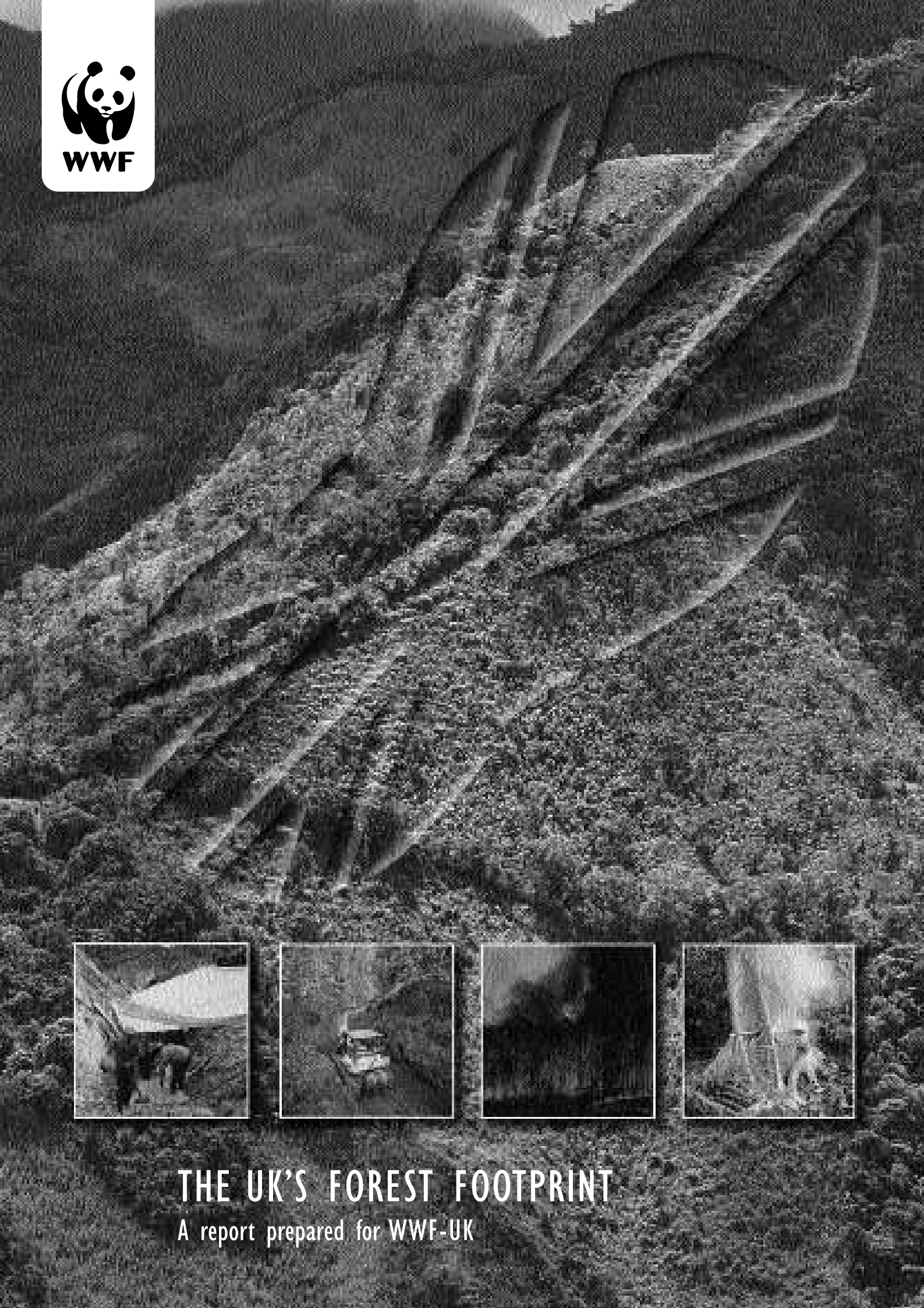

THE UK'S FOREST FOOTPRINT

A report prepared for WWF-UK

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PREFACE

The UK lost most of its natural wild forests hundreds or even thousands of years ago. Today, British conservation organisations are trying to protect the fragments that remain and to restore semi-natural forests and woodlands wherever possible. But what about our wider impacts? The UK's role as a major economic and trading power, as a source of training and expertise and as the base of many environmental organisations means that our forest footprint stretches well beyond the shores of the British Isles.

WWF's European Forest Team has identified the need to reduce damage caused by countries' forest footprints as a priority campaign issue for the 21st century. Accordingly, WWF-UK commissioned a dozen experts to look at our own forest footprint as it relates to activities ranging from import policies to development assistance. The current report draws on their conclusions and presents both a synthesis of what they found and some recommendations for how the UK could reduce negative impacts of its forest footprint.

The whole concept of one nation's responsibility for its wider ecological impact, or 'footprint' is quite new. We hope that the current exercise – which is still quite preliminary – will help draw attention to both our wider responsibilities and at some of the ways that our impacts can be measured and addressed.

Dr Paul Toyne
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SUMMARY

Exploring the UK's forest footprint

The UK's forest footprint is the total environmental and social cost of UK actions on the world's forest and forest peoples

There is agreement that the world's forests are being lost and degraded at an unacceptable rate and a vast international policy process has been attempting, with only limited success, to address these problems. The UK has a role – both good and bad – in what happens not only to our own forests but also to those in countries where we have economic and/or political influence. Despite our small size, our past and present economic power and colonial history mean that the UK's footprint on forests is greater than many countries of larger size.

This report aims to look at these impacts (our *forest footprint*), both from a historical perspective and at the present outside of the UK. The report covers most of the important ways in which the UK's footprint extends to forests beyond our borders. More importantly, it suggests specific policy options for reducing any negative impacts caused by UK citizens, government and industry. It is neither our intention nor our desire to condemn whole sectors and we believe that with sufficient will we can develop solutions to many of the problems. It is also not our desire to condemn the UK in particular. Every country has its 'forest footprint' and every country must learn to tread lightly if we are to secure a future for the World's forests. The UK's forest footprint can be divided into three broad categories:

- Impact through the actions of UK citizens and UK-owned companies benefiting directly from actions in forests outside the UK primarily involving resource extraction (energy, materials or food) but also extending to construction.
- Impact through the side effects of exports of potentially or actually damaging elements from the UK; primarily various forms of air pollution but also invasive species, including sometimes the human species in terms of tourism.
- Impact through policies and investment strategies – in the current report we have singled out aid policies for close examination although the UK's record in international trade negotiations and UN treaties could also have usefully have been examined.

RECOMMENDATIONS

WWF has identified a range of specific issues where the UK government, business community and general public can help lighten the UK's forest footprint and support the development of more equitable and sustainable forest policies. As the case studies show, in many areas our footprint has already been considerably lightened and many of the recommendations below are beginning to be implemented.

However, to truly achieve more equitable and sustainable forest policies all the areas listed below will need to be acted upon.

- Existing aid policies should be strengthened and integrated to initiatives linked with the maintenance and provision of sustainable resources for local communities: in the case of work in forest ecosystems this should include sustainable management of forest resources for a range of environmental and social benefits.

- The government should seek to ensure that trade rules, such as those of the WTO, do not undermine environmental and social safeguards, and that the standardisation of rules should aim to strengthen rather than weaken existing legislation. It should seek clarification of the relationship between WTO and multilateral environmental agreements to ensure that the two mutually support sustainable development.

- As part of this commitment, the UK government should continue to promote sustainable forest management and to support the development of independent forest certification through the Forest Stewardship Council, with particular emphasis on support for certification of small, community based forest management initiatives at home and abroad.

- UK companies and development projects should avoid projects in sensitive forest ecosystems and follow the same environmental and social guidelines in all their global operations, including strong codes of conduct and a commitment to full and transparent social, ethical and environmental reporting. Companies should provide full, cumulative, independent and participatory environmental and social impact assessments on any development projects. This should include:

  - Collecting adequate base line data before implementing the project;

  - Developing emergency responses to worst-case scenarios;

  - Considering alternative land/forest and water uses and lost opportunities;

  - Providing full public disclosure at least 60 days in advance of decisions.

  - Assessing indirect impacts (transportation, settlements, logging, etc.);

  - Monitoring and regular assessment;

- Government, industry and consumers should support reduction policies for non-renewable resources, including recycling. In particular further reductions in air pollution are essential to reduce impacts on forest ecosystems. As part of this commitment, the UK government should urge other developed countries to increase the rate of reduction of their greenhouse gas emissions.

- Any involvement in activities in forests should include technical and financial provision to cover restoration, reclamation, risk reduction and emergency action.

- Government, industry and consumers should unite to ensure sustainable and more equitable consumption through provision of information, independent environmental and social assessment and adequate chain of custody monitoring. Individual decisions by UK consumers and investors will play a key role in determining the country's long-term forest footprint.

- Issues of illegal resource extraction pose severe problems for both local communities and the environment. UK government aid and foreign policies should address these problems by:
  - Support for community forest management initiatives that help control illegal use;
  - Confiscation at port of entry of materials known or suspected to have been extracted illegally;
  - Supporting conservation programmes for threatened forest species and ecosystems;
  - Working with industry to replace timbers and other forest materials whose use threatens survival of biodiversity.
- Any UK involvement in resource extraction operations and other commercial activities in forest areas should respect protected area management objectives. This should include:
  - No involvement in major commercial exploration or extraction in protected areas;
  - Investment should be withheld from projects in countries without adequate legal frameworks and from enterprises without adequate codes of conduct.
- Projects should be integrated into wider development initiatives through ecoregional or bioregional planning, taking into account the sustainability of overall land uses, and recognising communities' rights including participation in planning decisions.
- There should be full respect to the rights of indigenous and other traditional peoples, including land rights, and they should be able to share fully and equitably in the benefits associated with any developments or trade in association with other stakeholders.
- Aid programmes should not be used to support the forcible resettlement of local people or the permanent settlement of people practising rotational-agriculture or nomadic-hunting systems.

