is planning to cut around 100,000 hectares of this old-growth forest, including almost all that in Kessi and Hammastunturi ("Tooth Mountain"), the two most important remaining forest wilderness areas in Finland outside the national parks.<sup>7</sup>

A campaign to protect Kessi, organized by environmentalists, Sami (Lapp) activists and the representatives of a number of reindeer-raising districts, has so far prevented logging in the area, which was originally planned to have started in 1987. Kessi is situated between Lake Inari and the USSR and Norwegian borders, and together with the area of Vätsäri, and Lake Inari and its 3500 islands, forms the largest remaining forest wilderness in Finland. Kessi is directly connected to the Ovre Pasvik National Park over the border in Norway. Kessi, Vätsäri, Lake Inari and Ovre Pasvik together form a unique wilderness complex of more than 350,000 hectares and tens of thousands of small lakes.

The logging of Kessi would be a major blow to two indigenous Sami peoples, the Skolts and the Inari Sami, peoples whose cultures are largely based on reindeer herding and who would lose a major part of their remaining winter grazing lands.<sup>8</sup> The amount of available grazing lands in winter is a critical factor limiting the size of reindeer herds. The snow in logged areas is generally much harder than in forests, making it more difficult for the reindeer to dig through to their food. Tree branches

left on the ground after logging also hinder the reindeer from digging through snow and tend to inhibit the growth of reindeer lichen, the most important winter food of the reindeer. Finally, when the old-growth forests are logged, the lichens growing on the branches and trunks of old trees disappear. These lichens, the "luppo", are the emergency food of the reindeer, especially in hard times when even in the forests the snow becomes as tough as rock, and the reindeer cannot break through it.<sup>9</sup>

The logging of Kessi would not make reindeer herding in the area impossible. But it would reduce the number of people who are able to earn their living by raising reindeer and would thus worsen the already bleak employment situation among the Sami.

## The Destruction of Finnish Peatlands

In environmental terms, the draining of wetlands for forestry during the last few decades has been by far the most rapid project of large-scale destruction ever carried out in Finland, if not in the whole of Europe. Over half of the 10.5 million hectares of peatland in Finland have been drained, mostly for tree plantations; drained mires now cover more than a fifth of the country's land area. It is predicted that in the year 2000 about 15 per cent of Finland's wood production will come from drained mires.<sup>10</sup>

The draining of forests and mires has increased the nutrient and humus load in waterways, seriously worsening the water quality of countless rivers and lakes and reducing fish populations.<sup>11</sup> It has also worsened spring floods as in many areas the peatlands play an important role in regulating river flow. The loss of wetlands has also reduced the populations of some game birds and animals, and in northern Finland has reduced the amount of summer pasture available for reindeer.

Environmentalists have so far been unsuccessful in trying to stop the draining of wetlands. Increased international concern about global warming may, however, change the situation.

## Carbon Dioxide Emissions

Over thousands of years a massive amount of carbon in the form of the remains of mosses and other vegetation has gradually been accumulated in mires and swamps.

## The Nuclear Connection

Nuclear power is now widely promoted as a key solution to global warming. In the present Finnish context, however, more nuclear power would mean more carbon dioxide emissions.

The Finnish nuclear industry is currently lobbying the government to authorize the state-owned power company, Imatran Voima, to build a fifth nuclear plant. Approximately 15 per cent of Finland's total energy and 30 per cent of its electricity is produced by nuclear power. If the new nuclear plant is built, it would not reduce the use of fossil fuels in Finland: the electricity produced would meet additional energy requirements.

Much of the pressure to build the plant has come from the forest products

industry; a large part of the electricity generated would be consumed by the new mills which the paper manufacturers want to invest in. The construction of another nuclear plant would therefore lead to the draining of yet more peatlands and to a shortening of the cutting cycles used in forestry. Both measures would produce significant new carbon dioxide emissions.

Finland's anti-nuclear movement and the Green Union (the Finnish Green Party) are trying to make nuclear power an important issue in the parliamentary elections to be held in March, 1991. They are collecting names for a major petition demanding a popular referendum on energy alternatives for Finland.

*The draining of mires  
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The carbon stored in the world's 450 million hectares of peatlands has been estimated to be of the same magnitude as the amount of carbon dioxide in the atmosphere, or of the carbon stored in the trees of the world's forests.<sup>12,13</sup> Peatlands may absorb around 110 million tonnes of carbon from the atmosphere every year, about two per cent of the annual global emissions from the burning of fossil fuels.<sup>14</sup> In Finland, forests contain on average about 10 times and peatlands about 100 times more carbon than the atmosphere above them.<sup>15</sup>

When peatlands are drained, the organic material stored in them decomposes much quicker than before, and peatlands are transformed from carbon sinks to important sources of atmospheric carbon dioxide. Globally, only 15-20 million hectares of mires — or between three and five per cent of their total area — have so far been drained. According to T.V. Armentano and E.S. Menges, however, even this rate of drainage has made the world's peatlands a net source of carbon dioxide; the drained swamps are already producing more carbon dioxide than the remaining swamps can absorb from the atmosphere.<sup>16</sup>

Research in Eastern Finland by Jouko Silvola of the Department of Biology of Joensuu University, indicates that well-drained peatlands release an average of five tonnes of carbon per hectare annually. The net production of the shrubs and trees growing on the peat — which increases when a peatland is drained — is estimated to be somewhere between one and two tonnes of carbon per year.<sup>17</sup> The annual net carbon production from well-drained peatlands is therefore between three and four tonnes per hectare. If the studies are representative for the whole country, the draining of mires may already be causing more annual carbon dioxide emissions in Finland than the national consumption of fossil fuels.

After the first tree generation, the carbon consumed by the trees and other vegetation can no longer be deducted from the carbon emitted by the decomposition of peat. The carbon in the harvested trees will gradually be released back into the atmosphere while new trees are growing; the net consumption of carbon dioxide by the second and subsequent generations of trees will therefore be zero. But the peat will keep on decomposing layer by layer.

Global warming is expected to be most extreme near polar regions. This could dramatically accelerate the decomposition of peat in the drained mires.

### Methane from Peatlands

Swamp soils are producers of methane when waterlogged, but consumers when dry. As methane is a much stronger green-

*Only if Finland's timber  
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stored in its forests.*

house gas than carbon dioxide, it has been argued that while draining peatlands increases carbon emissions, this is at least partly compensated for by a reduction in the flux of methane into the atmosphere. Although very little research has been done on methane fluxes from peatlands, and even less on how they are influenced by draining, it appears that only some types of mires produce significant amounts of methane.<sup>18</sup> The majority of mires drained in Finland have been of the type which are unlikely to produce much methane, and thus the reduction in methane emissions has probably in most cases been insignificant compared with the increases in carbon dioxide emissions.

### Biomass Carbon Storage

The modern production forest is a patchwork of blocks of trees of different ages. Those parts of the forest which have been clear-felled or which have just been planted with young seedlings contain, per hectare, very little carbon in the tree biomass.



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Therefore the average carbon storage in Finnish production forests is much less than if forests were grown with the primary purpose of absorbing carbon from the atmosphere.

According to the Finnish Council for Natural Resources, the amount of carbon tied in the biomass of Finnish forests could be increased by 270 million tonnes, without even reducing the annual timber harvest. This is over 14 times more than Finland's current annual carbon emissions from the burning of fossil fuels.<sup>19</sup> The measures suggested by the Council for Natural Resources include an increase in planting density, more intensive use of tree branches and lengthening the rotation period by ten years.

The amount of carbon stored in forests could, of course, be increased still more if the annual amount of wood removed were reduced. More forests could be left outside large-scale commercial activities and, in the remaining forests in production, the rotation period could be increased by more than the ten years proposed by the Council for Natural Resources. The practice of clear-felling could be abandoned. These possibilities have, however, largely been ignored in Finland.

The greatest positive impact which Finland's forests could have upon global warming would be if a much larger proportion were used in energy production rather than as raw material for the wood and paper industries. In theory at least, wood could replace both fossil fuels and nuclear power.<sup>20</sup>

## The Paper and Pulp Industries

The forest products industry is linked to a range of environmental problems in Finland, including acid damage to vegetation and lakes and the eutrophication of waterways. According to the industry's own figures, they are responsible for about 20 per cent of Finland's sulphur dioxide and 10 per cent of its nitrogen oxide emissions (these emissions are the major precursors of acid rain). These figures, however, do not allow for the production of the energy used by the industry (a large share of Finland's total energy consumption) or its transport needs. If these emissions are included, the forest products industry could cause up to 20-25 per cent of nitrogen oxide and up to 30 per cent of sulphur emissions.<sup>21</sup> The forest products industry is therefore an important contributor to acidification in Finland, a phenomenon

which threatens the health of a large proportion of Finnish forests, and therefore the industry itself.<sup>22</sup>

In many water systems, phosphates in paper mill effluent are a major contributor to the growing problem of eutrophication. This source may be responsible for around a quarter of the phosphates entering Finnish lakes and rivers, in spite of efforts by the industry to reduce their emissions.<sup>24</sup> Effluent from the bleaching of paper with chlorine is known to contaminate organic substances in water, producing both toxic and mutagenic compounds.<sup>23</sup> Although, there is very little data about the health effects of this, it has been proven convincingly that high incidences of several types of cancer appear among workers in paper and pulp mills.<sup>24</sup>

## Reducing Forestry's Impact

Only if Finland's annual timber harvests are reduced will it be possible to reverse the destruction of peatlands, preserve the country's remaining forest wilderness areas and maintain or increase the amount of carbon stored in its forests. Almost all the measures proposed by Finnish biologists to ensure the survival of endangered species would also reduce the amount of wood taken from the forests. The pollution produced by forest-based industries could be significantly reduced without cutting production, but reduced timber production would of course mean even less emissions from factories, transportation and energy generation. Claims by the pulp and paper industry that by planting more trees in Scandinavia they are protecting the environment and helping abate the greenhouse effect are patently false.

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# Back to the Land:

## The Sea-to-Land Transfer of Radioactive Pollution

by  
Tim Deere-Jones

*While the British nuclear lobby have ceased to deny that they have made the seas around Britain the most radioactive in the world, they continue to insist that this is having no impact on the health of those who live or work on or near the sea. But research by the nuclear industry into the effects of the marine discharge of man-made radioactivity has been characterized by the use of inefficient technologies and mischosen sites for monitoring and analysis, and has been undertaken against a background of basic ignorance about the behaviour of radioactivity in the sea.*

High incidences of childhood leukaemia found near the coastal nuclear plants at Sellafield, Dounreay and Hinkley Point have been linked to radioactive discharges from these sites. The report by the Independent Committee on Medical Aspects of Radiation in the Environment (Comare) into leukaemia clusters around Sellafield in North West England and Dounreay on the Northern coast of Scotland, decided that there was evidence that "some feature of the nuclear plants . . . lead to an increased risk of leukaemia in young people living in the vicinity of these plants."<sup>1</sup> But, the link is by no means clear-cut; indeed, if conventional dose-risk estimates are used, the reported levels of radioactivity released from these plants could not be responsible for the leukaemias. As the Somerset Health Authority concluded after their study of leukaemias around Hinkley: "Only if the assumed doses from Hinkley Point are drastically wrong (either by an underestimation of the emissions or by underestimation of the amount actually reaching people)", could there be a direct cause and effect relationship between the plant and the leukaemia incidence.<sup>2</sup>

But conclusive epidemiological studies of these clusters rely on absolutely sound data. There must be a definitive understanding of dose-risk estimates, the amount of radioactivity entering the sea and the

behaviour of radioactivity in the marine environment, as well as an efficient and coherent programme of monitoring. Unfortunately for epidemiologists, legislators, inquiry inspectors and those who live near the coast, none of these conditions are being fulfilled.

For some 40 years, the British Government has turned logic on its head and allowed the nuclear industry to discharge radioactivity into the sea in complete ignorance of its consequences. The little knowledge that has been acquired about the dilution and dispersal of radioactivity in the sea has been gained only by monitoring the radioactivity after it has been discharged.

### Understanding the Marine Environment

The nuclear industry has justified the discharge of radioactive liquid into the seas by claiming that the radioactivity would "dilute and disperse". To understand the dispersal and dilution of radioactivity in coastal waters there must be a thorough knowledge of the system of currents in the relevant sea areas. Yet the definitive *Atlas of the Seas around the British Isles*, published by the Ministry of Agriculture, Fisheries and Food (MAFF), admits that for all British waters "the main overall weakness [in the study of water column movement] is the lack of systematic, long term data collection in almost all areas".<sup>3</sup> For the Irish Sea, this lack of data means that the authors can say no more than "it

would appear that more often than not there is a South to North flow to the West of the Isle of Man". Referring to the region to the East of the Isle of Man (in the vicinity of the nuclear installations at Sellafield, Chapelcross, Springfields, Capenhurst and Heysham) this definitive work says "the circulation shown for the region is still a matter for argument."

Knowledge of the residence time of pollutants in any given sea area is similarly vague. According to the International Council for the Exploration of the Seas, the fate of pollutants is dependent on the environmental conditions at the time of release and for a few months afterwards.<sup>4</sup> The large variables of wind, current and even river input spread over extended time periods, make estimations of residence time extremely unreliable.

After a large leak of radioactive crud into the Irish Sea from the Sellafield pipelines in 1983, site operators British Nuclear Fuels (BNF) admitted that nothing was known about how the radioactivity was likely to disperse. Following that incident, the Irish Sea Project, an independent research group, conducted a number of studies to test the potential movement of the water column and its associated radioactivity. These showed that radioactivity released from Sellafield could travel further and faster in the sea than had been previously guessed, and that such radioactivity might concentrate and remain in coherent masses over a period of months. These coherent masses could be trapped in certain types of coastal locations for even longer periods.<sup>5</sup>

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## Incomplete Discharge Data

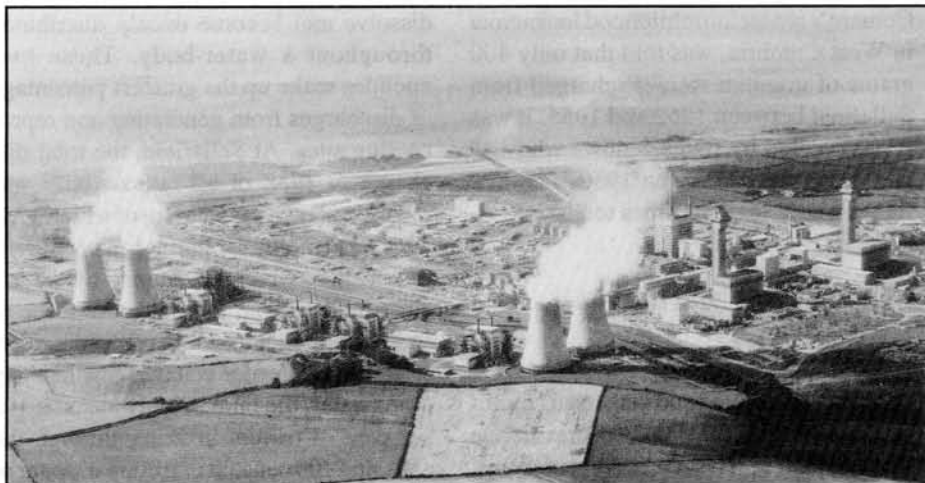
MAFF regularly produce an *Aquatic Environment Monitoring Report*, which contains what purports to be a definitive list of the discharges of liquid radioactive waste from UK nuclear establishments.<sup>6</sup> This data is far from complete.

It is inevitable that sites as complex as nuclear establishments will suffer from accidental leaks. The 1983 pipeline leak at Sellafield was only discovered because Greenpeace protestors were working off the end of the pipeline. BNF and the relevant government agencies were only able to make an approximate assessment of the radioactive contents of the leak. BNF representatives were unable to deny that there had been other such incidents in the past. Beach surveys that have taken place since 1983 make it quite plain that there is contamination on the Cumbrian coast from specific incidents that occurred in years other than 1983.<sup>7</sup>

BNF also discharges solid radioactive wastes into the Irish Sea, including pieces of contaminated work gloves, bits of highly radioactive bitumen (probably from the lining of the pipeline itself) and particles of radioactive stainless steel from nuclear fuel pins or reactor cores. Such items are not included in the computations for liquid radioactive wastes discharged from Sellafield, and since the dumping of solid wastes into the marine environment is currently subject to a moratorium, there is no official record of these wastes.

In February 1979, a serious leak of radioactivity was discovered at the Central Electricity Generating Board (CEGB) installation at Hinkley Point, Somerset. This was escaping via a site drain which was only inspected once every six months.<sup>8</sup> CEGB Hinkley guessed that the leak might have begun on the 8th or perhaps the 17th January. It was not until June that levels of radioactivity escaping from the drain were reduced to close to background levels. The leak may have released approximately 185 million becquerels of mainly caesium-137 onto the beach. No action was taken to clean up the contamination because it was felt that the natural washing action of the sea was sufficient to reduce the radioactivity. Incidents of this nature occur every year at British nuclear establishments, and because of bad site design and lax attitudes to on-site and pipeline monitoring, it is almost always impossible to obtain information on the duration and the radioactivity content of the leaks.

There are several other unquantified



*Sellafield nuclear reprocessing plant. A cluster of childhood leukaemias around Sellafield (formerly Windscale) cannot be explained by the reported radioactive discharges from the plant if conventional dose-risk estimates for low level radiation are used. However the official discharge figures are extremely unreliable, and neither the environmental behaviour of radioactive pollution nor its health effects are properly understood. (Photo: University of Cambridge)*

inputs of man-made radioactivity into the seas around the UK. The Chernobyl plume, for instance, is thought to have deposited some 20,250 curies of radiation into the Irish Sea alone in 1986, and was responsible for an approximately 100-fold increase in radiation in Irish Sea shellfish in only a few days.<sup>9</sup> No attempt has been made to quantify the importance of Chernobyl-derived radioactivity entering coastal waters as a result of run-off from the contaminated highlands of Scotland, Ulster, North West England and North Wales in the years since 1986.

If the "one-off" Chernobyl plume can affect the seas in this way, then it is logical to assume that the regular gaseous discharges from UK nuclear stations are contaminating the seas. But the authorities will not monitor such sources, and have no intention of quantifying their importance. Other contributors to man-made marine radioactivity are the radioactive cargoes lost at sea, as well as the nuclear powered warships which routinely discharge at least six nuclides in significant quantities.<sup>10</sup> There are also "non-nuclear" sites that produce radioactive waste by-products which are flushed into the sea.

### Plutonium-241

Plutonium-241, a beta-emitting nuclide, was originally thought to be unimportant in terms of human radiobiology and was consequently discharged into the sea in unlimited and unquantified amounts.<sup>11</sup> It is "guesstimated" that, up to the end of 1982, some 550,000 curies of this substance had

been discharged from the Sellafield pipelines alone. It is now accepted that plutonium-241 presents a risk to human health in its own right, and, more seriously, plutonium-241 decays to produce the daughter product americium-241, which is both a beta- and alpha-emitter.<sup>12</sup> Americium-241 is considered to be 2.5 times more hazardous than the most dangerous of the plutoniums.<sup>13</sup> Americium accumulates in marine sediments and silts and in living organisms. It is particularly prone to being incorporated into seaspray and so transferred back to the land.

Americium is discharged from all nuclear stations, but in very small quantities. Because of the late discovery that americium appears in the marine environment as a result of plutonium-241 decay, limits have now been imposed upon discharges of both plutonium-241 and americium-241. In 1988, for example, the total discharge of americium (including that due to plutonium-241 decay) was approximately 45.5 curies. In comparison, it is estimated that americium production in Irish Sea silts resulting from the decay of historically discharged plutonium-241 will peak towards the end of the 21st century, by which time plutonium decay will be contributing approximately 1,300 curies a year into the Irish Sea.<sup>14</sup> On the basis of current authorizations for Sellafield, this will be equivalent to having another 14 reprocessing plants discharging americium into the Irish Sea.

Added to the industry's inefficiency at data collection is a certain economy with the truth over known releases. Sir Douglas Black, for example, when preparing

Comare's report into childhood leukaemia in West Cumbria, was told that only 400 grams of uranium were discharged from Sellafield between 1952 and 1955. It was later revealed by two scientists who had worked at the site in the 1950s that this figure was at least 40 times too low.<sup>15</sup>

## Behaviour of Marine Radioactivity

Supposedly "diluted and dispersed" radioactivity is reconcentrated in the marine environment by a number of mechanisms. Some nuclides, such as tritium and caesium,

dissolve and become evenly distributed throughout a water-body. These two nuclides make up the greatest percentage of discharges from generating and reprocessing sites. At Sellafield, the total discharge in 1988 of all radioactivity was 1914 Terabecquerels (TBq) of which 1724 TBq was tritium.<sup>16</sup> Tritium is a beta-emitting nuclide which is assumed by the nuclear industry and its regulators to be of little importance to human health. However, tritiated water behaves just like any other water, the human body absorbs 100 per cent of tritium in water through the skin, and 100 per cent of tritium in water or water vapour is inhaled. Tritium re-

concentrates in the human body, particularly in fat cells. In laboratory studies on animals, it has been shown to cause an increase in lymphosarcomas, as well as an important level of incorporation into DNA, RNA and proteins.<sup>17,18</sup> Tritium is difficult and expensive to monitor in environmental samples so neither the electricity generating authorities nor the regulating agencies undertake such monitoring.

Caesium on the other hand is easy and cheap to monitor. Like tritium it is ubiquitous throughout the marine environment which it has entered as a result of weapons test fallout, and accidents and gaseous and liquid discharges from nuclear plants. Monitoring by the authorities and independent groups has proved that caesium reconcentrates in the marine food chain and in estuarine and marine sediments, and blows ashore with seaspray and water vapour.<sup>19</sup> Caesium from the sea can be found in grass and lichens at least 10 miles inland in South Wales and even further inland in Cumbria.<sup>20</sup> Caesium reconcentrates in the muscle tissue and reproductive organs of marine and land mammals, and is transferred via mother's milk to offspring (who prior to weaning show much higher body burdens of caesium despite their shorter exposure time).<sup>21</sup> The laboratory studies on tritium and the observed behaviour of caesium in the environment (especially in the mammalian system) indicate that the impact of these nuclides on DNA, RNA, proteins, reproductive organs and mother's milk may be relevant to the induction of childhood leukaemia.

## Sediment Behaviour

All nuclear plants discharge alpha-emitting actinides — the plutoniums, americium and curium.<sup>22</sup> Sellafield makes the major contribution to British waters; its fingerprint can be detected along the Irish Sea coasts, down the North Sea as far as the Blackwater Estuary in Essex and even as far away as Scandinavia.<sup>23</sup>

It was originally assumed that actinides would be trapped in the sediments off the end of the discharge pipelines. However it emerged at the Windscale (as Sellafield was formerly known) Inquiry in 1977 that the contaminated sediments off the end of the discharge pipelines were subject to a host of phenomena including dredging, trawling, earthquakes (several in the Irish Sea over recent years) and storms.<sup>24</sup> By 1989, the responsible authorities had only just begun to construct models of marine

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Element	Enrichment Factor
Pu 238	291
Pu 239	347
Pu 240	347
Am 241	583

**Table 1:** Enrichment factors for actinides due to bubble burst in open sea 10km from Sellafield pipelines.

Source: Walker et al., 'Actinide Enrichment in Marine Aerosols', Nature 323, 6084, 11 September, 1986, pp.141-142.

sediment movements; models which do not include any input for specific storms, but only for an "average effect".<sup>25</sup>

The "averaging" of such data irons out the peaks of radioactivity in the environment. Such a peak occurred in February 1990, when extreme storm conditions breached sea defences and deposited hundreds of tonnes of marine sediment in the streets and houses of the town of Towyn in North Wales. Out of 14 samples of this sediment analyzed for radioactivity, eight contained Sellafield-derived actinides at levels which exceeded by more than 10 times the official levels at which further investigation is required.<sup>26</sup> This event has certainly led to the inhalation and possibly the ingestion of actinides. Yet, as far as the official data gatherers are concerned, it remains unrecorded.

When seawater samples from British waters are analyzed for alpha radiation, it is found that almost all of the americium and plutonium present is in the form of radioactivity "adsorbed" or bonded to the surface of sedimentary particles suspended in the water column. The heavier particles will eventually sink to the seabed where they can remain stable for sometime, but are subject to disturbance as described above. Lighter particles will travel through the water column for longer periods and are available for sedimentation out into mud flats and estuarine silts and salt marshes. Because finer particles have a relatively greater surface area available for the adsorption of radioactivity, samples from the silts of the extreme landward end of an estuary will typically have 10 per cent more radioactivity than samples from its seaward end.<sup>27</sup>

## Microlayers and Aerosoling

As liquid waste from nuclear installations tends to be warmer than the ambient sea temperature, discharge plumes tend to rise

towards the sea surface. The plumes' contents are therefore available for incorporation into the sea surface "microlayer". The microlayering phenomenon occurs when the sea surface layer, only thousandths of a millimetre thick, becomes enriched with very fine sedimentary material. When the sedimentary particles are exposed to radioactive contamination, the microlayer concentrates the surrounding levels of radioactivity. Irish Sea microlayers, for instance, have been observed to be enriched with plutonium and americium by factors of four to five.<sup>28</sup>

Microlayers themselves cause a second set of phenomena called "aerosoling", which allows for the transfer of radioactive materials from the sea to the air by a number of mechanisms including bubbling, evaporation, and wave break in the open sea and in the surf line. Seawater-to-air aerosoling enrichment factors are enormous. The maximum such enrichment observed in the open sea was recorded 10km off the Sellafield pipelines (see Table 1). These enrichment factors were observed as a result of "bubble burst". The breaking of waves along the shoreline has been observed to produce aerosols with an enrichment factor of 812 for americium.<sup>29</sup> There do not appear to have been any studies that have considered the enrichment factor potential of evaporation or wave break in the open sea, however it has been calculated that algal blooms in the open sea may concentrate plutonium by factors of up to 26,000.<sup>30</sup>

The CEBG have dismissed the microlayering and aerosol phenomena as being of little importance, insisting that delivered doses from such sources could not represent more than one per cent of International Commission on Radiological Protection (ICRP) limits.<sup>31</sup> The CEBG base this claim on a document published in 1981 using ICRP limits of five millisieverts (mSv).<sup>32</sup> However by 1989, when the CEBG made this assertion, the ICRP limit had been

revised downwards to 1mSv, while the UK National Radiological Protection Board (NRPB) was issuing "interim guidance" that the limit should be cut to 0.5mSv.<sup>33</sup> The CEBG's claim refers only to aerosol enrichment factors by bubble burst in the open sea, and completely ignores the even greater enrichment factors observed at the shoreline.

## Silt Monitoring

The Ministry of Agriculture, Fisheries and Food, the Department of the Environment, Nuclear Electric (the state-owned company which has taken over the running of the CEBG's nuclear plants), British Nuclear Fuels and the UK Atomic Energy Authority are responsible for monitoring man-made radioactivity in the marine environment. But if there is no understanding of the dispersal patterns of man-made radioactivity in the sea, then there can be no proper assessment of where to monitor.

The village of Garlieston is the only official monitoring site on the coastline of Wigtownshire in South West Scotland. It is on the evidence from this *one* site that MAFF draw their conclusions about the

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*There is no doubt that the very high concentration of man-made radiation in estuaries is a significant source of sea-to-land transfer. Yet, no studies are conducted in the vicinity of the silts of estuarine headwaters.*

---

effect of radioactivity on the population of over 120 miles of coastline.<sup>34</sup> Samples taken from silt deposits in the Cree estuary by the environmental group Radioactive Survey for the People of Wigtownshire, gave a maximum reading for americium of 715 becquerels per kilogram (Bq/kg). The maximum activity for the same nuclide a few miles away in the stony-bottomed harbour at Garlieston was only 40.5 Bq/Kg. A similar pattern was noted for plutonium and caesium.<sup>35</sup>

It is therefore likely that some people on the Wigtownshire coast have for many years been exposed to much higher levels



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of radioactivity than official reports indicate. Despite having been fully aware of both the Cree/Garlieston discrepancy and evidence from the Institute of Oceanographic Science that estuaries and mudflats are likely to have the highest marine radioactivity levels, MAFF and the other relevant authorities have failed to adjust their monitoring practices.<sup>36</sup>

There is no doubt that the very high concentration of man-made radiation in

*The population of the  
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particularly in periods  
of strong winds.*

estuaries is a significant source of sea-to-land transfer. Yet, none of the UK studies of sea-to-land transfer are conducted near the silts of estuarine headwaters.

## Monitoring of Sea-to-Land Transfer

A study of the UK Atomic Energy Authority's programme of monitoring sea-to-land transfer shows firstly that plutonium and americium are airborne throughout the UK coastal environment; and secondly, that the UKAEA's work dismally fails to give accurate data on the true extent of the sea-to-land transfer of actinides. Most of the Atomic Energy Authority's research has relied on the use of continuous high volume air samplers and muslin screens. Both the technology and the methodology are deeply flawed.

The muslin screens are usually deployed to catch airborne particles on or near the surfline of open coasts. The high volume samplers, which draw air through an aperture positioned one metre above ground level, are sited inland of the screens. Because of the many inaccuracies inherent in the use of muslin screens (especially in winds above force five, when the material in the screen stretches and its porosity increases) a 1982 UKAEA report concluded that they should be used "only as a qualitative tool to compare relative concentrations of actinides in seaspray".<sup>37</sup> Despite this warning, muslin screens have been used repeatedly in recent studies by

the UKAEA into human exposure by inhalation to actinides coming off the Irish Sea.

Muslin screens were first used in the early 1980s because the high volume air samplers are "not particularly suited" to sea-to-land transfer studies, "and [are] believed not to be very efficient for the relatively large particles" which may be found in seaspray.<sup>38</sup> Yet, the UKAEA responds to criticism over the use of the muslin screens by arguing that the results from the screens are supported by the use of the high volume air samplers.

The 1982 UKAEA report states that the "enriched spray front" at the shoreline in force five winds is about 10 metres high (the muslin screens are only one metre high and are placed one metre above the ground), and that the behaviour of the spray front as it moves inland has not been studied. Stronger winds will undoubtedly increase both the size of the front and its inland penetration, yet the only inland monitoring is with air samplers which are unreliable for measuring large particles.