WHY OUR FOOTPRINT IS IMPORTANT

The capacity of ecosystems to produce many of the goods and services we depend upon is rapidly declining. Forests perform essential 'environmental services', regulating global climate, preventing soil erosion and protecting watersheds. They also contain as much as 90 per cent of all terrestrial species of plants and animals.

Forests are therefore important to people in many different ways. To the urban population of the UK and Western Europe forests are places for recreation, with more than 300 million visits made every year to forests in the UK alone. Globally they are a major source of food and medicinal plants, and other non-timber forests products such as rubber, rattan and cork. Timber and pulp account for 2 per cent of world trade. To the world's tens of millions of forest-dependent peoples they provide a home and livelihood as well as a basis for their spiritual and cultural identity.

Many of these values are currently under threat. Of the approximately 100,000 species of tree in the world a recent study estimates that more than 8,000 are threatened (Oldfield *et al*, 1998). For decades the destruction of the world's forests has been recognised as one of the biggest environmental problems of our time.

Forests cover approximately 3.4 billion hectares (34 million km^2) or a little more than one third of the world's land surface. By comparison the UK covers 25 million hectares, with just over 10 per cent forest cover and contains less than 1 per cent of the world's population: for every hectare of forest in the UK there are more than thirteen hundred hectares elsewhere. However, British people have an impact on forests well beyond our islands. It has been calculated that it takes almost three times the area of UK forest to keep us supplied with timber products alone. Our impact is disproportionate to our size for three important reasons.

S MURPHY, WWF-UK

E PARKER, WWF-UK

First, the UK had a very large, global empire during the time when technology and the needs of an industrialising economy increased the need for resources, including both timber and crops that could be grown in place of trees. The UK's colonial legacy has been an important factor in shaping the forest cover – and the forest policies – of many countries far from our shores.

Second, despite a national perception of economic shrinkage, the UK remains a powerful economic player at the start of the 21st century. Its buying power and consumer demands means that it influences forests through imports of timber, agricultural crops and other resources. Its export of expertise, equipment and opinions continues to help shape forest policy in many developing countries. And the UK's political power, particularly within the G8 group, OECD and the World Trade Organisation, helps shape policies that affect forests everywhere.

Thirdly, and more complexly, the UK has a history of involvement in issues beyond our borders. The legacy of the colonial period, the history of travel and the current financial resources that send UK citizens around the world mean that many of us have the chance to experience forests in many different countries. Interest in forests – through conservation organisations, development groups and other non-governmental organisations – also mean that many British people deliberately put time and money into influencing the future of forests all over the world.

Footprints can be both positive and negative. There is a fair amount of criticism in the case studies and examples cited of the UK's forest footprint – including criticism of government and industry. However, this report is not put together with a sense of complacency or superiority. Few people set out to cause damage to the environment and many of the worst impacts come from ignorance rather than malice. If non-governmental organisations get things wrong, they can cause as much damage as a commercial company or a government. For example, a conservation organisation that creates or supports a protected area without due regard for the needs of the indigenous people will have an important negative social impact on the forest. The examples quoted here are intended to help us all learn lessons, rather than be presented in a judgmental manner.

WHY 'FOREST FOOTPRINT'?

The term *ecological footprint* has already gained attention as a marker of environmental impact. It has a precise definition and was devised to describe 'the tendency of urban regions to appropriate the carrying capacity of "distant elsewheres"' – ie the land area required to support a given community (Rees, 1992). There is already a considerable literature about how this might be interpreted in terms of precise areas of forest affected by specific actions in different places; for example the government of the Netherlands has already produced several reports on Dutch impact on the world ecology. However, this current report deliberately takes a broader environmental and social perspective, whilst looking at our impact overseas on one biome only – forests. We therefore suggest the term *forest footprint* as a more accurate description of the impacts we are setting out to describe.

WHAT IS A FOREST FOOTPRINT?

The UK's forest footprint is defined as the total environmental and social cost of UK actions on the world's forest and forest peoples.

Thus we look beyond issues of carrying capacity – whilst acknowledging their importance – and include social alongside ecological impacts. Including a social perspective is particularly important, although it makes the analysis more complicated. In the past WWF and other conservation organisations have received considerable criticism – some of it justified – for conserving wildlife at the expense of local people. Recognition of the equal importance of social aspects has changed the emphasis of both field projects and policy approaches. It should be noted that the footprint can be positive or negative; and in many cases sectors will have both good and bad aspects simultaneously.

Teak – an example of an historical footprint on a major forest ecosystem

Before the use of wood preservatives, ships built of English oak would last 12-15 years, while those made of Indian teak lasted 50-60 years, creating a strong demand for teak. By 1805 an investigation into teak supply from Malabar in India showed that most accessible forests were almost exhausted (Winters, 1975). Interest turned to Burma, which had long been renowned as a shipbuilding centre.

The forests of Burma provided a strong motivation for the British annexation of the Burmese province of Tenasserim in 1826. Dr Wallich, of the Calcutta Botanical Gardens, reported after a visit to the area that 'our ceded Provinces are second to no other part of the Honourable Company's possessions with which I am acquainted; in point of timber forests they stand altogether unrivalled.' Despite his pleas for regulation, European contractors rapidly exploited the forests. In theory, rules controlled extraction, but a system of short-term leases discouraged private traders from any long-term commitment. As competition increased 'corruption and bribery flourished' and in just twenty years most of the Tenasserim area was stripped of teak. In 1846 Commissioner Durand commented that forest rules were subject to 'the most gross neglect and the most barefaced violation' (Bryant, 1994).

In 1852 Britain gained control of teak forests in the province of Pegu (Adas, 1983). Concerns that unregulated extraction threatened future supplies finally led to government action with the Dalhousie Memorandum of 1855. The Governor General of India declared all teak and similar timbers to be the property of the Government of India (Westoby, 1989). By then only the most inaccessible areas of Tenasserim's forests remained untouched, and controls were centred on the Pegu forests. Dietrich Brandis was appointed to set up a Forest Department in Burma, to demarcate reserves and control leases. This marked the start of the transition to 'scientific forestry'. Brandis ran into strong opposition from timber traders led by the Scottish-born William Wallace, who resented government interference. A compromise was reached and controls were enforced only on the few species considered marketable.

IDENTIFYING OUR FOREST FOOTPRINT

For decades the destruction of the world's forests has been recognised as one of our biggest environmental problems. The causes of forest loss and degradation are complex, depending on economic, social, political and environmental conditions. In this report we highlight a number of sectors that have an impact on the fate of forests beyond the UK's borders. Below, we present an overview, then a series of case studies highlight particular issues and offer some recommendations about how individual sectors could reduce their forest footprint.

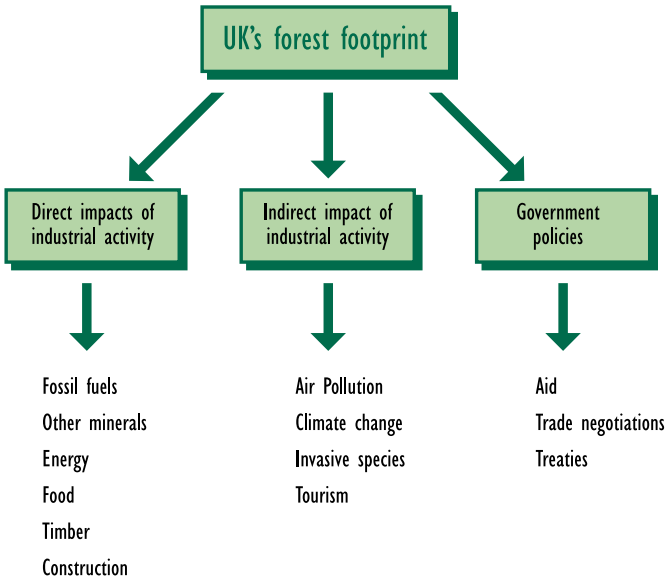
IDENTIFYING A FOREST FOOTPRINT IS A THREE-STAGE PROCESS:

- Identifying the types of footprint;
- Discovering the extent and range of impacts associated with each;
- Calculating a more-or-less precise figure for this impact in terms of environmental and social costs.

The third part is the most difficult – while there have been some laudable attempts to do this for ecological footprints in many cases the methodologies are poorly developed, data area lacking and as soon as social issues are included, calculations become even more complex. In this report we focus on identifying the main types of footprints on forests outside of the UK and give an approximate indication of their importance without attempting to provide precise figures for the scale of the impact

The UK's forest footprint can be divided into three broad categories:

- Impact through the actions of companies benefiting directly from actions in forests outside the UK, primarily involving resource extraction (energy, materials or food) but also extending to construction.
- Impact through the side effects of exports of potentially or actually damaging elements from the UK, primarily various forms of air pollution but also invasive species, including sometimes the human species in terms of tourism.
- Impact through national and policies – in the current report we have singled out aid policies for close examination although the UK's record in international trade negotiations and UN treaties could also have usefully have been examined.