## Inland Penetration of Seaborne Radioactivity

There is, however, ample evidence that seaborne, man-made radioactivity is penetrating inland and entering the human food chain. In South West Wales, independent analysis by Dyfed County Council and the Irish Sea Project has found caesium-137 from the Sellafield sea discharges on pasture grass and tree lichens more than 10 miles from the coast, presumably having been blown inland in strong winds.<sup>39</sup> A pre-Chernobyl study from the Hebridian island of Uist showed that caesium-137 contamination was present in almost every type of island-produced food. Islanders who consumed a high proportion of local food had higher burdens of caesium than those who were eating imported food.<sup>40</sup> Seaborne radioactive contamination of surface soil and vegetation has been found in the saltmarshes at Ravensglass near Sellafield, with the subsequent reconcentration of caesium-137 and plutonium in the carcasses of sheep that had grazed the area.<sup>41</sup>

In spite of evidence that sea-to-land transfer is affecting crops grown up to 10 miles and more inland from UK coasts, the authorities insist that the only pathway for the ingestion of seaborne radioactivity is through the consumption of seafood.<sup>42</sup> They also disregard the certainty that the population of the coastal zone is breathing in



potentially significant doses of radioactivity, particularly in periods of strong winds.

## Risk and Dose Estimates

It is central to the nuclear industry's case that it cannot be responsible for the leukaemia clusters around its sites, that there is an adequate understanding of the health effects of exposure to low-level radiation. This is far from being the case.

During the course of the public inquiry into the construction of a third reactor at Hinkley Point, R.H. Clarke of the UK National Radiological Protection Board (NRPB) stated that there was sufficient evidence to recommend a *tenfold* reduction in the current legal annual radioactive dose limit to members of the public.<sup>43</sup> This is of little surprise to anti-nuclear campaigners, because it accords well with the history of radiobiological protection, which has been a long saga of steady reductions in the so-called "safe and acceptable" dose limits.

In 1952, the "safe and acceptable" pub-

lic dose limit was set by the International Commission on Radiological Protection (ICRP) at 15mSv per year. Five years later this was reduced to 5mSv; in 1986 it was downgraded again to 1mSv. The following year the NRPB gave "interim guidance" that exposures should not be allowed to exceed 0.5mSv per year. Each of these limits was considered in its day to be erring on the side of "safety and acceptability". People born before 1957 were legally allowed to receive doses 30 times greater than those recommended by the NRPB in 1987 — a recommendation which was only an "interim guidance". It is clear that the NRPB are fully aware that there is enormous ignorance about the impact of radioactivity on humans.

## A Continuing Experiment

In 1958, John Dunster of the UKAEA openly admitted that the authority had intentionally discharged "substantial amounts of radioactivity" into the Irish Sea

to monitor how it would behave in the marine environment. Dunster stated: "... the aims of this experiment would have been defeated if the level of radioactivity discharged had been kept to a minimum."<sup>44</sup> This experiment is continuing, although it is being grossly mishandled and the resulting data is totally inaccurate.

As the National Radiological Protection Board and the Government press ahead with research into the medical aspects of radiation, the time is ripe for a review of the "experimental" discharges of radioactivity. This would allow the Government to reconsider the safety aspects of marine discharges at the same time as they conduct their promised financial review of the nuclear industry in 1994. If this does not happen, the signs are that after 1994 the industry will be allowed to expand further, in almost complete ignorance of the realities of seaborne radioactivity and its effects on human health. This is what has been happening since the birth of Britain's nuclear industry. There is no need for this to continue.

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# Japanese Aid and the Environment

by  
Richard A. Forrest

*International pressure on Japan to use its economic power to assist the West's strategic interests, and Japan's need to maintain economic ties with developing nations, have led to massive increases in its aid budget. The environmental effects of its aid programme on the recipient countries are rarely considered by the complex Japanese aid bureaucracy. Attempts to reform the system have been largely derisory.*

Japan is increasingly seen by the international environmental community as a global "ecological outlaw". Japan is blamed for everything from the smuggling of endangered species and the use of drift nets to the destruction of rainforests. In response to its critics, the Japanese government points out that it is the world's leading aid donor. Committed to becoming an "aid superpower", Japan's government has followed a series of "mid-term aid doubling plans" since the mid-1970s, each plan intended to double over a period of approximately five years the total cumulative amount of official aid (in dollar terms) provided over the previous "mid-term" period. The current plan calls for a steadily rising annual level to provide a total of US\$50 billion between 1987 and 1992.

Japan's foreign aid has thus grown faster than that of any other nation (see Figure 1). While the dollar amounts have also been inflated greatly by the appreciation of the yen, aid has consistently been the single fastest growing item in the Japanese national budget. Its aid budget for 1990 was roughly \$10 billion, surpassing the \$9.5 billion of the US. Because much US funding is military-orientated and concentrated largely in only two countries, Israel and Egypt, the importance of Japan's non-military, economic-orientated assistance is enormous.

Japan is the top bilateral aid donor to 25 developing countries (up from six in 1970), and often plays a central role in development plans. For instance, Japan is committed to providing \$8 billion to China over the five-year period starting in 1990, and already provides 45 per cent of all foreign assistance received by China. Japan is also an influential force in the multilateral aid institutions. Japan is the largest contributor to the Asian Development Bank, and ranks second in the World Bank, the International Monetary Fund, the Inter-American Development Bank, and the African Development Bank.

Japan's official aid or "Official Development Assistance" (ODA — defined by the OECD Development Assistance Committee as grants or loans with very low interest rates) is often used in combination with private funds.<sup>1</sup> Flows from private voluntary organizations in Japan are, however, negligible in comparison to those of many other countries. But when both governmental and

private financial flows (including private investment and commercial lending) are included, Japan ranks as the top supplier of funds to the developing world. In 1987, Japan channelled abroad a total of \$22.5 billion, amounting to a quarter of all the flows of financial resources to the developing world (see Figure 2).

## The Foreign Assistance Budget

The Japanese parliament, the Diet, votes only on an overall amount for the foreign aid budget, with almost no debate on the content of programmes or policies or even knowledge of specific country programmes.<sup>2</sup> All political parties are generally in favour of increased Official Development Assistance and other funding, with the opposition parties calling for more aid for basic human needs.

Diet members and their small staffs are generally preoccupied with fundraising activities to maintain their patronage systems. Their interest in ODA comes largely in relation to their voluntary affiliation with various *zoku*, the so-called "tribes" of Diet members who share a particular interest in activities associated with a particular ministry, such as construction or trade. Diet members have been known to help particular companies gain overseas development project contracts, and have supposedly pocketed some of the profits themselves.

## Japan's Foreign Assistance Bureaucracy

Japan's development financing structure centres on two principal bilateral aid agencies, the Overseas Economic Cooperation Fund (OECF) and the Japan International Cooperation Agency (JICA), and the governmental Export-Import Bank of Japan (EXIM Japan). Other agencies and ministries also exercise varying degrees of control over the system (see Box and Figure 3). This development financing bureaucracy is undoubtedly the most complicated and confusing in the world, the only system to have two main bilateral aid agencies, directly overseen by four Cabinet-level ministries, and influenced by a total of 16 ministries and agencies.

Much of Japan's current development financing takes place within the so-called "Surplus Recycling" or "Capital Recycling" programme. The country's huge trade surpluses have led to

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# The Structure of Japan's Aid System

## Overseas Economic Cooperation Fund (OECF)

The OECF is a bank which provides loans qualifying under the Organization for Economic Cooperation and Development's definition of "Official Development Assistance", but with relatively high interest rates. The volume of OECF funds (roughly \$5.5 billion for 1989) makes it the third largest development funding institution in the world, after the World Bank and USAID. Many OECF loans are for capital-intensive infrastructure projects, such as the construction of dams, roads, airports, port facilities, power plants, irrigation schemes and railways. However, it is increasing its "policy change" ("sector-adjustment" and "structural adjustment") lending.

OECF loans account for 56 per cent of Japan's ODA, although loans comprise less than 10 per cent of US ODA. The funds Japan spends on development financing thus have a very low overall "grant element", meaning that its ODA bears a closer resemblance to loans from a commercial bank than to grants — what might normally be thought of as "aid".

## Japan International Cooperation Agency (JICA)

JICA administers a hotch-potch of programmes of technical assistance grants, performs studies for OECF loan projects, provides technical advice to other ministries and finances projects by Japanese companies through its "Development Cooperation Programme".

JICA is overseen primarily by the Ministry of Foreign Affairs — but also officially by the Ministry of International Trade and Finance (MITI) and the Ministry of Agriculture, Fisheries and Forestry (MAFF). When aid funds allocated to the various ministries are channelled through JICA, the original ministry remains involved in the decision-making process. Projects which combine ODA funds from different ministries are therefore supervised by several ministries.

## Export-Import Bank of Japan (EXIM Japan)

EXIM Japan provides export credits, import credits, overseas investment credits and project loans and "untied direct loans", mostly for large-scale natural resource development projects. It is officially overseen by the Ministry of Finance, but is strongly influenced by the Ministry of International Trade and Industry.

## Ministry of Foreign Affairs (MFA)

The Ministry of Foreign Affairs attempts to act as the unofficial coordinator of aid policy, and must funnel all aid requests from the developing countries to Japan's aid agencies. It has strong control over grant aid (including that channelled through JICA) and through chairing the inter-ministerial group that must decide on all ODA loans.

Aid projects and programmes administered directly by the MFA (the "Capital Grant Assistance Programmes"), emphasize "basic human needs" and provide grants for "Increased Food Production" (providing chemical fertilizers, pesticides, machinery, etc.) and disaster relief aid. The Ministry of Foreign Affairs also provides "Cultural Grant Aid" (funding related to cultural activities, language instruction,

sports, etc.) and "Food Aid programmes" (shipments to developing countries of surplus Japanese rice).

## Ministry of International Trade and Industry (MITI)

MITI advocates the use of economic cooperation to assist Japanese industries in obtaining resources, building overseas markets and supporting the growth of the world economy, and meeting demands made by trading partners. Japan's main policy research institute on international economic policy is the MITI-subsidized Institute of Developing Economies. MITI also influences policy by subsidizing groups of business leaders, known as "wisemen's groups" who recommend economic strategies, and through nominally "private" agencies that plan and consult on ODA projects.

## Ministry of Finance (MOF)

The powerful Ministry of Finance has authority over the ODA budget, and its bureaucrats are regarded as the most élite group within the Japanese establishment. Other ministries must present aid requests to MOF for approval in a yearly tug-of-war for power and funds. Rivalry between MOF and the Ministry of Foreign Affairs is recognized to be the main arena of conflict over the content of ODA policy. MOF also provides funds directly to the multilateral development banks, thus having the most influence over Japan's multilateral funding policies, and oversees the increasingly important activities of the Export-Import Bank of Japan.

## Economic Planning Agency (EPA)

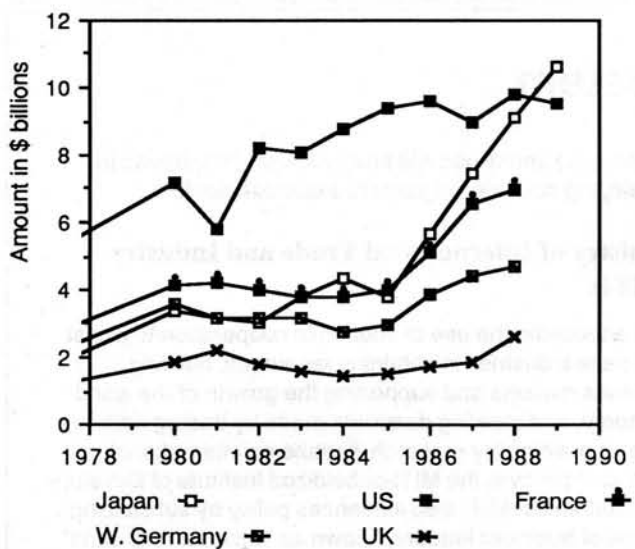
The Cabinet-level Economic Planning Agency, the least powerful of the four main aid controlling bodies, officially oversees the OECF. Increasingly it advocates the use of aid for "policy change" and "structural adjustment" lending, a reflection of its role as the overall coordinator of national level economic planning in Japan.

## Environment Agency (EA)

The Cabinet-level Environment Agency advocates using ODA for environmentally beneficial purposes, and assists mainly in transferring pollution-monitoring and anti-pollution technologies. It has one of the smallest budgets for foreign assistance of all the Japanese agencies channelling ODA (under \$1 million in 1989). The more progressive views of the EA (often expressed in policy statements on environmental matters) do not represent the thinking of the other government agencies or ministries.

## Other Ministries

Other ministries oversee the activities of the aid agencies for projects related to their mandate, and also provide and administer aid on their own. The Ministries of Construction and Transportation, for example, have small ODA budgets, but influence developing countries through studies, pilot projects, training programmes and advice.



U.S. and Japan 1989 data projected. Other countries unavailable.

**Figure 1: ODA From Major Donors**

Source: OECD Development Assistance Committee.

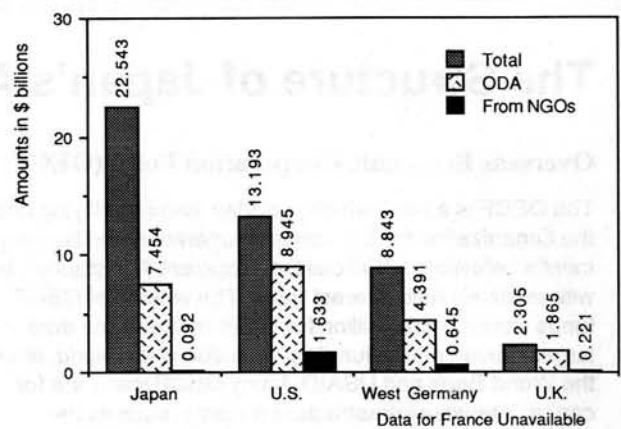
pressure from other countries to reinvest its funds — partly to rescue US banks that hold bad debts and are unwilling to provide new loans to certain countries. The Japanese government promised in 1987 to channel \$30 billion in public and private capital to the developing world over a 3-year period in addition to normal ODA flows, and in 1989 announced that it would expand the programme to \$65 billion over the period up to 1994. This programme has been referred to as “Japan’s mini-Marshall Plan”, or the “Nakasone Fund” outside Japan, since it was perceived, incorrectly, to be an initiative of former Prime Minister Yasuhiro Nakasone.

Japan’s trade surpluses are mostly privately held. The surplus recycling programme, however, mobilizes funds with government help, in new combinations with bilateral and multilateral funding, and in combinations of governmental and private funds. The implementation of these recycling schemes is complex. It includes expanded funding of the IMF and the World Bank and other multilateral development banks (MDBs), as well as contributions to and “co-financing” of certain MDB projects by the Overseas Economic Cooperation Fund, EXIM Japan and private banks. It also includes direct lending to recipient countries by EXIM Japan, and expanded structural adjustment lending by the OECF.

One major tool for “recycling capital surpluses” is the so-called “Japan Funds”, established in the MDBs. These funds, similar to those established by a few European nations but much larger in scale, allow Japan to meet promised levels of capital “recycling” through special mechanisms requiring little administrative burden for Japan; significantly, they do not trigger negotiations for general capital increases in the MDBs or changes in Japan’s voting share — which would be politically difficult and opposed by the United States and others.

## Foreign Assistance as Self-Interest

Like other Western nations, Japan has used its development assistance funds to support its own economic goals. The dividing line between government activities and private business interests



**Figure 2: 1987 Resource Flows to Developing Countries from Major Donors**

Source: Ministry of Foreign Affairs.

and activities is, in general, less clear in Japan than in other countries. There are strong linkages between government and private advisory panels, industrial associations and corporate leaders. Top officials in the government aid bureaucracy retire and, according to the Japanese expression *amakudari*, “descend from Heaven” to lead aid consulting associations and companies working to gain ODA contracts. Many nominally private consulting associations, which conduct project-finding missions and promote the interests of Japanese firms in particular fields, such as civil engineering, transport and forestry, are subsidized by ODA-providing ministries and are headed by former government officials.