Identifying the precise roles of any particular country or region is extremely difficult. It requires a combination of knowing exactly where all imports come from and what the impacts of their production entail and, even more difficult, tracking where all national public and private finances are used. In the labyrinthine world of international finance, where most large enterprises involve several companies and all of those involve many shareholders, consultants and owners, identifying precisely where money is invested is extremely time-consuming and ultimately probably impossible. In practice our understanding of national forest footprints is bound to be a combination of a general overview of our overall impacts in terms of resources and more fragmentary and incomplete examples, both good and bad. The case of UK involvement in large dams shows some of the problems facing analysts.

Obscuring the footprint – the case of dams

Dams have received more attention than most large infrastructure development projects due to the destruction of land and resettlement of local communities that their construction necessitates. The most direct forest footprint left by hydro schemes comes from the loss of forestland to reservoirs.

The UK's involvement in dam building has been controversial, the Malaysian Pergau Dam, being a particularly well known example. The dam, built with £234 million of British aid, was linked in writing to an arms deal whereby the Malaysian government agreed to buy over £1,000 million worth of British military equipment. The scandal over Pergau, combined with increasing public opposition to dams in general, has led to the UK virtually abandoning support for such large-scale infrastructure projects. However, continuing controversy over the UK's possible involvement in the Ilisu Dam in the Kurdish region of Turkey, which FOE described as 'a disaster for the environment, a tragedy for the Kurdish people and a threat to peace' shows that this is not entirely the case. (Pearce, 1994)

UK construction and engineering companies complain that this has transformed them into bit players on the world stage, unable to compete against competitors in Japan, Germany and France who continue to receive huge hidden subsidies from their governments for overseas projects. Many senior figures now argue that the only way forward is for British companies to form partnerships with foreign competitors in order to gain access to subsidies. That trend towards cross-border alliances – and the consequent blurring of easily identifiable national infrastructure footprints – is reinforced by a more general move away from public to private financing of infrastructure projects. As a result, private sector flows have overtaken public transfers as the driving force behind economic growth in the countries of Asia, Latin America and (to a lesser extent) Africa. At present, the private sector finances about 10-15 per cent of infrastructure investments in the South. The World Bank, however, predicts that private investors could soon be providing as much as 70 per cent of infrastructure investment.

One result of these changes is that the links between the project promoter and their home country often become increasingly difficult to trace. For instance, no UK company was directly involved in building the now-suspended Bakun Hydroelectric Project in Malaysia (although Bucknalls, a Birmingham-based construction company undertook the building of resettlement sites). Nonetheless, a number of British companies held shares in the project promoter, Ekran Berhad. (To their credit, Abbey Life and Norwich Union both disinvested once the ecological and social impacts of the project became apparent). Ekran also targeted British pension funds and banks as potential investors in the Bakun Hydroelectric Company, the Ekran subsidiary that would build the dam. In the event, the dam failed to attract the investment it required and, in the wake of the Malaysian currency collapse, the Malaysian Government suspended the project. Nonetheless, the forests already cleared to make way for the proposed reservoir (an area the size of Singapore) bear the unavoidable footprint of those UK shareholders that failed to disinvest from Ekran.

THE ELEMENTS IN THE FOOTPRINT

In the following section, some likely elements of the footprint are identified, before being discussed in greater detail, from an UK perspective, in the case studies.

DIRECT IMPACTS OF INDUSTRIAL ACTIVITY

Most direct impacts are linked to various forms of resources extraction, although the UK's role in major infrastructure projects – such as road building and dam construction – also impacts on forests.

Conversion to agriculture is still probably the number one cause of forest loss worldwide. Between 1990 and 1995, the developing world lost over 65 million ha of natural forest, mostly through clearing for agriculture (FAO, 1999). Some of this is necessary to provide food and basic necessities, while other conversion has more to do with the profits of a minority. Plantations of cash export crops such as tea, coffee, tobacco, soya beans and oil palm frequently replace forests or take up the best agricultural land. The forest fires in Indonesia were set primarily by plantation companies clearing land for palm oil or pulp plantations and in the Brazilian Amazon much of forest clearance is for cattle ranching and soya cultivation: albeit frequently financed by the logging that precedes it. The devastation caused by Hurricane Mitch in Central America was far more severe in areas where large forest tracts had been replaced by plantations and there was no longer the buffering capacity to deal with the high winds and rains.

Shrimp culture and the loss of coastal forests

Agricultural impacts can be more complex than simply converting rainforest into cattle pasture. Mangroves play a key role in tropical marine ecosystems, providing organic matter, energy and nutrients to estuarine ecosystems, and act as a nursery for fish and a buffer against wind and wave action. Mangroves are also important habitats for many species including endangered primates like the crab-eating macaque *(Macaca fascicularis)* and proboscis monkey *(Nasalis larvatus)*, and for rare bird species. Aquaculture, largely for export to the consumer countries, has caused serious losses, for example, around a million ha of mangroves, around five per cent of the world's mangrove resource, has been lost to the development of shrimp ponds. Between 1986 and 1988, 90 per cent of the mangroves in Thailand's Chanthanburi Province were replaced by shrimp ponds and in total 253,000 ha of the country's 380,000 mangroves have been lost to shrimp production. In Ecuador, 100,000 ha of mangroves out of a total of 177,000 ha are used for shrimp production, mostly for sale to the USA and Japan. As well as destroying whole mangrove systems, intensive aquaculture also pollutes them with lime, organic waste and pesticides, and large-scale extraction of fresh water for salinity control draws salt water into aquifers. Loss of mangroves

not only has an impact on the wildlife associated with the habitat, but also results in loss of income for coastal fishing communities – in effect fish farms geared to export replace domestic fishing for subsistence and local sales. Over 90 per cent of all shrimp traded on the international market is consumed by just a few importing countries, including the European Union, which imports approximately 200,000 tons (processed weight) of shrimps annually. Studies have shown that a one hectare semi-intensive shrimp culture system in Colombia (producing about 4,000 kg of shrimp annually) requires the productive and assimilative capacity of between 38 and 189 hectares of natural ecosystem per year (Stolton, 1998; Hagler, 1997).

E PARKER, WWF-UK

Timber and pulp consumption, unless linked to environmentally and socially appropriate forest management, can be a major cause of forest destruction and is perhaps the most direct and obvious link in the forest footprint trail. Timber from well-managed forests can be one of the most environmentally friendly products available, but most timber does not fall into this category. Although industrial timber sold commercially on the open market only accounts for a small amount of the total timber removed from forests, research for WWF suggests that commercial logging is now the primary cause of deforestation and forest degradation *in those forests that contain the highest levels of biodiversity* (Dudley *et al*, 1995). Timber and particularly pulp consumption continues to increase.

Paper now accounts for 45 per cent of industrial timber production. Consumption is skewed towards the rich countries; for example *per capita* use in North America is 60 times that in Africa and 150 times that in India. High consumption also affects timber, through a rapid turnover of building stock and furniture. Primary forests are still being cut for pulp, and forest management is being intensified to boost production. Most recent analyses suggest that the world does not face the prospects of an immediate shortfall in timber (Nilsson, 1996; Solberg, 1996; UNECE, 1996). However, studies also suggest that surviving *old-growth* forests could be at risk if current trends continue. Over-use is now putting the world's most valuable wildlife forests at increasing risk.

Mineral mining and infrastructure projects: According to the World Resources Institute, mining, oil drilling, roads and infrastructure currently threatens 38 per cent of frontier forests – the world's last remaining large areas of intact forests (Bryant *et al*, 1997). The extraction, processing, use and disposal of minerals have many negative impacts on the distribution and quality of forests. The most obvious is the clearance of vegetation to reach deposits beneath the surface, however forest quality is also affected by air and water pollution linked to the processing of

minerals, infrastructure developments and to the disposal of mining wastes and diminished surface and ground water. Although some practices are improving, economic needs often still take precedent over environmental and social issues (Finger, 1999). Although the short-term ecological disruption caused by mineral extraction is generally negative, some abandoned mineral workings have gained considerable wildlife value – this is, however, often in the form of wetland and scrub habitats rather than forest. In addition to the direct loss of forests and forest quality, the main environmental impacts arising from mineral exploitation relate to displacement of communities and the release of health-threatening pollutants to air and water.

M EDWARDS, WWF-UK

What's in a can?

Aluminium drink cans are one of the great convenience food success stories, dramatically out-competing glass bottles. The average Briton now drinks the equivalent of 400 cans of soft drinks a year. Yet aluminium production has extremely high environmental costs: strip mining, including in tropical forests; pollution from tailings; heavy energy use often supplied by environmentally-damaging hydroelectric projects; and sometimes release of dangerous waste products. Aluminium cans, if used only once, have higher energy consumption per use than steel cans or glass bottles. Mining for bauxite – the raw material used for aluminium production – contributes to deforestation in several countries. Large-scale strip mining in the Brazilian Amazon has directly affected six groups of indigenous people and caused deforestation. In one region huge areas were cleared to provide firewood for a smelter. Major bauxite strip mines are also found in forested regions of Guyana and Suriname in Latin America and Guinea in Africa. In Australia, one of the world's largest bauxite mines is on a 2,590 km^2 concession of tropical forest in Queensland. In Jamaica farmers have been forcibly resettled if they live in areas with high bauxite reserves and forest has been destroyed to reach the bauxite. A third of Jamaica's plant species are endemic and a tenth under imminent threat, mainly from deforestation. As in other areas, Jamaican bauxite mining is intensely polluting, creating highly unstable, very alkaline (pH 12.5-13) waste that is highly toxic to plants and animals. There is a high risk of groundwater supplies becoming contaminated (Stolton et *al*, 1998).