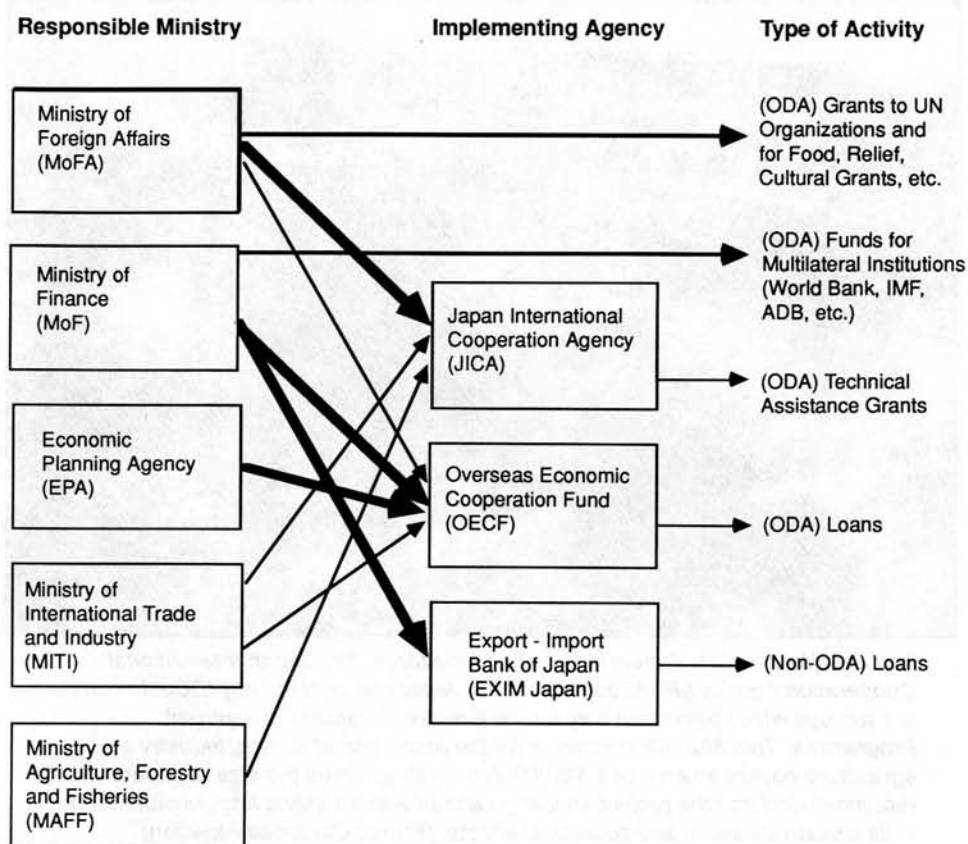
To promote Japanese exports in the 1960s aid was tied to purchases of Japanese goods and services, creating markets for Japanese goods and introducing Japanese banks and trading companies into developing countries.<sup>3</sup> Starting in the 1970s, Japanese funds have been used to build large-scale facilities for exploiting and processing raw materials in resource-rich countries, such as Indonesia and Brazil, and to relocate hazardous and energy-intensive processing facilities to offshore sites, usually in South East Asia.<sup>4</sup> Reports by Japan’s overseas development agencies highlight how projects provide supplies of crucial materials for Japanese industry, such as oil, aluminium and pulp. Aid to Pacific island nations has been used as a tool to secure access to fishing grounds for Japanese fleets.<sup>5</sup> Aid has also been used to help “phase-out” particular industrial sectors that are no longer economic in Japan.<sup>6</sup>

In general, Japan’s aid, while “fulfilling the duties of a creditor nation” — that is, re-investing trade surpluses — is also used to support the international trading system on which Japan depends, and helps avoid retaliation from trading partners, such as the United States, with which Japan has large trade imbalances.

## Aid for Japanese Companies

In addition to funding foreign government projects (the contracts for which normally go to Japanese companies), Japan’s foreign assistance agencies provide direct loans for, and equity investment in, private Japanese companies (JICA often does so at the exceedingly low interest rate of 0.75 per cent). Japan’s aid is often used in the form of “mixed credits”, combined packages of ODA





**Figure 3: Basic Structure of Japan's Foreign Assistance System.** Bold arrows between government organizations indicate the agency or ministry with greatest nominal control; other lines indicate agencies with major controlling influences. In all, however, 14 ministries and agencies have official control over the content of certain projects and programmes.

Adapted from Rix, A., *Japan's Economic Aid*, Croom Helm, London, 1980, and International Development Study Group, 'Shortcomings of the Foreign Aid Program', Economic Eye 10, 1, 1989.

and private capital for a project, using "soft" official financing to assist Japanese companies venturing overseas. This leads to the situation where even if the ODA portion is covered by environmental or other restrictions, the auxiliary funding and secondary projects that often follow are outside the scope of environmental assessments, and have no policies to guide or regulate them.

Japan's construction industry, in particular, is closely tied to Japanese politicians and foreign aid. It has been reported that more than half of the political bribery scandals in Japan each year involve the construction sector.<sup>7</sup> Conservationists are concerned about the strength of this "political-construction complex" which, they feel, is the overriding influence on Japan's development policies, both domestically and internationally.<sup>8</sup> Overseas construction projects are big business, and are increasing in importance due to declining numbers of large domestic projects, domestic opposition to many large projects, and the opening of Japan's construction market to outsiders.

Japan's preference for large-scale infrastructure is striking: in 1987, 48 per cent of Japanese ODA went for economic infrastructure and industrial, mining and construction activities, compared to 3.5 per cent of US aid, and 23 per cent for OECD Development Assistance Committee (DAC) countries overall; in contrast, only 0.2 per cent of Japanese aid went to research activities, compared to 3 per cent for the United States and 2 per cent for all Development Assistance Committee countries.<sup>9</sup>

Large infrastructure projects funded by Japan's government

are often designed to provide the foundation for later activities by Japanese businesses. A classic example of this is the Asahan hydroelectric project in Sumatra, Indonesia, designed by Japan's largest consulting firm, Nippon Koei.<sup>10</sup> The OECF provided loans totalling over \$100 million, two-thirds of the funding for a hydroelectric dam and associated transmission lines and roads. The low-cost electric power was then used by Asahan Aluminium, a joint venture company formed by the Indonesian government, five Japanese smelting companies, and seven Japanese *sogo-shoshas* (general trading companies).

Other, smaller projects transfer expensive equipment, such as sophisticated boats, computers and medical technology, which often gather dust because their recipients cannot or do not use them, but which provide business for Japanese companies. Such "showcase" items have often been criticized in the press, but, as one aid insider confided, the business community feels that there is little profit to be made in projects dealing with basic human needs.

## Japanese Consulting Companies

Consulting companies, which provide engineering and other services and supervise projects, are a key factor in Japan's aid. They provide an important link between overburdened Japanese officials and foreign governments unsure of how to negotiate Japan's disorientating bureaucracy.

At the urging of other donor nations (many of whom also use ODA to further domestic commercial interests), Japan has tried to open development project bidding to non-Japanese companies. But Japanese companies are competitive, and consulting work, which sets the specifications for projects, is still usually undertaken by Japanese consultants. Japanese companies and individual consultants have an advantage in understanding their government and its approach, sharing the same language, experience with the types of projects favoured, and having personal connections with government officials. Thus, some 85 per cent of procurement for Japan's "Lesser Developed Country untied" loans takes place in Japan.<sup>11</sup>

Japan's consulting companies, often with better networks in developing countries than Japan's aid agencies, are dependent on ODA for much of their business.<sup>12</sup> Consultants admit they often plan projects based on what they know Japan's government will approve, and then urge the developing country government to "request" the project from Japan.<sup>13</sup> The same company, or closely related "family" companies, supported by the diverse, octopus-like *sogo-shoshas*, can then lobby for a project to be approved, and step in to do the actual work. The system is criticized in Japan as

being open to corruption and the diversion of funds for private interests. Indeed, consultants report that virtually all consulting contracts are decided by *dango*, an informal, nominally illegal, and uniquely Japanese process of awarding contracts, in which companies in a particular field (particularly construction) secretly negotiate amongst themselves to decide who will be awarded each particular contract. This process assures that only government and corporate decision-makers are involved, hidden from public scrutiny.



*The Carajás Iron Ore Project in Brazilian Amazonia. The Japan International Cooperation Agency (JICA) contracted the Japanese consultancy IDCJ, to carry out surveys which paved the way for the Greater Carajás Development Programme. This \$62 billion scheme for the promotion of mining, industry and agriculture covers an area of 1,120,000km<sup>2</sup> — three times the size of Japan. IDCJ recommended that the project should go ahead without giving any consideration to its disastrous social and ecological effects. (Photo: Campbell Plowden)*

## Government-Private Sector Links

Keidanren, the Japanese Federation of Economic Organizations, Japan's most influential business group, has criticized the development system as complex and inefficient. Yet they have added to the complex constellation of assistance organizations. In March 1989, 98 Keidanren-affiliated companies and the Overseas Economic Cooperation Fund founded a new quasi-governmental development assistance organization, the Japan International Development Organization Limited (JAIDO). Keidanren has also established the Keidanren Committee on International Cooperation Projects. Both organizations work with the Japanese government — JICA, OECF and EXIM Japan — and international development organizations, such as the World Bank and UN agencies.

The Government has also established the ASEAN-Japan Development Fund, a special fund to promote the flow of private and public credit to the ASEAN countries. All of these mechanisms are intended to catalyze the flow of funds or "prime the pump" for increased private investment in projects (mostly industrial) in developing countries.

Pressure to unload funds has allowed for schemes that are hard to accept as "foreign assistance." These include the first planned JAIDO project, a high-security industrial park in the Philippines, complete with residences and golf courses for Japanese corporate executives and their families; and the "Holiday Village" project to build resorts in developing countries for use by Japanese tourists, planned by the Ministry of Transportation.<sup>14</sup> A Japanese diplomat in Manila recently noted that he could not find enough properly planned projects for the huge amount of aid he was supposed to disburse, remarking: "What can I do except find holes to dump the money into?"<sup>15</sup>

## Foreign Assistance Scandals

A number of scandals involving bribery and misconduct have shaken Japan's foreign aid system. In response to allegations that Japanese aid funds were misused by the Marcos Administration in the Philippines, the Director General of the Economic Planning Agency (the cabinet agency that oversees the loans of the OECF, the world's third largest development financing institution) said

that Japanese funding is "like money a husband gives to his wife for shopping — the husband can't know how his wife spent it."

In 1986, the chief of JICA's agricultural division was arrested for receiving large bribes from a consulting firm for projects in Africa; a major newspaper at the time reported a rumour that there were as many bribes as projects. Consultants confide that this particular official was arrested because he was too open about receiving favours from contractors, and that it is standard practice to do so on a more discreet level.

## Barriers to Reform

Japan's aid administration lacks unified or coherent authority over programmes; it also lacks firm basic laws, policies, and goals for its aid, other than maintaining quantitative growth.<sup>16</sup> Japanese citizen's groups and opposition parties in the Diet have tried for more than three decades to enact various versions of a "Basic ODA Law", to create a centralized aid ministry and bring coherency and coordination to the system. These efforts have repeatedly failed, apparently because of opposition from the bureaucracy.

Due to the lack of scrutiny by legislators, details of official policies, procedures and goals of development financing are left almost exclusively for Japan's career bureaucrats to decide by themselves. The lack of a unified development assistance structure, moreover, creates a lack of coordination, and even breeds unproductive competition between different branches of the bureaucracy. Agencies routinely withhold relevant information from each other, and the President of JICA, Mr Kensuke Yanagiya, admits that JICA staff on study missions occasionally discover that the project they are studying is already being funded by other Japanese agencies.<sup>17</sup> Bureaucratic struggles occur even within a single funding agency.<sup>18</sup> For example, different departments of



JICA are headed and manned by bureaucrats transferred from the ministries, who often return to their own ministry after only a few years.

There are reports that Japan cannot even disburse all of its promised ODA budget every year, much less study in detail the effects of the funding, due to a lack of staff. Yet, while Japan's ODA volume increased 523 per cent from 1977 to 1987, staff levels increased only 52 per cent, from 916 to 1396 employees.<sup>19</sup> In 1990 each ODA administrator in Japan was responsible for an average of \$6.35 million in funds — far more than aid staff in any other nation.<sup>20</sup> The average staff member of the OECF is responsible for roughly four times as much funding as his or her counterpart at the World Bank.

Although Japan is the leading provider of ODA to Indonesia, providing 12 times as much aid as the US, Japan has only 20 field staff there, less than one-fifth the total USAID staff; in-country Japanese staff are responsible for 70 times as much aid money per person as USAID staff.

## Lack of Expertise

The bureaucrats that administer ODA in Japan are not as specialized as those in other countries, nor do they seem as experienced with and dedicated to development matters. One reason for this is

that the agencies have no field mission system.<sup>21</sup> The OECF and JICA have only 11 and 39 offices in developing countries respectively (each usually with only a token staff of one or two clerks), compared with over 80 USAID overseas missions. Only 47 JICA staff members are based overseas, this is roughly 5 per cent of total staff, compared with over 2400, or roughly 50 per cent for USAID. Needless to say, very few Japanese development assistance staff have on-site experience with actual development projects.

The bureaucratic system creates and values generalists; within ministries, bureaucrats are transferred regularly. Aid work is seen as merely one short phase of a bureaucrat's career, not a career in itself.<sup>22</sup> According to Ministry of Finance staff, there are already too many "environmental" staff within the Japanese bureaucracy.<sup>23</sup>

## Attempts to Reform the Aid System

In the face of criticism from other donors, Japan has attempted to "reform" its aid in several ways. These have included increasing the amount given, increasing its geographical coverage, increasing the proportion of grants, adopting "basic human needs" as one goal of its aid, and "untying" its aid (giving aid which is not linked to contracts from Japanese firms). Many of these efforts have fallen far short of expectations and promises.

One effort to improve the system was instituted in 1982 when the Ministry of Foreign Affairs began to institute occasional post-project evaluations. This was in keeping with OECD recommendations, and was also intended to regain public trust in the development assistance system in the face of scandals and an onslaught of media reports of failed projects. Some of these government-commissioned evaluations, called "impressions of aid projects", have been made by untrained private citizens. Projects are selected for evaluation without clear guidelines. There is no mechanism to feed information from evaluations made by the Ministry of Foreign Affairs, such as they are, back to the implementing agencies in order to improve the design of future projects. Moreover, the evaluations department in the MFA has no criteria for judging projects in terms of environmental or social factors, and is only now studying how to develop such criteria. No ecologists, sociologists or anthropologists are involved, and in-depth environmental or social assessments are not made.

Nevertheless, in March 1989 the Foreign Ministry announced that 90 per cent of Japan's ODA projects are successful, and do not require a major rethinking of project design. In the same year, the Ministry stated that Japan would not fund projects associated with environmental destruction, although it is obvious that a large proportion of their funding is going into massively destructive projects. In May 1990, however, the Ministry of Foreign Affairs did announce that it was to suspend its funding for the Sardar Sarovar dam on India's Narmada River, a project which is the focus of an international environmentalist campaign.<sup>24</sup>

Unlike the situation in the United States and most European nations, non-governmental organizations have not been important in the Japanese aid system, either in the implementation of projects or in lobbying for reform. Small amounts of Japan's ODA are given to certain "NGOs" that are essentially extensions of government agencies, created because of governmental hiring restrictions.