Bioprospecting is the latest form of forest exploitation, with the search for new pharmaceuticals akin to mineral prospecting and fair benefit sharing agreements with local people likely to be the exception rather than the rule. As the footprint of corporate bioprospecting is concentrated in areas that are particularly rich in biodiversity but economically impoverished, for example, tropical rain forests, it is not surprising that such activities have become highly contentious. Furthermore, of greater concern is the growth in so-called biopiracy – the illegal collection of genetic resources for economic gain – which is reported to be at an all-time high in the Amazon (Goering, 1999).

INDIRECT IMPACTS OF INDUSTRIAL AND OTHER ACTIVITIES

Indirect impacts by their nature come from further away. They can range from the very obvious, like the impact of tourism on forests, through to subtle effects of air pollution or climate change.

Climate change: The majority of scientific opinion now accepts that major changes are taking place in the climate and that this is likely to be linked with emissions of what have become known as *greenhouses gases* from fossil fuels, agriculture and the burning of plant material, particularly in forests. In its report to the Framework Convention on Climate Change meeting in Buenos Aires in 1998, the Intergovernmental Panel on Climate Change was uncharacteristically blunt about the implications for forests concluding that: 'forests are highly sensitive to climate change'. Forest particularly at risk include:

- Boreal forests, where predicted climate change effects are greatest. Up to 40 per cent of the boreal forest could be lost altogether.
- Tropical forests, including particularly those that are sensitive to drought and increased drying trends, tropical storms, changes in rainfall pattern, seasonality and fire.
- Mangroves, in areas where sea level is expected to rise. Evidence from past temperature changes suggests that many mangrove systems will be unable to build up sediment fast enough to keep pace with sea-level rise.
- Islands and relict communities in places with significant climate change. Risks are increased both because there is little room for migration and because a smaller gene pool reduces options for rapid adaptation.

Severe *El Niño* effects, such as the 1997/8 event can have far reaching consequences, disrupting weather patterns around the globe. The strength and frequency (normally every 4-7 years) of *El Niño* events appear to be increasing and may be linked to global warming.

Air pollution: Emissions of carbon dioxides tend to go hand in hand with emissions of other pollutants and acid deposition particularly from sulphur and nitrogen oxides. Air pollution, including acid rain, ozone and dry deposition of sulphur and nitrogen oxides, has been linked to a range of impacts on biodiversity, and to a widespread decline in forest health. Increases in air pollution are largely as a result of increased consumption levels. Motor vehicles are now the single biggest source of air pollution in some areas and road freight alone is responsible for 23 per cent of the European Community's total NO_X emissions. Energy production and heavy industry are also the two largest sources of carbon dioxide; the world's major greenhouse gas.

Tourism has become one of the leading forces in the world economy, and as in many other sectors this can either promote forest conservation or drive its degradation. Tourism can favour, and thus preserve, forests with a high level of biodiversity (eg mixed woodlands and semi-natural forests), encouraging the conservation and protection of wildlife and helping to limit the loss of forests to urban spread and road building. However, if visitor pressure becomes excessive, problems of soil erosion can occur along and adjacent to footpaths, wildlife can be disturbed (especially important during the breeding season), damage to plants and tree saplings can occur from trampling underfoot and discarded waste can become a problem.

Air pollution and wildlife

Many European forests are undergoing a form of decline caused at least in part by air pollution. Similar effects are also seen in North America and Asia. Decline is often intensified by drought and bad forest management; however research has shown clear links with levels of several pollutants. Ozone is particularly important in western Europe, while sulphur and nitrogen oxides are more significant in central and eastern Europe. In general, older trees, isolated individuals, and those on the edges of stands are the most badly affected. Symptoms include discolouration of leaves, premature leaf and needle fall, erratic twig branching and changes in crown density. The decline in vitality and loss of health can in occasional cases result in tree death. Air pollutants also have a range of effects on forest wildlife. Epiphytic and foliar lichens are badly affected by both sulphur dioxide pollution and wet acid deposition, and many species have disappeared from industrialised areas of Europe. Epiphytic mosses, including several species of *Bryum* and *Orthotrichum*, are declining in polluted areas. Major declines in European fungi have also been linked to air pollution. Some vascular plants are apparently affected by acid rain – either directly or through its impacts on soil chemistry – including club mosses such as *Lycopdium clavatum* and flowering plants like the violet *Viola canina*, sundew *Drosera rotundifolia* and mat grass *Nardus stricta* (Fry and Cooke, 1984; Dudley, 1987, Tickle *et al*, 1995).

IMPACTS FROM GOVERNMENT AND INDUSTRY POLICIES

These immediate causes are driven by a series of underlying pressures, including the level of consumption in the rich countries and, conversely, the impacts of poverty in the poorest regions. A fifth of the world's population consumes 80 per cent of the net annual production. Consumption levels continue to rise and industrial society is now organised – by manipulation of fashion, through the concept of built-in obsolescence and as a result of increasing consumer expectations – in a way that makes high levels of consumption difficult to avoid. For example, consumption of energy, meat, copper, steel and timber has doubled; car ownership and cement use quadrupled; and air travel has multiplied 33 times in recent years. For a country like the UK, our apparently ever-growing desire for material goods and possessions, for travel and for other resource-intensive activities underlies and increases the detrimental impacts of all our footprints.

Government actions, both in terms of providing and implementing domestic legislation and through attitudes to international negotiations, are a key aspect of any country's forest footprint. Of increasing importance, as the role of central government declines are attitudes within the private sector including particularly financial services and industry.

The burden of international debt, currently totalling more than a trillion US dollars, has put tremendous pressure on natural resources in many developing countries. In many cases forest exploitation to generate the foreign exchange required to meet debt repayments has been accelerated. Aid flows are generally in decline and fall way short of the 0.7 per cent GDP that was agreed during the Rio Earth Summit in 1992. Private sector sources of finance have overtaken the public sector, with fewer controls and less transparency. The combination of poverty and lack of access to agricultural land in developing countries leaves people with little choice but to move into forests, frequently using logging roads. Secure land ownership or tenancy is vital if people are to have a stake in using natural resources sustainably, yet imbalances in land ownership are widespread, for example, in Peru 10 per cent of the population own 93 per cent of the land.

Levels of impact: The case of oil

The modern world is utterly dependent on oil – a non-renewable resource that we use at a rate of 100 million barrels a day. Oil powers our transport systems, heats our homes, produces many of the materials we use and wear, and creates a vast range of industrial and domestic chemicals. Transport uses 60 per cent of global oil production, mostly to fuel cars and light vehicles. Use continues to increase. North America, Europe and Australasia use 84 per cent of global transport fuel. The oil industry destroys habitats and damages biodiversity from the exploration of new oil reserves right through to final disposal of oil products. Onshore, oil drilling damages wildlife and ecology and opens up wilderness areas. The first stage of oil exploration is seismic testing. By analysing the shock waves from a number of explosions along a predetermined linear path, which has to be cleared, geologists analyse the probability of finding oil. Seismic explosions adversely affect wildlife and are often detonated without regard for indigenous communities who live nearby. The width of seismic lines have however been reduced by the oil industry – for example, when Texaco arrived in Ecuador in the early seventies seismic

lines were ten metres wide, they are now 2.5 metres. Whilst they used to be 5 metres wide in the mangrove swamps of Nigeria, they are now a metre (Van Gelder, 1996; Kimerling, 1991). Once exploration and production activities commence, they can be a significant source of atmospheric, terrestrial and marine pollution. Pollutants released include particulates, nitrogen dioxides, sulphur, volatile organic compounds, heavy metals, and soot.

Drilling operations produce large amounts of waste or cuttings and contaminated production water – an average exploratory well generates up to 1,600 tonnes of cuttings. In many countries, these cuttings are dumped in open pits. In Ecuador, where billions of gallons of toxic waste have been dumped since 1972, thousands of unregulated and unlined oil pits litter the region that regularly overflow contaminating soil, plants and rivers (Kimerling, 1991).

Many people have argued that the most destructive practice of the industry, apart from direct pollution, is the secondary colonisation that follows their operations. The World Bank estimates that for each mile of new road built by the oil industry, some 400 to 2,400 hectares of land are colonised (Ledec, 1990). Ever sensitive to this criticism, many companies operating in remote forest now say they operate 'offshore' ie everything is flown in by helicopter, or moved by river and that no roads will be built, therefore stopping deforestation. However if oil or gas is found, some kind of road will have to be constructed to build a pipeline to transport the oil. Even if the pipeline is buried and the road is not permanent, virgin forest is still opened up, and maintenance will have to be undertaken so the track is likely to become permanent, even by default.

Oil development can have profoundly disturbing effects on local and isolated communities through the abrupt imposition of an alien culture, the environmental effects of oil development, and sometimes through associated persecution. Tribal people have entirely different values of life to western society and to the oil companies that are prospecting in their land. It is therefore highly unlikely that any environmental impact assessment, written by western experts, can truly evaluate the adverse cultural impact that oil development will bring to tribal peoples.

Footprint 1

THE TIMBER TRADE

Cross-border timber trade only accounts for a very small proportion of cut timber, but its ecological impacts outweigh its size. Some of the world's most important old-growth forests are affected including, through illegal trade, many in protected areas. The timber trade is identified as *the* major threat to the quality of remaining native temperate and boreal forests, while selective logging opens tropical forests to other uses and for example increases unsustainable bushmeat trade (wild animals killed for sale as food).

WHAT IS THE UK'S FOOTPRINT?