The Ministry of Foreign Affairs in 1989 for the first time budgeted 300 million yen (\$2.2 million) for "Small-Scale Finan-

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Assistance", to be apportioned by Japanese embassies to assist local development, possibly in cooperation with NGOs, and 120 million yen (\$800,000), or one ten-thousandth of the total ODA budget, for projects by independent NGOs. Japanese NGOs conducting grass-roots development projects are somewhat reluctant to accept these funds, resistant to the many conditions they fear will be imposed, and fearful also that the single-year project cycle of the ODA administration will not mesh with their longer-term perspective.

## Environmental Reform Efforts

Recommendations for environmental reform of foreign aid in Japan have been made only very recently, and have mostly come from short-term, *ad hoc* committees, often associated with the Environment Agency (which has low status within the bureaucratic hierarchy), with no definite means for their implementation by the aid bureaucracy. The recommendations do not reflect the attitude of the aid agencies or the ministries that oversee them.

Japan's first attempt to study the environmental aspects of its aid policy was the creation in 1986 of the Environment Agency's panel on "Basic Directions for Environmental Considerations in Development Assistance". Emphasis was placed on basing future assistance on Japan's own experiences in dealing with environmental problems, and ensuring that the initiatives of the recipient governments must be "fully respected".<sup>25</sup>

Other reports issued by and for the Environment Agency included the April 1988 annual *White Paper on the Environment*, which for the first time included global environmental issues, and recommended that environmental impact assessments be considered for ODA projects and overseas activities by Japanese companies. In June 1988 the Environment Agency published *Japan's Activities to Cope With Global Environmental Problems: Japan's Contribution Towards a Better Global Environment*, by the Ad Hoc Committee on Global Environmental Problems (Japan's follow-up to the Brundtland Commission). This report recommended an expansion of environment-related aid and the establishment of a new organization for funding environmental protection activities.<sup>26</sup> The report did not recommend any major changes in the rest of Japan's public and private financing of development, but did encourage aid agencies to create environmental guidelines and treat the "request-orientated" nature of the system flexibly in order to promote more environmentally sound projects.

## Reform Within the Funding Agencies

Efforts to reform Japan's funding agencies have largely been limited to the incorporation into project manuals of theoretical principles gleaned from OECD Development Assistance Committee recommendations and MDB procedures. No review has been performed of past projects to determine actual environmental impacts. Japanese officials still lack concrete information on local social and environmental conditions and the role of their own projects. Although the disastrous impact of a logging road funded by JICA in Sarawak is well-known (JICA was publicly humiliated for it in the Diet, and it is referred to by officials who now claim that they have learned from their mistakes), Japanese officials cannot or will not point to a single instance of an OECF or EXIM Japan project having ever caused an environmental

problem, and deny that any fundamental changes need to be made.<sup>27</sup>

JICA has been the subject of most reform efforts, although even Ministry of Finance officials admit the environmental impacts of loans (activities of OECF and EXIM Japan) are greater. Development activities by other ministries have not been reformed at all. The Forestry Agency, for example, an advisor on all Japanese-supported overseas forestry projects, reported nine months after the report on "Basic Directions for Environmental Considerations in Development Assistance" that they had not learned of its contents.<sup>28</sup>

There is only one person each in the OECF and EXIM Japan dealing with environmental matters. The "advisors" are extremely inexperienced; in the case of EXIM Japan, the officer was appointed only in December 1988, and has frankly admitted his complete lack of experience on environmental issues. These "advisors" have no direct control or veto power over projects, and merely assist in the creation of guidelines to be used by others.

Despite the OECD Development Assistance Committee recommendation that certain types of projects — especially the large infrastructure projects that Japan specializes in — should always have proper environmental impact assessments, the recent gov-

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*Japan has few environmental experts, and people in Japan tend to have a strong belief in technical solutions to problems, and even a belief in the ability to replace nature with artificially-engineered environments.*

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ernment "reforms" have not instituted proper procedures for this. The government's approach is instead to make manuals and checklists for generalists to use, without emphasizing the thorough study of potential impacts at the project site.

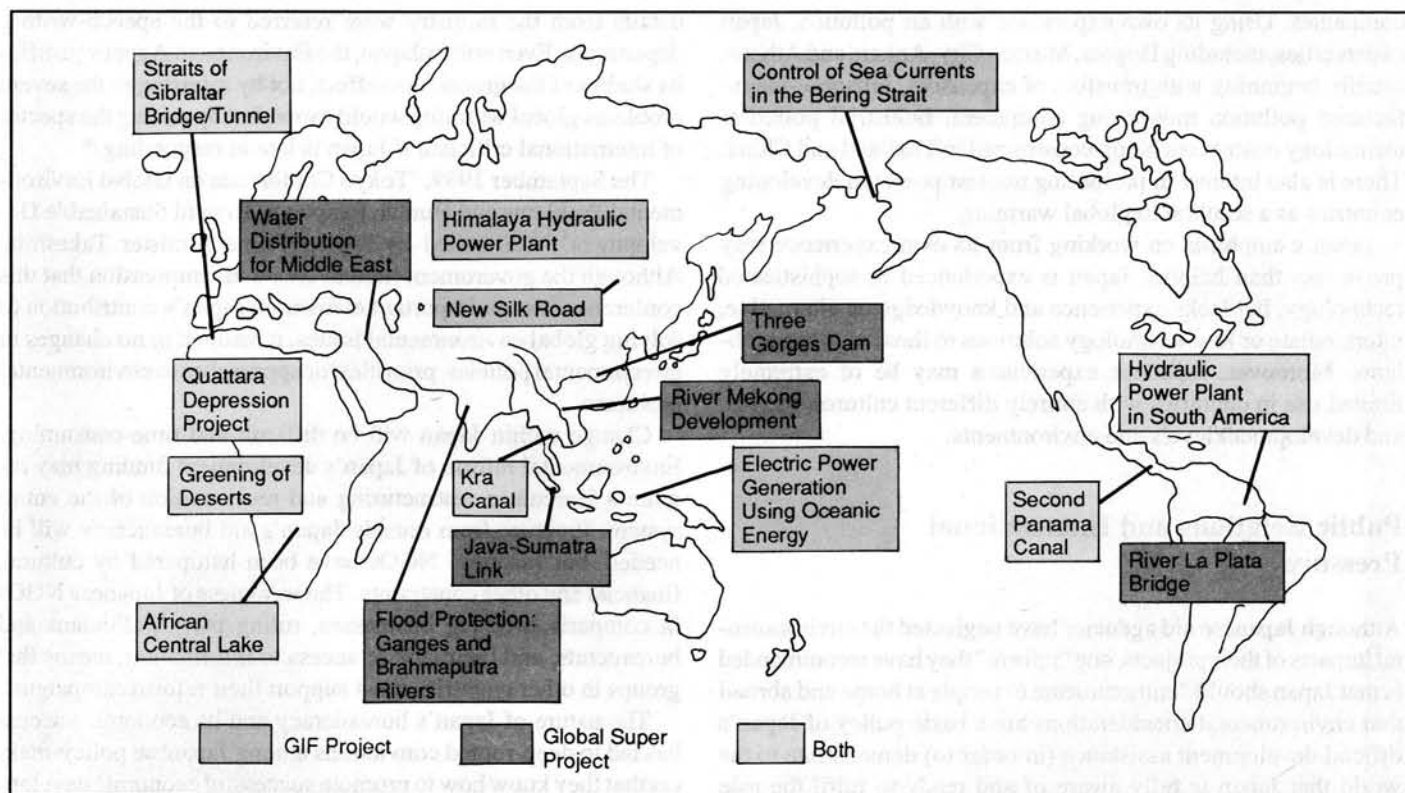
The government of Japan evidently intends to make no independent environmental or social review of projects which it funds through co-financing with the World Bank and other MDBs, and also will not create opportunities for non-governmental organizations to participate in the consideration of MDB projects.

## The "Environmental Sector"

Japan has few environmental experts, and more so than in other developed countries, people in Japan tend to have a strong belief in technical solutions to problems, and even a belief in the ability to replace nature with artificially-engineered environments. This approach is illustrated well by the remarks of the manager of the international cooperation division of the Ministry of Construction: "Paving a road, for example, might improve the environment by reducing dust". Japanese tend to learn about and relate to the outside world through the prism of commercial transactions, in contrast to the diplomatic and political relations that have complemented Western foreign commercial relations. This has important implications for Japan's responses to environmental issues.

Japan's aid establishment sees the environment as a distinct "sector" of international cooperation, rather than a subject of relevance to all programmes. Thus a number of projects that are supposedly environmentally "beneficial" are being promoted,





*The Global Superproject Committee was established in 1988 with JICA, OECF and EXIM Japan among its members. It is beginning feasibility studies on infrastructure projects of the type first proposed by the Global Infrastructure Fund (GIF). GIF was set up by the president of the Board of Mitsubishi Research Institute, Masaki Nakajima. The projects are supposed to combat "nuclear armament . . . economic depression in the Third World and the North-South economic disparity, and damage to the environment."*

(Source: Look Japan)

allowing the remainder of projects to proceed virtually unchanged.<sup>29</sup> Moreover, this "environmental assistance" will still be comprised mainly of loans, compounding the debt repayment burdens of recipient developing countries. Japan has also earmarked \$5 million for the creation of an "environmental fund" in the International Development Association of the World Bank for pre-project environmental studies and the financing of supposedly environmentally beneficial projects, such as the "greening of deserts".<sup>30</sup>

Regardless of the publicity these gain for Japan, a few environmentally beneficial projects cannot make up for the negative environmental impact of the \$25 billion in Japanese funds annually allocated to development schemes. Japanese "environmental aid" is often used for pollution-control equipment and afforestation projects to ameliorate the harm caused by Japanese corporate activities. One NGO, the Japan Tropical Forest Action Network (JATAN), reports that a much-publicized tree plantation project in Benakat, Sumatra, Indonesia, which JICA claims is restoring an area degraded by native farmers, was originally deforested by logging operations funded by Japanese companies.

Other Japanese foreign aid plans may cancel out the few positive initiatives. For instance, the Ministry of Construction is promoting various "Global Superprojects" to "recycle" Japan's surplus funds. These superprojects — the Three Gorges Dam on the Yangtze River in China; a trans-isthmus canal in Central America; major infrastructure projects linking Indonesian islands; the creation of huge lakes in arid central Africa; and hydroelectric schemes in the Amazon — would all have tremendous environmental and social impacts. MITI is also supporting a

group of influential businessmen and others — the Global Social and Industrial Research Progress Institute — to prepare a "vision" of Japan's contribution to global environmental issues, including "the creation of a new environment through macroengineering".<sup>31</sup>

Some of Japan's "environmental" aid projects are likely to become ecological and social disasters. In the field of tropical forestry, Japan is putting large sums of money into the establishment of plantations of exotic tree species. Such plantations have been the target of violent protests in Thailand and opposition movements in India.<sup>32</sup> Japan also emphasizes funding the International Tropical Timber Organization (ITTO) as a solution to tropical forest problems. The ITTO has been much criticized for promoting logging and ignoring the rights of forest dwellers.<sup>33</sup> Conservationists were astonished when in August 1990 the government of Japan announced that, "no one can doubt [that] the effectiveness of the ITTO . . . is already beginning to be amply demonstrated."<sup>34</sup>

The OECF is becoming involved in "environmental" projects such as relocating and resettling nomads and shifting cultivators; groups that, according to its Vice-President, desertify and deforest large land areas. These projects are likely to destroy unique cultures and disrupt sustainable local land management practices. Often the damaging agricultural practices in marginal areas cited by Japanese officials have resulted from export-orientated cash crop production schemes that push people off farmlands — schemes Japan participates in or benefits from. These include cotton plantations in Mali and animal feed plantations in Thailand and Brazil.

Much of Japan's "environmental assistance" transfers high-technology equipment, ensuring lucrative profits for Japanese

companies. Using its own experience with air pollution, Japan assists cities, including Bogota, Mexico City, Ankara and Athens, usually beginning with transfers of expensive, Japanese-manufactured pollution monitoring equipment. Industrial pollution technology centres are being constructed in Thailand and China. There is also interest in promoting nuclear power in developing countries as a solution to global warming.

Japan's emphasis on working from its own experience may prove less than helpful. Japan is experienced in sophisticated technology, but lacks experience and knowledge on alternative, intermediate or low-technology solutions to these or other problems. Moreover, Japanese experiences may be of extremely limited use in countries with entirely different cultures, income and development levels and environments.

## Public Relations and International Pressure

Although Japanese aid agencies have neglected the environmental impacts of their projects, one "reform" they have recommended is that Japan should "communicate to people at home and abroad that environmental considerations are a basic policy of Japan's official development assistance (in order to) demonstrate to the world that Japan is fully aware of and ready to fulfil the role required of it in international society".<sup>35</sup> Reforms have thus been made more to meet the expectations of others than to address environmental issues. As a spokesman for EXIM Japan admitted in February 1989, "environment is of course a vital issue this year, because we are approaching the (Paris G-7) Summit" (at which environmental issues were expected to be a major topic). The Ministry of Foreign Affairs announced in January 1989 that it was entering a "Year of Environmental Diplomacy"; those seeking

details from the ministry were referred to the speech-writing department. Even within Japan, the Environment Agency justifies its studies of the greenhouse effect, not by referring to the severe problems global warming would cause, but by raising the spectre of international criticism if Japan is late in responding.<sup>36</sup>

The September 1989, 'Tokyo Conference on Global Environmental Problems and Human Response Toward Sustainable Development', was called by former Prime Minister Takeshita. Although the government tried to create the impression that this conference was an important element in Japan's contribution to solving global environmental issues, it resulted in no changes in governmental policies, priorities, or approaches to environmental problems.

Change within Japan will be difficult and time-consuming. Environmental reform of Japan's development funding may require a Herculean restructuring and reorientation of the entire system. Pressure from outside Japan's aid bureaucracy will be needed, but Japanese NGOs have been hampered by cultural, financial and other constraints. The weakness of Japanese NGOs in comparison to big businesses, ruling party politicians and bureaucrats, and their lack of access to information, means that groups in other countries must support their reform campaigns.

The nature of Japan's bureaucracy and its economic success has led to deep-rooted convictions among Japanese policy-makers that they know how to promote successful economic development, even in countries with cultural, social and environmental conditions very different from Japan itself. Perhaps only more tragic disasters will convince them that they may be mistaken.

This article is an abridged version of *Japanese Economic Assistance and the Environment: The Need for Reform*, a report prepared by Richard A. Forrest for the National Wildlife Federation.

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# Electromagnetic Cover-Up

*Attempts to water down a US Government report linking exposure to electromagnetic fields to cancer have provoked charges of a cover-up.*

A two-year study commissioned by the US Environmental Protection Agency (EPA) has concluded that there is a significant link between exposure to extremely low frequency (ELF) radiation and the occurrence of human cancer. The study group's report *An Evaluation of the Potential Carcinogenicity of Electromagnetic Fields*, was made available in June amid much publicity.<sup>1</sup> However, it has emerged that the conclusions of the EPA assessors have been watered down significantly in the published version of the report, prompting charges of a cover-up.

Early drafts of the report, which were leaked to various sections of the American media, recommended that ELF electromagnetic fields (EMFs) be classified as "probable human carcinogens".<sup>2</sup> The EPA assessors also recommended that radio-frequency and microwave radiation be designated as "possible" carcinogens.<sup>3</sup>

As originally drafted, the summary of the report stated that although the biological mechanisms by which non-ionizing radiation might cause cancer in humans are unknown, animal tests and epidemiological studies "are suggestive of a causal relationship". According to the New York-based newsletter *Microwave News*, the following paragraph concluded the draft summary — until it was deleted in mid-March by Dr William Farland, Director of EPA's Office of Health and Environmental Assessment, the body which prepared the report:

"Concerning exposure to fields associated with 60 Hz electrical power distribution, the conclusion reached in this document is that such exposure is a 'probable' carcinogen risk factor, corresponding to 'B1' degree of evidence that it is a risk factor. This conclusion is based on 'limited' evidence of carcinogenicity [in] humans which is supported by laboratory research indicating that the carcinogenic response observed in humans has a biological basis, although the precise mechanisms [are] only vaguely understood."<sup>4</sup>

As published, however, the report concludes that studies of leukaemia, lymphoma and brain cancer in children and adults occupationally exposed to extremely low frequency EMFs, "show a consistent pat-

tern of response that suggests, but [does] not prove, a causal link." The recommendation that ELF radiation be classified as a "probable human carcinogen" has also been deleted from the officially-released version, as has the recommendation on classifying radio-frequency and microwave radiation as "possible" carcinogens. The deletions were made by Farland because there was, in his judgement, an absence of both a mechanism of interaction and an observed dose-response relationship.

## Positive Association

Despite the deletions ordered by Farland, other sections in the report underline the original conclusions. For example, after evaluating the 28 studies of occupational exposure to EMFs, the report states:

"The occupational studies seem to suggest the likelihood that there exists a positive association of leukaemia and central nervous system cancer with employment in jobs that have a high potential for exposure to EMFs."

And assessing six studies of childhood cancer and EMFs, the report concludes:

"The case-control studies of children residentially exposed to magnetic fields provide evidence of a positive

association of a risk of certain types of cancer, namely leukaemia, central nervous system cancers and lymphoma. Because these measured risks are low in all of these studies the possibility that some unknown confounder is responsible cannot be eliminated. However, because of the consistent positive findings and suggested site concordance, chance is not likely to be the explanation."

Referring to the work of both the Polish researcher Szmigielski, and Dr Bill Guy at the University of Washington, on the effects of radio-frequency radiation, it is stated that:

"The clear positive findings of Szmigielski et al. show that radio-frequency fields without low frequency components stimulate the growth of tumours and indicate that they may act as a tumour promoter, or a modifying factor in the development of tumours, the role of tissue heating as a mechanism for this effect is not clear."

Comments such as these are the strongest yet made by a US government agency on the connection between human cancer and chronic exposure to electromagnetic fields from sources such as powerlines, visual display units, household appliances, radio broadcast and microwave systems. It is reported that the question of how to deal with EMFs is being debated at the highest levels of the Bush Administration. Indeed, the White House was briefed in early March by EPA officials on the report's original recommendations.

Simon Best

## Electromagnetics

*A news report on non-ionising radiation* NEWS

Following the success and interest shown in *Electromagnetic Man: Health and hazard in the electrical environment* by Dr Cyril Smith and Simon Best (Dent, 1989, and St Martin's Press, NY), Simon Best has launched the above bi-monthly (6/yr) report to keep those interested aware of the latest research on the biological effects of EMFs from powerlines, VDUs, microwaves, etc, and related areas.

Subscription (1991) is: (individuals) £18/yr (£3/issue); (companies) £44/yr (£8/issue). Send cheques/POs payable to *Electromagnetics News* to PO Box 25, Liphook, Hants GU30 7SE. Advertising rates and back issues available. Overseas postage extra on enquiry. *Electromagnetics News* is produced by Information Production Services Ltd.

## Notes and References

1. Copies of the report can be obtained from: The Environmental Protection Agency, 401 Main Street SW, Washington, DC 20460, USA. Tel: (202) 382-5898. Currently, there are five independent studies on the link between childhood cancer and EMFs being carried out in Europe and North America.
2. *Nature* 345, 7 June, 1990, p.463.
3. Other substances currently listed under classification B (probable human carcinogen) of the EPA's five-fold "weight of evidence" categorization, include PCBs, DDT and formaldehyde, while category C (possible human carcinogen) includes methyl chloride and saccharin. Class A (human carcinogen) includes asbestos and benzene, while Classes D and E refer to lack of evidence of carcinogenicity.
4. *Microwave News*, May/June 1990.



## Books

### Options for the Green Party

**A GREEN MANIFESTO FOR THE 1990s**, by Penny Kemp and Derek Wall, Penguin, London, 1990, £4.99 (pb), 212pp. ISBN 0-14-013272-4.

**GETTING THERE**, by Derek Wall, Green Print, London, 1990, £4.99 (pb), 149pp. ISBN 1-85425-034-5. With an introduction by Penny Kemp and contributions from Mary Mellor, Peter Tatchell and Ted Trainer.

Penny Kemp and Derek Wall's *A Green Manifesto for the 1990s* seems hurriedly written, has no obvious line of argument, and badly lacks subheadings. Hundreds of commendable ideas tumble willy-nilly onto the pages in a torrent of green consciousness, so that it is difficult to keep one's head above water.

At the end of Chapter Two, ex-Conservative Party Chairman Kenneth Baker is cited, claiming that the Green Party wants to turn the people of Britain into "environmentally friendly peasants". "Read the rest of this book," the authors urge, "and judge for yourself the accuracy of Mr Baker's analysis". At last it appeared that a theme to the book was emerging.

Baker chooses his words shrewdly. In Britain, "peasant", which means country-dweller, is a term of contempt. Across the English Channel however, 20 million French people cheerfully call themselves "*paysans*". What Baker means is that Britain under the Greens would become a "Third World country". It is a common electoral fear, and not unreasonable. The Green Party maintains that economic growth must be limited by resource deple-

tion. If existing resources are to be fairly distributed throughout the globe, should we not expect, horror of horrors, a declining standard of living?

Unfortunately the authors never quite grasp this nettle although it crops up everywhere. We are advised to emulate the Chinese, "who support one fifth of the world's population on half as much arable land per person as there is in India." Yet we are gaily informed that "there is plenty of land: about 21% of the world's surface is arable, yet only 8% is farmed." At the other end of the spectrum, the authors welcome "the substitution of high-performance ceramics for steel components". Are we to envisage a world where even the poorest Chinese peasant drives a solar-powered ceramic hatchback, and eats genetically-engineered soya-burgers from a cold fusion-powered microwave . . . and still empties his night-soil onto his paddy field?

"Peasantry" is a complex subject — and well worth tackling. Sadly this book is so shapeless that by the end we still have little idea whether the Greens advocate high-tech peasantry, or low-tech peasantry, or no peasantry at all.

### Muddled Thinking

The emphasis given to different issues in *A Green Manifesto for the 1990s* is totally skewed. Half a page is devoted to rainforests, one parenthetical sentence to immigration, three whole pages to vivisection. Animal rights gets star billing: "Animal Liberation, more than any other issue, is the one that makes green politics different." Really? Well, I for one, did not join the Green Party to support the muddled thinking and ill-considered generalizations on this subject that are given such prominence by the authors.

Meat production, Kemp and Wall argue, is "an inefficient use of the Earth's scarce resources." Well, often, yes. Most luxuries are. But it is surely more environmentally sound, for example, to eat lard from a pig fed on whey, beer slops and old school dinners, than soya margarine from rapacious farming schemes in Brazil. When they state that, "the catching of wild animals would be a crime in any green society," I shudder. Aside from my own rabbit stews, are they not aware that meat and fish are primary renewable resources in rainforests? Or that bushmeat management is agreed by many conservationists to be the soundest solution for protein deficiencies in Southern Africa? At root is a reluctance

to distinguish between the slaughter of individual animals for consumption, which, as almost all peasants know, is integral to life itself; and the extinction of species, which is usually due to habitat destruction, or over-sophisticated hunting technologies.

Curiously, in her introduction to *Getting There*, Penny Kemp retracts this emphasis. Here, it is "the question of economic growth that has been central to the green critique of modern industrial society. It is where greens part company with mainstream politicians." Quite so, and it was therefore disturbing that the 1990 Green Party Conference was marked by a determination to stress that the Greens are no longer, "the party of zero growth, but the party of green growth." If you want to act as a brake on an almost irresistible momentum, why simultaneously assume the function of accelerator? All the other parties are rushing to embrace concepts such as "green growth", "sustainable growth" and "green capitalism". If the Green Party joins them, it will indeed be distinguishable only by a preponderance of vegans and animal liberationists.

*Getting There* is a rather better book (except that it fell to bits while I was reading it). It postulates not so much a peasant Utopia, as a cooperative, decentralized society, not addicted to growth, where the elimination of the innumerable absurdities of consumer capitalism would permit a redistribution of the world's re-

*"The question of how we will non-violently win 'the battle for the planet' has never been addressed by the Porritts and Goldsmiths of the Green movement."*

sources without any lowering of the quality of life. But the book's main purpose is to determine not what we want to achieve, but how we are to achieve it. The founder editor of *The Ecologist* is among those taken to task: "The question of how we will non-violently win 'the battle for the planet' has never been addressed by the Porritts and Goldsmiths of the Green movement."

Wall describes what would happen were the Green Party, or a like-minded coalition, voted into office: "it would be met by an almost instant collapse of sterling, as capital went elsewhere. The exchange rate



## One Earth, One Future Our Changing Global Environment

C.S. SILVER, National Academy of Sciences, Washington, USA

In just a small fraction of the time of our brief presence on earth, humans have become a powerful agent of change in the global environment. This easy-to-read volume can help concerned individuals understand the basic science behind global environmental problems and the policy implications that are part of the search for solutions. The book contains fascinating accounts of an emerging science of the earth system and how scientists have begun to understand the workings of the earth. Describing the earth as a unified system, the authors explore the interactions between the lands, water, and atmosphere, and the snowballing impact that human activity is having on that system.

0309041414 150pp December 1990 approx £10.70/\$14.95  
Published by National Academy Press, USA

## Wheat Genetic Resources: Meeting Diverse Needs

Edited by J.P. SRIVASTAVA and A.B. DAMANIA, International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria

Plant breeding in recent decades has reduced the genetic variability of wheat varieties commonly grown by farmers in many parts of the world. This book is a collection of papers presented at an international symposium on wheat genetic resources, held at the International Center for Agricultural Research in the Dry Areas (ICARDA) in Aleppo, Syria in May 1989. The papers describe worldwide efforts to evaluate and utilize the stocks of wheat germplasm held by genebanks. They discuss the problems of managing and evaluating large collections of germplasm, the statistical techniques that can be used to improve the reliability of results, and the recent advances in cytogenetics that can be applied to increase the efficiency of both evaluation and plant breeding efforts, facilitating the process by which valuable genes can be located and transferred between species.

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## Seaweeds

### Their Environment, Biogeography and Ecophysiology

K. LUNING, Biologische Anstalt Helgoland, Hamburg, W. Germany  
English language edition edited by: C. YARISH, University of Connecticut, Stamford, Connecticut, USA and H. KIRMAN, CSIRO Fisheries, Marmion Laboratories, North Beach, Australia

Updated and expanded, this book is a translation and thoroughly revised edition of the highly acclaimed 1985 German book, MEERESBOTANIK. Now containing more paleo-oceanographic than before, the book includes maps showing the geographical distribution of 44 individual seaweed species of the northern hemisphere, plus an extensive bibliography. Controversial views and open questions are presented, as well as possible reasons for the present distribution patterns in the course of geological time. Part 1 presents the geographical distribution of seaweeds and seagrasses around the world, environmental factors, floral history and relevant paleo-oceanographic considerations. Part 2 covers seaweed ecophysiology, including the relationships of light, temperature, salinity and other abiotic factors on seaweed distribution, as well as biotic factors such as competition, herbivory, predation and parasitism.

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A Wiley USA Title

## Natural History of Blackflies

R.W. CROSSKEY, Department of Entomology, British Museum (Natural History), London, UK

Until now the enquiring entomologist has needed to scan a massive, scattered and sometimes abstruse literature to uncover information about the general biology of the flies of the family *Simuliidae* (blackflies). This work is based on a synthesis of knowledge that until now has been essentially only available to the specialist and has needed collation and interpretation in a more generally available form. The author's guiding theme has been to provide a readable text for freshwater biologists, tropical doctors, parasitologists, veterinarians and cytologists. With over 1200 scientific references and beautifully drawn illustrations, this book is presented as a state-of-the-art summary of biological knowledge of blackflies.

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## Coastal Dunes Form and Process

Edited by K.F. NORDSTROM, N. PSUTY, Rutgers University, New Brunswick, New Jersey, USA and B. CARTER, University of Ulster, Co. Londonderry, Northern Ireland

Until now, there has not been any major book to deal specifically with coastal dunes. This current volume surveys a range of coastal dunes such as the ephemeral characteristics in the rapidly subsiding Mississippi delta, the extensive sand sheets of Australia and South Africa and the Holocene dunes of Western Europe and North America. The book deals with the formation and establishment of coastal dunes, considering both forms and processes in a wide variety of environments.

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## Introduction of Genetically Modified Organisms into the Environment SCOPE 44

Edited by H.A. MOONEY, Stanford University, California, USA and G. BERNARDI, Institut Jacques Monod, Paris, France

There has been a continuing concern regarding the potential consequences of the release of genetically-engineered organisms into the environment. This book first views the history of concerns regarding genetic manipulation in general, and then examines the genetic, population, and ecological dimensions of the release issue. Finally, approaches to assessing risks and setting safety standards are given. A principal conclusion of the book is that the environmental introduction of any organisms, modified or unmodified, should be undertaken within a framework that maintains appropriate safeguards for the protection of environmental and human health while not discouraging innovation.

Series: Scientific Committee on the Problems of the Environment (SCOPE)  
0471926779 224pp October 1990 \$45.00/\$103.50

## Seaweed Resources in Europe Uses and Potential

Edited by D. GUIRY, University College Galway, The National University of Ireland, Galway, Ireland, and G. BLUNDEN, Portsmouth Polytechnic, Portsmouth, UK

Seaweeds represent a large, renewable, but currently under utilized resource. With the increasing demand for new foods, medicinal agents and other products of potential economic value, seaweeds have attracted considerable interest as a source of these requirements. This book provides a fascinating insight into this field of research. In view of their industrial importance, the seaweed polysaccharides are given prominent coverage, including their applications in biotechnology and their uses as foods and in pharmaceutical preparations. Other topics discussed include the utilization of seaweeds and seaweed-derived products in cosmetics, animal and human nutrition and agriculture.

0471929476 456pp February 1991 approx \$65.00/\$149.50

## The Rhizosphere

Edited by J.M. LYNCH, AFRC Institute of Horticultural Research, Littlehampton, UK

Micro-organisms that live around a plant's roots can improve its growth or damage it. By manipulating the population balance of the microbial communities or by modifying the plant and microbial genomes, there is opportunity to optimize crop yields without loading the environment with chemicals. This book stresses the need for an interdisciplinary approach to the rhizosphere involving agronomy, ecology, genetics, microbiology, plant pathology and physiology and soil science. Its applications range from the environmental impact of genetically engineered organisms to reduced-input farming systems.