Negative: Historically the UK exploited and often over-exploited forests for timber throughout its colonies. The UK still imports timber (albeit a tiny proportion of the total) from countries where natural forests are exploited unsustainably (eg the Democratic Republic of Congo and Cameroon) and where felling affects old-growth areas (eg Latvia, Canada, the USA and the Russian Federation – in the last case mainly via Scandinavia). The UK imports plantation pulp from countries like Chile and Brazil where poorly regulated plantation establishment has destroyed natural forest. UK customs have weak controls over illegally extracted timber and in recent years UK companies have imported illegally felled timber from countries including the Philippines, Cambodia, Ghana and Brazil.

Positive: The UK has been a major promoter of certification of good management under the Forest Stewardship Council (FSC), with 25 per cent of timber sold in the UK bought by the hundred companies that belong to the WWF 95+ group who have committed to switching to certified timber. The UK has agreed a national FSC standard, the UK Woodland Assurance Scheme, and UK companies have actively promoted certification abroad. In 2000, the UK government agreed to procure its timber from certified sources.

HOW IMPORTANT IS THE UK?

The UK is the world's second largest net importer of forest products (by value) and imports wood products from around 90 countries, albeit the majority coming from nearby temperate forests in Europe. This rank reflects the UK's low forest cover (almost 85 per cent of wood products are imported), large population and high consumption levels. Through its buying power the UK timber trade has the potential to impact the way that other countries manage their forests and was for example instrumental in helping convince Swedish companies to adopt certification.

Case study The ecological footprint of the UK's wood product imports

The International Institute for Environment and Development carried out a research project for the UK Department of Environment to ascertain the amount of forested land necessary to provide wood products for UK residents, and the extent of deforestation this caused. The results showed that at least 6.4 million hectares throughout the world are used on a continuous basis to service the wood demands of the UK consumer. Additionally some 67,000 hectares are *deforested* each year through logging (or are so badly damaged that they will become deforested). The area concerned was three times the area of the UK's own productive forest and woodland. The study found that 75 per cent of deforestation took place in developing countries, even though they only account for a small proportion of imports. The most damaging impacts occur with the extraction of tropical hardwoods, for example mahogany, iroko and meranti. The social impacts were found to be severe – with people being displaced from their land used for logging. Much of the revenue generated by tropical timber production did not accrue to the producer country (IIED, 1995).

WHO IS INVOLVED?

Hundreds of importers operate in the UK although a few – including particularly major retail chains, paper manufacturers and building suppliers – control the bulk of the market.

RECOMMENDATIONS

- UK companies should help encourage good management by demanding timber certified by FSC standards.
- UK consumers should add to this support by insisting on certified timber products and on recycled paper wherever possible and by minimising waste of wood and paper.
- The UK government should help control timber poaching by tightening import regulations to make it easier to block imports of illegally traded timber. Recent statements from the government about controlling use of illegally traded timber are encouraging and should be effectively implemented at both national and local level.

Footprint 2

AGRICULTURE

Agriculture remains the most important single factor in forest loss according to the UN Food and Agriculture Organisation. However, 'agriculture' covers an enormous range of activities from small-scale subsistence farming, through extensive ranching to the establishment of major plantations of rice, oil palm and bananas. The role of western companies in taking part in or buying from ranches established on the site of tropical forests is well documented. Footprints from the developed countries come largely from clearing land to establish export crops, particularly today in the South, through the impacts of agrochemicals (pesticides and fertilizers) and more recently through the potential export of genetically modified agricultural crops.

WHAT IS THE UK'S FOOTPRINT?

Negative: Historically, the UK's agricultural forest footprint impacted on all colonised territories, starting with imports of sugar to Bristol in 1456. Forests were cleared in India and Ceylon (now Sri Lanka) for tea production, Malaysia for rubber, in the Pacific for coconut plantations and the West Africa for cocoa and palm oil. More recently, the expansion and adoption of technologies associated with the industrialisation of agriculture had a direct impact on developing countries. Despite the increase in yields, the green revolution has had some significant disadvantages; environmentally the green revolution has caused major pollution and loss of native habitat and has led to greater social inequalities.

Positive: UK companies, large and small, have already played a more positive role, through for example organic certification schemes and fair trade systems. Although these so-called 'niche' markets remain small, demand is growing fast (40 per cent per year for organic products) and as the majority of this food is being imported (70 per cent of organic food) these trends have a major impact on food production worldwide (Soil Association, 1998).

HOW IMPORTANT IS THE UK?

Today, UK citizens leave a footprint on forests through the agricultural products that they consume and through investments that they make in agricultural businesses. Imports of food, animal feed and drinks have risen steadily in recent years, from £6 billion in 1980 to £17 billion in 1996, a figure reflected by the fact that the UK only produces just over 50 per cent of its food needs. Total UK consumer expenditure on food is over £450 billion (MAFF, 1997).

Case study **Cocoa**

The UK is the third largest importer of cocoa beans and products (behind the USA and Germany), importing 204 tonnes in 1997/8 a figure that is increasing at about 9 per cent a year. Although cocoa grows wild in the Amazon, it is now cultivated in developing countries in Africa, Asia and Latin America, but eaten mainly in Western Europe and North America. The world's leading cocoa producers are Cote d'Ivoire and Ghana. Cocoa is often grown in former forest areas. In the Brazilian Atlantic rainforest – the most highly endangered temperate forest in the world – over 7,000 km^2 have been used for cocoa, mainly by clearcutting at the insistence of regional agricultural authorities. Cocoa is Malaysia's third biggest cash crop and production increased eight times during the 1980s, and continued to expand in the 1990s. An eighth of Sabah's logged area has been converted to cocoa production. In Sarawak, 3,000,000 ha were converted to the production of cash crops in the late 1980s and early 1990s, including substantial cocoa production. The Primary Industries Minister of Sabah stated, that he supports: 'expansion of cultivation of plantation crops suited to Sarawak and Sabah – land where primary agricultural potential is still available'. Between 1965 and 1980, plantations of oil palm, cocoa, rubber and coconut in Papua New Guinea replaced 190,000 hectares of coastal forests (ICCO, 1998; Cox 1993).

WHO IS INVOLVED?

We all buy food and much of that food is imported. The supply of agricultural inputs and the food market in the UK is dominated by a handful of companies such as Unilever, Cadbury Schweppes, and Associated British Foods.

RECOMMENDATIONS

The UK has the chance to play an important role in both addressing some of the environmental issues relating to agriculture and the world's forests and in evening out the social inequalities associated with these practices. Through our aid policies, buying power and consumer pressure, the UK can play a leading role in encouraging more sustainable and ethical forms of agriculture through for example support for organic agriculture, fair trade and ethical trading initiatives. At the same time, the UK should have a role in reform of both the European Common Agricultural Policy and the wider global agricultural agenda. The World Trade Organisation needs to be made more accountable for environmental and social issues.

Footprint 3

INVASIVE SPECIES

Invasions by plants and other organisms have been quite normal features of earth's history. Current concern about invasive species is the result of a rapid increase in the rate of invasion over the last century and recognition of the extreme ecological impacts of some of these invasions. The likelihood is that this increase will continue to rise in the near future and have even more deleterious effects on environmental quality. Specifically, it is feared that plant invasion will seriously reduce global biodiversity – indeed invasive species have been suggested as likely to be the single greatest cause of wild plant species extinction in the future (Lövei, 1997; Ratcliffe, 1980).

Invasive species cause problems through spread of disease, by out-competing native species or by predation. Results can be environmentally devastating. For example, the introduction of the Asian fungus *Pryphonetria parasitica*, to eastern North America in 1900 resulted in a decline in the proportion of chestnut trees *Castanea dentata* in the woods from 40 to 1 per cent; similar declines took place when Dutch Elm Disease spread in the UK during the 1970s, resulting in the virtual extinction of elm as a forest species. Invasive grasses are common in the Americas, Australia and Oceania and tend to promote fires, in some cases threatening the maintenance of the remaining seasonally dry forests and representing a major impediment to the restoration of cleared lands. Rats *(Rattus rattus)* introduced into Australia and New Zealand have driven some species of mammals and ground-living birds to extinction. Some of the most dangerous invasions have taken place when species identified as biological control mechanisms have spread faster than intended.

WHAT IS THE UK'S FOOTPRINT?

Negative: The UK has played a leading role – perhaps *the* leading role – in the spread of invasive species in the past, as a result of its role as a coloniser and imperial power, through its forestry and agriculture activities, the spread of deliberate 'acclimatisation societies' in places like Australia and New Zealand that sought to introduce British plant and animal species to transform the new land, and by accident. Important impacts occur in many former colonies and in current colonies, particularly on islands where invasive species are likely to be devastating to native flora and fauna. Many species introduced by botanical gardens for economic purposes have become invasive (Richardson, 1994). Examples include quinine *Cinchona succirubra* (for medicine) and New Zealand flax *Phormium tenax* (for fibre), both introduced initially on St Helena by the Royal Botanic Gardens, Kew.

Positive: The UK is host to two international bodies that could provide further leadership in controlling plant invasive species. The International Institute of Biological Control has, for the past 70 years, been undertaking biological control programmes against invasive species on a non-profit basis. Botanic Gardens Conservation International could be influential in developing protocols for the transfer of germplasm between botanic gardens to reduce chances of invasions.

HOW IMPORTANT IS THE UK?

Historically the UK played an extremely important role in causing the problems; we are therefore responsible for a legacy of problems that threaten the ecology of many forest ecosystems around the world.

WHO IS INVOLVED?

Today, the chief responsibility for controlling species likely to be invasive lies with agricultural seed merchants, timber traders and those involved in the wildlife trade.