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would fall, and industrialists would move their factories to countries with more relaxed environmental controls. Sources of finance would dry up as unemployment rocketed, slashing the revenue from taxation. The money for environmental reconstruction would run out." It is capitalism's ultimate contradiction that "minimizing consumption would lead to chaos, although increasing it . . . would lead to biological collapse."

Wall envisages consolidating a future green government by building alternatives within existing society: changed consumption patterns, ethical investment, local currency schemes, cooperative resource centres, barter systems and home-grown vegetables; "islands of cooperation within the capitalist ocean". This should be integrated with electoral politics: "Green parties should organize around discrete areas and look at how they might green their city, street or ward."

This is none other than our old friend "the alternative society" with his hair cut and standing for office — and none the worse for that. But one can already hear the groans of disillusioned ex-hippies. Wall concedes that "the communes, city farms, and alternative technology projects set up in the 60s and 70s have largely collapsed." A lot of people emerged embittered from these débâcles. Disproportionately so, in retrospect — failure at first attempt is not unusual. First time bankrupts do not normally renounce capitalism.

## Psychological Change

Wall could profitably have pursued the remark by Richard Hunt in *The Natural Society* that most alternative communities fail "on a social level, because they never take their grandparents". Instead he concludes by arguing that we must "go beyond economics" and undergo a "spiritual/psychological change". Luminaries such as Debord and Gramsci, Fromm and Gurdjieff are invoked in rapid succession; but by the end, though we may well agree, I am not sure that we are any the wiser.

Finally, the debate is thrown open to three guest contributors. Mary Mellor and Peter Tatchell provide some useful comments. And Ted Trainer, in eight concentrated pages, reshapes much of Wall's argument. Alternative structures are valuable "mainly as a means of educating people, otherwise they may become hobby obsessions of a small minority." As for electoral politics, "one must think very carefully

about whether or not that is the most cost-effective option."

Trainer's conclusion sums up the book: "the curves of awareness and concern have come up from the base line in the early 1960s, to remarkable levels now . . . It might take another 20 years, but at some point we will have built the critical mass of public opinion that will be sufficient to tip the balance, and then the structural changes will start to take place rapidly".

Simon Fairlie

Simon Fairlie is a member of the Green Party and has been a candidate in a local government by-election.

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## Shut Up and Listen!

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**BIG MOUTH: The Amazon Speaks**, by Stephen Nugent with drawings by Humphrey Ocean, Fourth Estate, London, 1990, £16.95 (hb), 248pp. ISBN 1-872180-65-5.

**BEHIND THE SMILE: Voices of Thailand**, by Sanitsuda Ekachai, Thai Development Support Committee, Bangkok, 1990, £5 (pb), £8 including postage and packing from TDSC, 530 Soi St. Louis 3, South Sathorn Road, Bangkok 10120, Thailand, 197pp. ISBN 974-85666-8-4.

A disturbing aspect of many discussions among environmentalists and development enthusiasts in Europe and the US is how often both sides seem to take it for granted that the future of the South is a matter for the North to decide. Whether the topic is structural adjustment loans or biodiversity conservation, the tropics are treated too often as a territory without history, a resource dump or nature kingdom to be administered wisely through the advice of Northerners, with at most the "consultation" or "collaboration" of a few inhabitants.

The majority of the people in the countries being discussed, meanwhile, remain often not only unheard but invisible, having been replaced in Northern imaginations by inarticulate stereotypes of "short-sighted peasants" who have to be modernized out of their misery or "traditional peoples" inhabiting timeless theme parks. Instead of a story of centuries of social struggle and environmental destruc-

tion — in which Northern powers are almost invariably to be found among the cast of bad guys — we get a relatively inanimate vista consisting of vast stretches of "untapped raw materials" or "still-pristine rainforest" urgently awaiting "global management".

For environmentalists who are impatient to discredit such talk, to "distance" or "place" it by doing some critical sociologizing about those doing the debating, to change the subject to something a little more connected to reality, both these books provide welcome tools. Stephen Nugent's *Big Mouth* is a brilliant and hilarious trans-genre polemic — part travelogue, part hip, ironic anthropological/semiotic treatise, part Amazonian encyclopedia — with a core of rock-hard argument debunking the claims of both those who "develop" the Amazon and those who try to "save" it without attempting to come to grips with the international political economy and social relations that shape it. Sanitsuda Ekachai's *Behind the Smile* is a collection of journalistic narratives of villagers' struggles in Thailand. Like Nugent's book, it demonstrates how development (in one of its guises as the expropriation of local land, water and forests by metropolitan interests) affects ordinary people (in this case small farmers and fisherpeople), and how they respond. Despite their different styles, both authors work hard to give us a respectful picture of the actual (rather than the fictional) inhabitants of the two countries concerned, and share a strong sympathy with claims for local autonomy.

## Amazon Yacht Club

Nugent, a University of London anthropologist, suavely disposes of many of the myths which clutter up our view of the Amazon. Far from being an untouched natural paradise, he notes, the region bears the stamp of centuries of exploitation and colonialism, and most of its inhabitants live in cities. Clichés of Amazonian "civilization" and "primitivism" — exemplified by the Manaus opera house and scenes of Amerindians against a backdrop of lush foliage — obscure a less exotic but crucially important social reality represented by items which are in many ways more difficult to decode — for example, a flourishing but yachtless Yacht Club in Santarem, 500 miles up the river, or the T-shirts emblazoned with "Miss Nudity Concourse USA" worn by canoe-paddling fishermen.



The efforts to "exploit the exploitable" which are turning Amazonia into the "social equivalent of a toxic open-cast mine", Nugent continues, are not to be traced to "slovenly peasant" residents or to people who don't know what they are doing, but rather to "cost-benefit addicts" — the non-Amazonian and international power brokers who have dominated the Amazonian scene for decades. That doesn't mean, of course, that it isn't Amazonians who are going to be blamed and "disciplined into submission" for the disaster.

The World Bank's supposed efforts to relieve poverty as it joins in the plunder are meanwhile "cynically devoid of relevance", particularly since they are aimed at boosting economic growth mainly outside Amazonia. Bank-promoted "curbs on population growth... are likely to be made redundant by the absence of any population at all" when the Bank's "white-shoe smoothies" get through doing what they want to do. Adding to Amazonians' problems, are the technocrats who, subscribing to the "stupid *latino*" theory, believe that:

"Amazonia is threatened not so much by being felled/mined/developed/poisoned as by having such acts performed without the benefit of imported management expertise of the Business/Executive Class variety (the field boffin in short-sleeved, white nylon shirt, plastic protector in pocket, follows in Economy Class)."

No one has satirized more amusingly than Nugent the schemes according to which Northern groups buy land for Indians that they should already own, or purchase debts of tropical countries in exchange for environmental protection:

"This is designer imperialism for the 1990s. Hobson, Lenin, Luxemburg, what did they know? They all failed to predict that once core countries had managed to shift their crises decisively to the Third World through the mechanism of 'aid' pegged to floating interest rates, the next stage would consist of getting selected regions of the Third World to start buying themselves."

Also tagged as imperialist are some Washington NGOs, who, in order to give American policymakers the impression that Brazilian opponents of mainstream development policy are recognizable "environmentalists" of the non-threatening Northern type, tend to edit out the leftist background of the rubbertappers' movement. This, according to Nugent, helps ensure that political agendas continue to be

set by those already in power, and demotes Amazonian society "to the status of a mere aspect of the eco-system". Green celebrities such as Sting come in for similar criticism when they "mystify" the deforestation issue by implying that bursts of publicity and consumer concern can address problems which are in fact "engendered by the grotesque maldistribution of agricultural land, the absence of official commitment to existing legislation, the effects of unregulated extraction throughout the region".

## Considered Subversion

Like Nugent, Sanitsuda Ekachai tries to get behind the "stereo tunnel vision" inflicted by development theory, which sees only those aspects of Southern societies which belong either to industrial civilization or to the "primitivism which Europe has consented to bring up to date". Her method, though plainer, is equally considered and subversive: listen not to the authorities, but to ordinary people; describe their lives not as a technocrat or wire-service reporter would, but as a friend would.

In her recent travels through the Thai countryside, Sanitsuda found that development has consistently undermined the ecological foundations of village livelihoods. In some areas of Northern Thailand, for example, land speculators have "all but swept clean the villagers' community woods in their grand designs to turn them into plantations and resort homes for the city rich". Many farmers, their vulnerability to intimidation from officials and businesspeople increased because of their lack of formal land title, have been forced to sell their farms as well, falling into the insecure ranks of rural labourers. The intrusion of contract cash-crop agriculture, meanwhile, has forced many villagers into heavy pesticide use, resulting in widespread human illness and the death of animals and fish.

In the South, small Muslim fisherpeople's coastal fishing grounds have been swept clean by modern trawlers using fine nets, forcing them into the squid- and crab-trapping trade. Now the fisherpeople are being pushed off their beaches as well by tourist developers operating hand-in-hand with local authorities. The situation has been made worse by the destruction of most of the region's mangrove forests within the last decade to make way for industrial export prawn farms and other

developments; effluents from the farms and from seafood factories are killing fish and ruining rice fields.

The toll in human lives and hope implied by such stories is depressing, but what is not is the resistance and resourcefulness villagers show in the face of exploitation and ecological degradation. Whether it is young Northern farmers rising up against traditional village elders who have sold the village common to an industrial dairy farm, a 75-year-old retired teacher leading hundreds of singing villagers in protest against the bulldozers clearing local woodlands, or teenage Bangkok gem cutters pulling up stakes and moving their workbenches back to their home villages, it is the creative response of local people, not management from above, that counts when rural livelihood is at stake. Sanitsuda's book, like Nugent's, lives up to its subtitle by letting the voices of those who are finding these creative responses get a few words in for once. For whoever is listening, *Big Mouth* and *Behind the Smile* have plenty to say.

Larry Lohmann

Larry Lohmann worked with Thai NGOs for six years. He is an Associate Editor of *The Ecologist*.

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## The Book of the Magazine

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**5,000 DAYS TO SAVE THE PLANET**, by Edward Goldsmith, Nicholas Hildyard, Peter Bunyard and Patrick McCully, Hamlyn, London, 1990, £17.95 (hb), 288pp. ISBN 0-600-571564. (Published in N. America by The MIT Press, under the title **IMPERILED PLANET: Restoring Our Endangered Ecosystems**, \$39.95. ISBN 0-262-07132-0.)

*5000 Days/Imperiled Planet* is a distillation of the arguments and evidence accumulated in the pages of *The Ecologist*. The book deserves immediate inclusion in any lists of books of the year simply by virtue of its illustrations. It is difficult to do justice to the care with which they have been chosen. The pictures drive home the points being made in the text with great effect. The quality of their reproduction is superb.

But this is not just a pretty coffee table

book. The text documents how even the most remote areas of the Earth are now being polluted and degraded. The authors practise what they preach by recycling much material from *The Ecologist* thus making it available to a wider audience. Though the necessary expressions of thanks are provided at the end, no references are provided within the text. This helps create a very readable book which will make green ideas accessible to the general reader.

Step-by-step, the book takes the reader on a tour of the Earth's major ecosystems, providing snapshots of destruction at work. Again, this takes the book out of the class of "yet another book on the environment". The authors encompass not only familiar instances such as industrialized agriculture but also many more, not least the leisure industry which is spreading its blight to otherwise undamaged areas.

However, it is in their analysis of how this crisis has come about and how it can be resolved that the authors begin to slip. Successful prescriptions depend upon successful diagnoses but the analysis in *5000 Days* is weakened by a glib populism. The root causes of the crisis can be sub-divided into two groups: the self-serving behaviour of vested interests, upon which the populist tradition has always focused; and the "tyranny of small decisions" in which otherwise harmless decisions become harmful simply because too many people make the wrong decision, even though they intend no harm. About this populism is silent.

## MICRO-COSMOS

FOUR BILLION YEARS OF  
MICROBIAL EVOLUTION

BY LYNN MARGULIS  
AND DORION SAGAN

"Microcosmos is nothing less than the saga of the life of the planet. This extraordinary book, is unlike any treatment of evolution for a general readership that I have encountered before."

FROM THE FOREWORD BY DR.  
LEWIS THOMAS

Price was £12.95 now £7/\$14 plus  
£1.50 UK and £2/\$4 overseas surface  
p&p. Cheques and orders to WEC  
Books, Camelford, Cornwall, PL32  
9TT, England.

The authors of *5000 Days* are too keen to blame everything on "Them", and skip over the deeper crisis in human values and priorities. For example, we are told in the chapter on 'The Dynamics of Destruction' that "population growth has not caused these problems" (environmental disasters in the Third World). This is nonsense and is contradicted by evidence nine pages before in a chapter on 'The Overloaded World' where the authors explain clearly the significance of human numbers, including, to their credit, those in the richer countries.

One cause of the population explosion has been the suppression of various diseases through immunization and other health programmes. This was not a capitalist conspiracy to increase the number of consumers. Similarly, the destruction of the world's wildlife was underway long before corporate capitalism came on the scene. And the ski slopes which, as the authors note, are helping to destroy the Alps, have been built mainly because lots of people want to go skiing.

Despite the implications of its title, *5000 Days* does not provide a detailed description of the mechanics and time-table of the transition to a sustainable society. I think it would be unreasonable to expect our authors to do so. They do, however, provide suggestions where we might begin.

The authors conclude with a call to devolve power to local communities. I do not disagree with this but it would not make much difference if the cultural problems alluded to above have not been resolved. Though the authors cite many examples of local communities fighting the imposition from above of inappropriate development programmes, it is just as easy to provide examples of localities fighting each other for the "privilege" of hosting them.

In fairness, however, I must stress that the book tries to end on an upbeat note. This might well serve its intended readership better than a more lengthy and contentious exposition about how to restructure society. Whatever its weaknesses, *5000 Days/Imperiled Planet* is a great achievement. I have had a copy for only a week but I have profited from consulting it many times already. It is not cheap but it is genuine value for money.

Sandy Irvine

Sandy Irvine is researching ecologically sustainable land use in upland Britain. He is an Associate Editor of *The Ecologist*.

## An Agenda for the 21st Century

**ENERGY POLICY IN THE GREENHOUSE: From Warming Fate to Warming Limit**, by Florentin Krause, Wilfred Bach and Jan Kooney, Earthscan, London, 1990, £29.95 (hb), pages not numbered continuously. ISBN 1-85383-080-1.

Nineteen-ninety will go down in the history of environmental campaigning as the year in which a scientific consensus on the implications of the build-up of greenhouse gases in the atmosphere was firmly reached. The report of Working Group 1 of the Intergovernmental Panel on Climate Change (IPCC) establishes beyond reasonable doubt that the world is going to get unpleasantly warmer within 30 years if no action is taken to curb global warming. So, as we move into 1991, the focus of debate shifts from the science to the policy implications — what can we, and should we, be doing *now* to curb global warming?

Part of the answer — or, at least, a signpost pointing the way ahead — can be found in this volume from Earthscan. *Energy Policy in the Greenhouse* looks at the time span from now until 2100, and outlines the scope of the action needed. It calls for an international agreement to limit the total release of carbon dioxide from fossil fuels over the next century so that the rate of warming is kept below the 0.1 degrees centigrade per decade which is becoming accepted as the maximum which natural ecosystems can tolerate. The maximum rise in temperature relative to 1850 that the report regards as tolerable, even beyond 2100, is 2.5 degrees centigrade — and since there has already been a warming of half a degree, clearly even the 0.1 degree rise per decade is not something that can be tolerated for long. For comparison, the IPCC projects a warming of 0.3 degrees per decade over the next 40 years in a "business as usual" scenario. Such projections ought to be sharply focusing the minds of policymakers.

To stay within their temperature change limits, Krause, Bach and Kooney state that the amount of carbon dioxide allowed to be generated from fossil fuels over the next 110 years would be half of the amount that would be released if emissions continued at present day (actually, 1985) levels. And even this level of carbon dioxide emissions



can only be accepted if CFC emissions are phased out completely by 2000, there is a major global programme of reforestation, and (the joker in the pack) methane emissions are at least slightly reduced.

Methane is the joker because there are suggestions that as the world warms more methane will be released — for example, from the thawing permafrost regions of the northern hemisphere — in a positive feedback that will accelerate global warming. So, if anything, the projections in this report err on the side of optimism. With that perspective, it is long past time for politicians to grasp the fact that an *optimistic* view of the future sees global releases of carbon dioxide back to 1985 levels within 15 years, with a 20 per cent reduction by 2015, a 50 per cent reduction by 2030, and a 75 per cent reduction by 2050. And industrialized countries will have to cut back their use of fossil fuel even more rapidly to allow for developing countries to stabilize emissions at, perhaps, twice their output in 1985.

The value of this book is that it confronts the issues involved in achieving these targets, looking at how the global carbon "budget" could be shared and at the political mechanisms, such as protocols, that might be used to achieve these ends. Hardly surprisingly, almost the last words in the book are "the above agenda raises political and implementational questions that seem overwhelmingly difficult, given past experience with international cooperation. Nobody has yet been able to figure out how the political will can be mobilized to undertake such unprecedented global action." But the bottom line is still that the problems are technically soluble, given the political will, and the sooner we act the less difficult it will be in the longer term.

*Energy Policy in the Greenhouse* ought to be required reading for everyone involved in the environmental debate. But it is fairly technical, and full of charts and tables of great value to the *cognoscenti* but possibly daunting to the casual reader. It also costs a ludicrous price. So my practical recommendation is to make sure your library stocks it, and read at least the executive summary. This is very much a preview of green politics in the 21st century.

John Gribbin

Dr John Gribbin used to be an astronomer but decided there are more pressing problems closer to home. His latest book (sensibly priced in paperback) is *Hothouse Earth: The Greenhouse Effect and Gaia* (Black Swan).

## BOOKS DIGEST

Books which are covered in the digest may be given full-length reviews in forthcoming issues.

- **GREEN REVOLUTIONS: *Environmental Reconstruction in Eastern Europe and the Soviet Union***, by Hilary F. French, Worldwatch Paper 99, Worldwatch Institute, Washington, DC, November 1990, \$4/£2.75, 62pp. ISBN 1-878071-00-9. Available in the UK from WEC Books, Worthyvale Manor, Camelford, Cornwall, PL32 9TT. Please add 50p postage.

This report brings together a wealth of facts and statistics on the appalling state of the region's environment. Given the current political, social and economic chaos in Eastern Europe and the Soviet Union, French's conclusion that the market reforms underway provide the policy instruments needed to reverse environmental decline is extremely optimistic. "Market pricing, environmental taxation and strong regulations can all encourage the development of an economy that is environmentally sustainable as well as market-oriented."

- **THE GAIA ATLAS OF FIRST PEOPLES: *A Future for the Indigenous World***, by Julian Burger with campaigning groups and native peoples worldwide, Robertson McCarta, London, 1990, £8.95 (pb), 192pp. ISBN 1-85365-113-3.

A wide-ranging introduction to the world's 250 million indigenous people, their cultures and beliefs, the repression and exploitation that they face, and how they, and indigenous solidarity groups, are struggling for their rights. In the foreword, UN bureaucrat Maurice Strong claims that indigenous peoples are "indispensable partners as we try to make a successful transition to a more secure and sustainable future". I wonder if Strong has consulted his "partners" on this project?

- **THE GAIA ATLAS OF FUTURE WORLDS: *Challenge and Opportunity in an Age of Change***, by Norman Myers, Robertson McCarta, London, 1990, £8.95 (pb), 192pp. ISBN 1-85365-123-0.

Two-page chapters and clever graphics on subjects as diverse as "Supercities" and "Dynamic peace" make a quick sweep through the world's environmental and social problems and the technologies and social and political systems that could solve them. A future is envisaged of "planetary citizenship" and "cheap teleconferencing, data-transmission techniques, on-line roundtables, resource-sharing collectives, (and) volunteer-talent pools".

- **THE STATE OF THE EARTH: *An Atlas of Environmental Concern***, edited by Joni Seager, Unwin Hyman, London, 1990, £7.99 (pb), 127pp. ISBN 0-04-440692-4.

More of a true "atlas" than the two Gaia books, *The State of the Earth* contains 37 full-colour maps of the world, illustrating environmental problems such as species extinctions, air quality, the toxic waste trade and "war-wasted lands". The format allows for the clear presentation of a mass of data.

- **LESSONS OF THE RAINFOREST**, edited by Suzanne Head and Robert Heinzman, Sierra Club Books, San Francisco, 1990, \$14.95 (pb), 275pp. ISBN 0-87156-682-6.

A collection of 24 essays written by leading commentators including Vandana Shiva, Bruce Rich, Anne and Paul Ehrlich and Frances Moore Lappé. The short and very readable contributions cover the issue from a wide range of different approaches; biological, ecological, anthropological, legal, economic and activist.

- **GLOBAL FOREST RESOURCES**, by Alexander S. Mather, Belhaven Press, London, 1990, £29.95 (hb), 341pp. ISBN 1-85293-055-1.

An excellent, comprehensive academic survey of the state of the world's forests. Mather writes from an historical, geographical and environmental perspective. He castigates those who see "forest management" as a purely technical issue and concludes that the basic problems are political, social and economic.

Patrick McCully



## Letters

### Not Marx's Fault?

Dear Sir,  
John Hardesty seems to have read more into my letter on Marx than was intended (see *The Ecologist*, Vol. 20, Nos. 1 and 4, 1990). It was certainly not meant to be an "ecological defence of Marxism". I merely sought to correct Robyn Eckersley's misrepresentation of Marx's labour theory of value and her suggestion that Marx was completely anti-ecological. As Fritjof Capra demonstrates in *The Turning Point*, Marx did not completely ignore ecological issues. His ecological outlook was, however, extremely limited. Whether he would have continued to advocate unbridled economic expansion and what he would have made of "socialist" experiments in Eastern Europe and other countries were he alive today is open to speculation. It certainly does seem

unfair to blame Marx for everything his followers have ever done.

As John Hardesty says "failed" philosophies should be rejected. This certainly applies to the mechanistic view of life, which seeks to reduce psychology to biology, biology to chemistry, and chemistry to physics. But even holism (traces of which can be found in Marx) remains flawed if it persists in the materialistic dogma that life and consciousness are by-products of matter. It is a telling fact that virtually all the founders of modern physics became mystics, including Einstein, Schrödinger, Heisenberg, De Broglie, Planck and Pauli. They discovered that to go beyond the shadows which we mistake for the real world is to go beyond physics altogether and into metaphysics. The contemporary revival of interest in Eastern mystical traditions such as Hinduism and Buddhism, which teach the spiritual oneness of all that exists, is a welcome development.

Yours faithfully,  
**David Pratt**  
Nicolaas Tulpstraat 37  
The Hague  
The Netherlands

### Dialectical Subterfuge

Dear Sir,  
In regard to Peter Dickens' quotation of Karl Marx's *Economic and Philosophical Manuscripts of 1844* (Letters, *The Ecologist*, Vol. 20, No. 5, 1990) it should be noted that Marx used the term "science" in a

manner that we would find more than slightly bizarre today. Marx was a dialectician. His idea of "science" was fundamentally based on the misconception that his modification of Hegel's rules was an infallible method of prediction. The term "scientific socialism" meant nothing more than his illusion that the Hegelian method of abstract wordplay proved that socialism was inevitable. In his famous letter to Joseph Weydemeyer Marx admitted that none of his economic or political theory was original, but he stated that his claim to fame was that he had "proved" that socialism was the inevitable result of what his system classified as "contradictions" on capitalism. Some proof!

The system of dialectics, whether Hegelian or Marxian, is merely a method of verbal subterfuge whereby abstract categories are arbitrarily opposed to each other in a mental calculus that can produce whatever "solution" the practitioner desires. The "subsuming" that Dickens quotes from Marx is merely one more instance of Marx's lifelong addiction to paradoxical statements wherein the antimonies of his thought system are contrasted in a show of superficial brilliance.

Neither the young Marx nor the old Marx, nor any imaginary Marx hatched in the incubator of academia, has anything to say to the modern world or to ecology.

Yours truly,  
**Dr Pat Murtagh DVM**  
#8-631 Roch Street  
Winnipeg  
Manitoba R2K 2P8  
Canada

### ADVERTISEMENT

## QUIET DESPERATION

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QUIET DESPERATION started three months ago, with an advertisement in the Guardian on October 2nd. The advertisement aroused considerable interest. Three national newspapers rang the Guardian to find out more and one, the Sunday Telegraph, ran a two-column article in its next issue. Radio Birmingham phoned to arrange an interview on its evening chat-show. The interview ended with the host of the programme suggesting that QUIET DESPERATION might turn out to be the political force of the nineties. The spate of postal enquiries surprised the Guardian and was still bringing four or five letters a day when this advertisement was composed seven weeks later.

If you would like to hear more about our ideas and our plans, send a (largish) s.a.e. to the address below. If you feel like adding some (brief) comments of your own, by all means feel free to do so. The project is still in the formative stage and ideas are welcome. A venture on this scale is going to need the widest possible consensus of informed opinion.

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### NICARAGUA ENVIRONMENTAL WORK BRIGADES 1991

The Environmental Network for Nicaragua and Nicaragua Solidarity Campaign are looking for fit, adaptable volunteers to work on two projects in Nicaragua.

- 1) SI-A-PAZ, Solentiname: July 2-Aug 18
  - 2) Malacatoya River Basin: Aug 8-Sept 6
- Closing date for applications - February 22nd.

Information and application forms from:  
NSC/ENN Brigades,  
23 Beviden Street,  
London N1 6BH.

**DESIGN FOR RURAL INDIA** offers short-term work-for-your-keep positions to craftspersons, builders, inventors, mechanics and farmers. Write with details of yourself and questions to: Padma Rajagopal Joshi, Alpha Centaurs, Survey No 35, Maidanahalli, Yelwal, Mysore-571 136, India. Tel: (0821) 42392.

**KASANKA NATIONAL PARK, ZAMBIA.** Volunteers are sought to assist in research on birds and mammals for this unique holistic non profit conservation project. Working holidays with scientists in the field in association with the Durrell Institute for Conservation and Ecology, University of Kent and the Manchester Polytechnic—17 days round trip £1,295 all inclusive. For details: Peter Moss, 146 Gloucester Road, London SW7 4SZ. Tel: 071 370 5032.

Students from Aeronautical University completing degrees in Aviation fields (such as flight, computer science, engineering and business administration) desperately seeking alternative career choices to form data base of socially and environmentally responsible companies. Contact S.S.U.R.F., Embry-Riddle Aeronautical University, 3200 N, Willowcreek Rd., Prescott, AZ 86301.

## CONFERENCES AND COURSES

The Centre for Environmental Management and Planning is holding several courses during 1991 on Environmental Assessment and Management and other subjects. Please contact Mrs Sandra Ralston on 0224 272480 or 272483 for further details.

**THEME RETREATS 1991.** The retreats provide an opportunity for quiet and prayer, are ecumenical in character and vary in style from silence to an exploratory approach. For details contact Canon Charles Shells, 13 Dod Lane, Glastonbury BA6 8BZ. Please send 9" x 6" SAE.

**LOSEHILL HALL** again offers professional in-service training courses all through 1991. For further details and programme please contact: Peter Townsend, Peak National Park Centre, Castleton, Derbyshire S30 2WB. Tel: 0433 20373.



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- Ecological Spirituality - Henryk Skolimowski 11-12 Jan
- Retreats - Bishop Stephen Verney on 18-20 Jan & 8-10 Mar
- Development and Rainforest Peoples - Peter Bunyard 1-3 Feb
- Intuitive Weaving - Naomi Hunt 8-10 Feb
- Living with Dying - Christianne Heal 16 Feb
- Ecology and Evolution of Consciousness - Jeremy Naydler 16 Mar
- Women, Nature and Theology - Anne Primavesi 22-24 Mar
- Mystic Traditions of the World Religions, with leading scholars, seven Saturdays from 13 Apr to 8 Jun
- Gandhian Studies in Non-Violence, 1-3 Mar, 7-9 June, 11-13 Oct

For information on these and other events, please send SAE to:  
The Abbey Sutton Courtenay Oxon OX14 4AF. Tel (0235) 847401.

**THE ENERGY AND ENVIRONMENTAL CENTRE,** Hannover, West Germany offers weekly and weekend seminars or workshops concerning alternative energy, ecological products, nutrition etc. Apart from the Holiday House there is an engineers

department, organic garden department, a laboratory and Reed-bed Sewage system. For details contact: Energie-und Umweltzentrum, am Deister e.v., 3257 Springe - Eldagsen, West Germany (Tel: 5044-380.)

## DIARY DATES

January 21-23 1991: **SECOND AMA NATIONAL ENVIRONMENT** Conference. Speakers: Environment Secretary Chris Patten, Carlo Ripa de Meana, European Commissioner for the Environment, Bryan Gould, Shadow Environment Secretary, and Simon Hughes, Environment Spokesperson for the Liberal Democrats. Venue, Manchester Town Hall. Details from: Association of Metropolitan Authorities, 35 Great Smith Street, London SW1P 3BJ. Tel: 071-222 8100.

29 January to 1 February 1991: **MANAGEMENT OF ENVIRONMENTAL CONFLICTS AND IMPACT ASSESSMENT** — Module II. Venue — Bologna, Italy. This is the second part of a three part course. For further information contact: L. Vincenzi tel: 051-230567-237135. Fax: 051-222353.

The **CENTRE FOR CONTINUING VOCATIONAL EDUCATION** at the University of Sheffield is holding a one day course on 28 February 1991 on the Environmental Protection Act: Consequences for Industry. This will deal with new legislation brought about by the passing of the Green Bill. Tel: 0742 768653.

**WASTE RECYCLING AND DISPOSAL.** A one day seminar organised by IBC Technical Services in association with the University of East Anglia. Date: 7 March 1991 at the Marriott Hotel, London W1. Further details from Liz Hide on 071-236 4080.

The Society for Ecological Restoration is holding its Third Annual Conference for Ecological Restoration in Orlando, Florida, USA, 19-23 May 1991. The main areas of discussion will be Restoration on Surface-mined Lands; Restoration in the Third World Tropics; The Role of Restoration in National Forests. Deadline for submission of abstracts is 15 January 1991. For further details regarding papers or attendance please contact Society for Ecological Restoration, Lynn Alford Schmidt, 1207 Seminole Highway, Madison WI 53711, USA. Tel. 608-262 9547.

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# *A New Book from the Editors of The Ecologist*

## 5000 DAYS — TO SAVE — THE PLANET



Edward Goldsmith · Nicholas Hildyard  
Peter Bunyard · Patrick McCully

We live in a fragile and beautiful world which we are busy destroying and polluting. If radical action is not taken now, then the future of our planet hangs in the balance.

*5000 Days to Save the Planet* has been written by the editors of *The Ecologist* magazine, one of the oldest and most respected international environmental journals.

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