RECOMMENDATIONS

The UK today, has some special opportunities in the effort to control plant invaders. In particular, many of our overseas territories are oceanic islands (eg Pitcairn Island, St Helena) that already are or might become sites of serious invasion and these areas require support and investment to recover their original ecology. Institutionally, the UK's membership of the Commonwealth, based partly on its historical role as a colonial power, provides a foundation for uniting with other countries to formulate anti-invasive plans. The UK could also take a leading role in gaining a more fundamental, theoretically based, understanding of plant invasions. The UK can also assist in the development of information systems about invasive species. It was announced in 1995 that the Oxford Forestry Institute (now the Department of Plant Sciences) is working on the format and structure of a database on tropical and subtropical weeds, and on species with invasive potential. The project may produce a prototype database and recommend channels of dissemination to allow its widespread use. The IUCN/SSC Invasive Species Specialist Group, with many UK members, is also developing an invasive species database.

Footprint 4

MINING

Although mining can never be sustainable, because minerals are a finite resource, it could in principle be a relatively high profit activity with a discrete environmental impact that could help fuel economic and social development. In fact, its net impact on forests is negative. Mining impacts on forests directly by destroying trees (particularly strip mining) and by opening closed forests through road construction and settlement. Damage occurs from mine pollution and waste products, known as 'tailings' for example in Papua New Guinea. Energy use for smelting has caused deforestation through use of charcoal, (eg the Brazilian Carajas mine) or by building hydroelectric power dams in forests (eg the Volta Dam in Burkina Faso). Industrial mining and processing consumes huge quantities of energy and involve a worldwide trade in raw materials and products, facilitated by commodity markets and international metals exchanges.

WHAT IS THE UK'S FOOTPRINT?

Negative: The UK is a major mineral user, importing raw materials and finished goods; eg the UK consumes more aluminium cans that any other European country (over 6 billion per year). The UK is home to the world's largest mining conglomerate, Rio Tinto, which is linked to forest damage in several countries including Madagascar and Indonesia. In the latter country, lands traditionally belonging to the Dayak people were appropriated for gold mining by PT Kelian Equatorial Mining (90 per cent owned by Rio Tinto), resulting in communities being displaced, and forests degraded. Most major pension funds and insurance companies invest in Rio Tinto. The UK has, for example, been the major source of investment into mining in the Philippines (in 1994 providing 79 per cent of investment) and Burma (21.12 per cent in 1997); in both countries mining has damaged forests (WWF, 1999). There is also direct UK Government influence through bilateral and multilateral aid to mining companies. UK citizens' taxes are thus implicated; eg a mineral mapping project in Ecuador is partly funded by the UK Department for International Development and involves consultants from the British Geological Survey; mining currently threatens many protected areas in Ecuador. The London Metals Exchange also has an enormous impact on prices and sustainability of mines. Mistakes at the LME in the early 1980s led to a collapse of the Bolivian tin mining industry and subsequent migration of many miners into the Amazon where illegal gold mining damaged forests and polluted waterways.

Positive: The UK-based International Institute for Environment and Development is currently facilitating a major initiative to improve the environmental and social performance of mining companies, in association with major mining corporations.

P TOYNE, WWF-UK

HOW IMPORTANT IS THE UK?

The UK plays a key role in mining both through hosting some of the world's largest companies and through the activities of the London Metal Exchange. Research on the UK's mining footprint suggests that a 50 per cent cut in mineral use is required to reduce negative damage.

RECOMMENDATIONS

There must be drastic improvements in levels of resource use efficiency and improvement to mining practices. Better arrangements to conserve critical habitats and habitat restoration must be key components of all mining (WWF, 2000a). Key elements include:

- A switch back to longer-life products and the subsequent industrial restructuring that this will involve.
- Greater recycling within the UK, supported by tax incentives and government grants as necessary.
- Introduction and monitoring of detailed codes of practice for mining activities.
- Evaluation of the concept of certification schemes and labelling for mining activities to provide consumer confidence in the ways in which minerals have been produced.
- No mining should take place in Category I-IV protected areas and should only take place in Categories V and VI where this is compatible with the objectives of the protected area, as outlined in the recent policy statement from the World Commission on Protected Areas (WCPA, 1999).

Footprint 5

INFRASTRUCTURE

Infrastructure projects – construction of roads, dams, ports, buildings etc – are an essential part of development. They are also potentially extremely damaging: roads or rail links built in the wrong place can create illegal settlement or unsustainable trade in timber or other forest resources, threatening traditional societies and forest ecosystems. Major hydroelectric dam construction has created massive environmental and social costs, often for only short-term gains if deforestation results in rapid silting of reservoirs. Infrastructure development is often carried out to meet the needs of an elite – timber or mining companies, ranchers – rather than improving living standards for the majority.

WHAT IS THE UK'S FOOTPRINT?

The UK is involved in many infrastructure projects, particularly in developing countries, through work by engineering companies and by taxpayers' financing of the World Bank, bilateral aid and private sector programmes. While some of these have had positive benefits for local communities, others have resulted in forest loss and further marginalisation of the poorest sectors of society. From 1944-1994, the World Bank made 527 dam-related loans (worth US$58 billion) to 93 countries, many of which resulted in forest loss. Two sources of bilateral aid have proved particularly important. Until 1997, the £73 million 'Aid and Trade Provision' supported UK companies' bids for contracts in developing countries, often with little regard for their environmental or social impacts. The ATP has now been curtailed, leaving industry looking to the UK export credits guarantee department (ECGD), which uses public funds to underwrite projects too risky for private insurers. Until late 1999, the ECGD did not even screen projects for their environmental impacts.

HOW IMPORTANT IS THE UK?

As governments 'liberalise' economies and encourage the private sector to take over infrastructure development, so the UK's importance has increased. In 1992, over half the money lent by IDA – the World Bank's soft loan arm – went to companies in the world's ten richest nations, with the UK topping the list. In 1994, World Bank contracts awarded UK companies £961 million – £700 million more than the UK subscribed to the Bank. London is also rapidly becoming the 'engineering and contract capital of the world' so that even foreign-owned firms are relocating there.

***Case study* Balfour Beatty in Sri Lanka**

Focusing on commercial advantages to UK firms rather than real value led to UK support for the Samanalawewa Dam in Sri Lanka, with Alexander Gibb winning the design work and Balfour Beatty the contracts to lay roads, drive a tunnel and build the power station. Yet two years after the Samanalawewa project was completed, its reservoir still could not be filled because its bed was leaking. One Sri Lankan geologist has warned: 'Samanalawewa is a write off. It will become an archaeological site'. Meanwhile, 80 kilometres north, another UK-funded dam – the Victoria Dam, also built by Balfour Beatty with Gibb acting as design consultant – has failed to produce the expected electricity. An assessment by the UK National Audit Office estimated that the capacity was likely to be '40 per cent below the original estimate'. The project displaced 30,000 people, flooding 28 square kilometres of the densely populated Dumbara Valley. Many people were resettled under a scheme part-financed by the World Bank, which was subsequently criticised by a Bank evaluation for having 'neglected' environmental impacts. In particular, the project resulted in the loss of some 30,000 hectares of forest and 'encroachment on remaining forest areas for shifting cultivation or for fuelwood' (Pearce, 1994).

WHO IS INVOLVED?

Major engineering and consulting companies. While some are responsible actors, others maintain a cynical view of their role. Senior figures argue that UK companies must form partnerships with foreign competitors to gain access to subsidies. As one industry figure graphically explained: 'If all the bastards understand is the bayonet but you cannot get anywhere near them, then you have to find another way to get into their knapsack' (Evening Standard, 1997).

RECOMMENDATIONS

Minimising the infrastructure footprint will require political pressure to be brought on both industry and government. For communities affected by UK-backed or initiated infrastructure projects, the importance of political organising cannot be underestimated. For groups in the UK, following the money trail may prove the most fruitful avenue for exerting pressure for change, for example on shareholders in companies whose footprints are oppressive. More generally, a range of policy changes could help reduce the UK's ecological footprint at home and abroad. These would include requirements that those companies receiving publicly backed funds for infrastructure development should abide by mandatory development and environment standards. They should also involve a shift away from support aimed at promoting the short-term interests of corporations and their shareholders towards support for projects promoting sustainable livelihoods and greater community control over resources and decision making.

Footprint 6

OIL AND GAS

The last century has been dominated by the oil industry and the 'Seven Sisters': the largest private oil companies (of which two are partially British: Royal Dutch/Shell and BP-Amoco). Shell believes that oil demand could increase by two-thirds and gas demand could double this century. The search for oil has taken companies deeper into the Arctic, the oceans and the forests of Central and Latin America, Africa, South East Asia and Russia. Some estimates say that over the next decade, 80 per cent of new oil development will occur in the humid tropics and marine environments. Because there is a correlation between areas of high biological diversity and sedimentary basins containing hydrocarbons, these areas are extremely threatened. Evidence to date suggests that major oil developments create deforestation, pollution and loss of biodiversity; oil is also a major source of greenhouse gas emissions and other more localised air pollution.

WHAT IS THE UK'S FOOTPRINT?

Negative: British oil companies, Shell and BP, which are truly global in nature, are spearheading frontier exploration. There are also smaller British oil companies, which specialise in exploring and producing oil, such as Lasmo, Marathon, and Premier. A major player in the gas sector is British Gas, the company that de-merged in February 1997 to Centrica and BG plc. International exploration and production is now carried out by BG plc, which operates in 13 countries. There are unfortunately many examples of oil operations involving UK owned or partly-owned companies causing damage to forest environments. The role of Shell Nigeria in the pollution and destruction of mangrove forest in the Niger Delta is well known and has been linked with significant human rights problems. In Pakistan, local NGOs have recently taken Shell to court for carrying out exploration related activities in Kirthar National Park – a key forest watershed for Karachi's 14 million people. BP's past involvement in rainforest exploitation of oil in Ecuador has also been seriously criticised by environmental and human rights groups. In Venezuela, BP's operations in the 1990s in the Orinoco River and Delta promised to promote sustainable development. However, according to the NGO Oilwatch 'The Warao communities visited were uninformed about (and had never agreed to) oil contracts granted to BP' (Bloemink, 1997; Watson, 1998).

Positive: BP was the first oil company to change its Mission to being a total energy company and is now the world's biggest produce of solar energy, with Shell number two – although amounts invested are still minute. Companies have also undertaken unprecedented public relation offensives, ushering in a new era of accountability and transparency, and a desire to be seen as good corporate citizens. However, one fundamental problem is the differences within transnational companies. For example, Shell Canada has set some of the highest environmental and social standards in the world, whilst Shell Nigeria has some of the worst.

Case study Shell's operation in Bolivia

Since 1999, Shell and its partner Enron have built the 360 km Cuiaba gas pipeline through the middle of the Chiquitano forest in eastern Bolivia. This tropical dry forest is one of the richest, rarest and most outstanding habitats on Earth and home to many endangered species including hyacinth macaw and maned wolf. It protects the watershed for the Pantanel, the world's largest inland wetland. Unfortunately, despite the recommendation made by conservation groups to route the pipeline around the largest intact piece of tropical primary dry forest left on the planet they decided to lay 160 km of the pipeline through the middle of the forest and 100km of the pipeline affects pristine wetland. The route was against the wishes of local NGOs and community groups as it will inevitably lead to further fragmentation of the forest. In addition to concerns regarding the negative long-term impacts on the environment, local indigenous groups and government authorities claim that their rights have been violated in the development and implementation of the projects and its related activities. The development also calls into question whether the US Overseas Private Investment Corporation (OPIC) should be financing infrastructure projects through primary forests (_The Independent_ 1999).

HOW IMPORTANT IS THE UK?

The UK is second only to the USA in its influence on oil and gas exploration and politics. How UK companies react to environmental and social pressures helps determine the pattern for the whole sector.

WHO IS INVOLVED?

Royal Dutch Shell, BP-Amoco and a host of smaller exploration and production companies.

RECOMMENDATIONS

Although the oil industry is attempting to persuade the wider community that sustainable development is possible in the rainforest, the cultural and ecological footprint of direct impact remains extremely high. Companies should recognise the importance of maintaining biological diversity and ensure the protection of critical species and areas that are rich in biodiversity, such as forests. They should also commit to full recognition of, and protection for, recognised protected areas, even if these contain oil reserves. The industry should be looking to further disinvest out of oil and gas and into renewable technologies: to supply total energy and transportation packages that are environmentally sound (WWF, 2000a).

Footprint 7

BIOPROSPECTING

Biodiversity prospecting, or bioprospecting, is the exploration, extraction and screening of biological diversity and/or indigenous knowledge for commercially valuable genetic and biochemical resources. 'Biopiracy' refers to the illegal collection of genetic resources. The main industries involved in bioprospecting are pharmaceutical and agricultural. Biotechnology advances have shifted attention to the ownership of DNA sequences. Patenting has thus shifted from protecting 'inventions' to protecting 'biological discoveries'. Investment is considerable: the world's largest pharmaceutical company Merck claims to spend US$1 billion per year on research that will see no profit for 10-15 years. Here the impacts are not necessarily just environmental but also relate to who controls the genetic material that is amongst the most valuable of the forests resources – at worst depriving national and local communities of profits from genetic material on their land and passing this instead to powerful companies.

WHAT IS THE UK'S FOOTPRINT?

Historically the UK has played a dominant role in movement of genetic material around the world. For example British research institutes took part in a notable act of biopiracy last century, by stealing 10,000 *Cinchona* seeds and 637 live plants from Bolivia, Ecuador and Colombia to create a quinine industry in Asia, to help cure malaria within UK colonies. Latin American countries lost valuable export earnings (Juma, 1989). There has also been criticism of the actions of UK companies working in the industry today (see case study below). Bioprospectors often claim to benefit the original owners of local phytochemical or genetic resources. For example, the Body Shop states that they will 'devote increasing efforts to establishing non-exploitative trading arrangements with communities in less developed countries as a means to protect their cultures and environments'. Nevertheless, it is also true to say that many companies and individuals seek the lowest common denominator with respect to benefit-sharing, or simply find that compliance with the letter of the law is much less problematic than compliance with the law's spirit. However perhaps the most problematic question is how a society with different concepts of ownership to our own can be said to give 'prior and informed consent' when it is required to subject itself from that point forward to the legalistic vagaries of western patent laws and agreements?

HOW IMPORTANT IS THE UK?

A survey of the UK's biotechnology companies predicted that by the end of the twentieth century American biopharmaceutical alliances with British companies were 'expected to take a clear lead' (Andersen, 1997). The Royal Botanic Gardens at Kew plays a key role with joint ventures with over a hundred partners around the world.

Case study Molecular Nature in Mexico

Molecular Nature Ltd, a Welsh biotechnology company linked to the Institute of Grassland and Environmental Research (IGER) at Aberystwyth, is involved in a US government sponsored project called 'Drug Discovery and Biodiversity Among the Maya of Mexico'. One of their principal target areas for surveying is the endangered remnant blocks of tropical montane cloud forest in the Central Chiapas Highlands. Although the project helped establish a local NGO, PROMAYA, to advise on benefit sharing and the allocation of any future royalties, the project has had critics locally, including eleven indigenous peoples' organisations who have demanded that the project suspend its activities (RAFI, 1999).

RECOMMENDATIONS

There are three key areas, regulation, research agreements and monitoring, where progress can be made in reducing the footprint left by bioprospecting.

- **Regulation.** Regulations governing genetic resources are ambiguous. There is also a risk that powerful governments will wish to relax controls, including influencing whether bioprospecting should be regulated by the World Trade Organisation or through the Convention on Biological Diversity: as the latter is principally about sustainable use of natural resources it would seem the obvious framework. The UK Government should support its Commonwealth partners with respect to strengthening and ensuring the pre-eminence of the CBD in these matters. UK companies should adopt clear, transparent and equitable aims regarding bioprospecting.
- **Research agreements.** Research agreements should clearly outline the responsibilities and expectations of each party.
- **Monitoring.** Over-exploitation of natural resources has already occurred as a direct consequence of bioprospecting (eg the near extinction of the Himalayan yew). It is important that companies that both prospect for and utilise natural resource products agree beforehand a transparent system for monitoring the exploitation of wild populations of commercially valuable organisms.

Footprint 8

CLIMATE CHANGE

Climate change has become the ultimate human footprint. Humans are now upsetting a natural balance that has held more or less constant for about 10,000 years, by increasing the sources of atmospheric carbon and unleashing a range of impacts that remain uncertain. The resulting footprint of these actions on forests is unclear.

There are two seemingly opposing views of the relationship between climate change and the world's forests. The dark side is captured in the images of the forest fires that raged in various places associated with the 1997/98 intensified *El Niño* climatic event and reflects the expected impacts of climate change, ie more drought periods, which increase the propensity for forest fires. On the other side some people argue that climate change is a benign force; forests will grow better and become saviours of the global climate as their capacity to store 'surplus' carbon is exploited. Both these visions may be fulfilled in different places and at different times. How they intertwine and will ultimately be resolved will depend, not so much on actions within the forest sector, but on the rate and extent to which reductions are made in greenhouse gas emissions from fossil fuels. What ever the outcome, forestry and land use change have now become central policy concerns in the scientific and political debates surrounding climate protection.

WHAT IS THE UK'S FOOTPRINT?

Negative: Although the UK contributes only about 3 per cent to global carbon dioxide emissions on an annual basis, its emissions on a per capita basis are amongst the top 10 in the world. In a global context, the Framework Convention on Climate Change (FCCC) notes that 'developed' countries have distinct obligations to 'take the lead in combating climate change and the adverse effects thereof', due to their high level of emissions.

Positive: The UK was a key player in formulating the Kyoto Protocol (agreed at a meeting of the FCCC in Kyoto, Japan) which established legally binding reductions in emissions of greenhouse gases targets. Further, within the EU, the UK itself has agreed to cut emissions at higher levels than required by the burden sharing deal.

HOW IMPORTANT IS THE UK?

The UK has leadership obligations as an industrialised country and has been active in both the science and the politics of climate change.

Case study Forests and carbon sequestration

Most forest activities and operations have an influence on flows of greenhouse gases and carbon storage. Carbon sequestration, or management options for expanding carbon storage by increasing the area and/or carbon density in existing forests, is being seen as a means of offsetting reductions in fossil fuel emissions. It is also being seen as a mechanism for countries to offset required reductions in emissions. Both the US and Japan see the potential for using forestry and land use change activities, particularly overseas, for removing the need for them to make politically unpopular domestic reductions in greenhouse gas emissions. The UK, however, has been crucial in underpinning the EU position requiring scientific robustness before decisions are made as to what activities are allowed for carbon offset allowances in what ways.

WHO IS INVOLVED?

We all are as producers of atmospheric carbon. As an early leader in the industrialisation process, the UK has been contributing to the increase in greenhouse gas concentrations in the atmosphere for over two centuries.

RECOMMENDATIONS

The Kyoto Protocol is only the first step in international attempts to combat climate change and will only reduce the projected rise of temperature by at most 0.2º or 0.3ºC of a degree at the end of the next century. Indeed, following the November 2000 meeting in The Hague, even these modest improvements are at risk. Unless the developed countries show that they are serious about significantly reducing their own emissions, the developing countries, which have much lower greenhouse gas emissions on a *per capita* basis, are unlikely to participate. As an industrialised country the UK must continue to press for early action on fossil fuel emissions and demonstrate action to slow and ultimately reverse the increased atmospheric concentrations of greenhouse gases and lift the negative climate footprint of humans on forests. WWF urges that a set of mandatory principles be adopted to guide decisions on the use of sinks to meet emission reduction targets, to maintain the environmental integrity of the Kyoto Protocol. Before sinks activities can be credited toward compliance they should be measured against agreed criteria to determine their consistency with these principles (WWF, 2000b).

Footprint 9

AIR POLLUTION

Air pollution has been linked decisively with serious damage to forest ecosystems throughout Europe particularly as a result of impacts on epiphytic lichens and mosses and on susceptible flowering plants, invertebrates, amphibians and even some species of mammals and birds. Acid pollution has also been responsible for unnaturally high rates of acidification of both freshwaters and soils leading to knock-on environmental impacts. More controversially, air pollution has been linked to damage to trees. While there is now little doubt that pollution has damaged trees in the most highly polluted areas, there remains intense debate about the long-term impacts elsewhere. For example, increased levels of nitrogen deposition from pollution in some areas may have resulted in more rapid growth in the short term although overall levels of health appear to be declining.

WHAT IS THE UK'S FOOTPRINT

The industrial revolution, which had its roots in the UK, saw a rapid increase in all forms of air pollution. Britain's first air pollution inspector, Robert Angus Smith, coined the term 'acid rain' in 1872. In the 1980s, the UK was the largest single emitter of sulphur dioxide pollution in West Europe, earning the title 'The Dirty Man of Europe' from NGOs and identified as the major foreign contributor to acidification of Scandinavian lakes and soils. A detailed study by WWF has found that at least 26 species of international conservation status have been adversely affected by air pollution. Some 70 per cent of Europe's protected areas are exceeding critical loads for pollutants, particularly in the industrialised areas of the northwest (Tickle *et al*, 1995). The United Nations Economic Commission for Europe has stated 'the main adverse effects, on the European scale, of changes in atmospheric chemistry have been those on forest biodiversity' (UNECE, 1998).

HOW IMPORTANT IS THE UK?

The UK impacts adversely on many European countries. The UK had the fourth highest emissions of SO_2 (after Russia, Poland and Spain), the second highest NO_X emissions (after Russia) and the third highest emissions of NO_2 (after Germany and Russia) in Europe. Although a large proportion of UK emissions are deposited within the country, much is exported, and the UK's contribution to the acidic deposition in certain countries exceeds the national contribution.
(Barrett, 2000; Ågren, 1997).

Case study Ecological impacts in Europe

Many lichen species have declined due to sulphur dioxide pollution, and indeed a map of pollution levels was published using the decline of lichens as an indicator in England in the early years of the century. More recently, sensitive lichens such as *Lobaria pulmonaria* have also been shown to decline as a result of wet acid deposition. Similar declines have also been found in some forest-living bryophytes, many mycorrhizal fungi and some vascular plants. Within animal groups, significant declines linked to acidification or dry deposition of air pollution have been found in tree-living molluscs such as *Ballea perversa*, tree-living spiders and a range of insects including particularly some wasp species. The latest European tree defoliation survey finds a continuing trend towards increased leaf and needle loss since 1992. Survey leader Martin Lorentz, stresses the multiple causes but comments: '… it has indeed been possible over the years to collect ever more indications for the plausible assumption that air pollution is involved' (UNECE, 1998 and 1999).

WHO IS INVOLVED?

Large power companies, car manufacturers and industry all contribute to the net pollution load. Resistance to pollution controls by vehicle companies and the state (later privatised) power companies slowed controls as did the UK government's long resistance to increased pollution controls. The whole population of the UK contributes to air pollution through our use of energy and vehicle transport.

RECOMMENDATIONS

Although the emissions of sulphur dioxide are falling rapidly, the scientific community is increasingly recognising the detrimental impacts of enhanced nitrogen deposition, not only to forests but also to a whole range of natural and semi-natural ecosystems. It is here, and in the control of other precursors of ozone formation that more progress particularly needs to be made. Despite its limitations, the critical loads/levels approach to air pollution control, whereby the minimum levels of pollution that cause damage are identified, gives policy-makers an environmentally focused strategy for planning emission reductions in the future.

An assessment of the steps required to reduce deposition in areas currently exceeding their critical loads for acidity by the year 2010 calculated that the UK would need to cut emissions of sulphur by a further 72 per cent, nitrogen oxides by a further 39 per cent and ammonia by a further 17 per cent compared with projected emissions for that year. Hence on the issue of emissions control, there is clearly still a long way to go (Johannesson, 1997).

Footprint 10

TOURISM

Tourism is the world's largest industry. Tourists can impact both positively and negatively on forests. Tourism revenue can at best provide incentives and direct funding to protect forests, conversely badly planned tourist developments can destroy forests and mangroves and tourists themselves can impact on both the ecology and the human culture in forest areas. Transport to tourist destinations, especially by air, has significant impacts on ecology and the environment.

WHAT IS THE UK'S FOOTPRINT?

Negative: The UK plays a leading role in mass tourism, both because British people travel a great deal and through its role in helping develop the industry itself. In the late eighteenth and early nineteenth century, the English were the first mass tourists to areas in continental Europe, such as Switzerland. In the words of the *Alpine Journal*, it was notorious that: 'if you met a man in the Alps, it was ten to one that he was a university man, eight to one (say) that he was a Cambridge man, and about even betting that he was a fellow of his college' (Thomas, 1983). Today UK travellers impact on forests in several ways. Through mass tourism to areas where forests are being cleared to make way for tourism development (for example in coastal areas of the Mediterranean). Through adventure travel in sensitive forest areas where, although visitor numbers are low, impacts are proportionately greater (for example in Nepal or the game parks of Africa) and through visits to 'indigenous communities' in forests, which are becoming increasingly popular although social impacts can be extreme.

Positive: According to European Environment Agency (EEA) the impact of tourism and recreation activities upon the ecology of European forests today is generally beneficial (EEA, 1995). At home and abroad many UK companies have led the way in more responsible eco-tourism, the development of codes of practice for responsible tourism and benefit sharing with local communities.

HOW IMPORTANT IS THE UK?

Travellers from the UK contribute significantly to international tourist activity. Numbers of tourists travelling from the UK have continued to rise and are expected to reach 56.7 million in 2002 (approximately one international visit per person) – amongst the highest in the world (Euromonitor, 1998). Some tour companies are directly involved in the encouragement and sometimes the building of hotels and associated infrastructure.

***Case study* European mountain tourism**

The European Alpine region currently attracts over 125 million tourists to visit each year who spend over 500 million 'bed-nights' in the region. The pressure on forest areas can be intense, with up to 250,000 people visiting Swiss forests on warm spring or autumn Sundays. Some 100 km^2 of forest have been cleared in the Alps for the creation of ski runs, lifts and associated infrastructure, including access roads and parking, although the real areas affected are far greater because of increased visitor pressure. The operation of ski lifts, off-piste skiing, use of snowmobiles and compaction of snow on pistes can disturb rare species and upset the balance of local ecosystems. For example, populations of the black grouse (*Tetrao tetrix*) in the French Alps are reported to be declining due to displacement from their breeding grounds and the increased 'competition' for space in the air with overhead wires and cable car installations. On the other hand tourist revenue helps persuade the governments in the region to support traditional farming practices that would otherwise disappear along with the associated cultural landscapes (Aga Khan, 1994; CEC, 1992; Jenner and Smith, 1993).

WHO IS INVOLVED?

A large proportion of the population travels abroad although most head for beaches and coasts rather than forests. No precise statistics have been found on the proportion of UK people visiting natural forest areas.

RECOMMENDATIONS

The application of the principles and concepts of sustainable development to tourism has been the subject of much discussion and debate. Within designated forest reserves, especially those with a unique or threatened biota, it may be legitimate to propose tourism as the only economic activity. In other situations management approaches should seek to facilitate forest tourism as one strand within a general strategy designed to manage the forest on a commercial basis. A recent initiative that recognises tourism as part of a multi-use strategy is the TOURFOR project (1997-2000), an EU LIFE programme initiative which seeks to encourage approaches to forest-based tourism which maximises the benefits and minimises the environmental costs. The intended positive outcomes include: sustainable forest management and timber production, contributions to the economy of local communities and support for environmentally sound forest management. WWF's own Pan Parks initiative is encouraging sustainable tourism in some of Europe's most important protected areas. Such approaches could form models for other tourist activities.

Footprint 11

AID

Who is Britain's aid money to forestry meant to benefit? Taxpayers believe money spent on 'development assistance' is justified as it helps the poor directly. In the past often this finance went to UK companies whose 'development activities' may undermine forest ecosystems and local communities. Past direct bilateral aid has also been criticised for its role in promoting industrial forestry and large-scale development at the expense of ecology and local communities. The Department for International Development (DFID) has been one of the first European overseas development agencies to re-orientate its forestry programme away from a classical model of forestry directed at conserving timber stands and promoting commercial logging towards a new model aimed primarily at the relief of poverty. DFID directly manages the main bilateral aid programme. Half of Britain's aid is delivered through multilateral agencies. About £660 million a year is channelled through the European Union and more through the United Nations. About £300 million a year passes through the International Monetary Fund, World Bank agencies and other Multilateral Development Banks (see footprint 12). Regional Development Banks also receive DFID monies. These multilaterals should follow DFID's lead in focussing on relief of poverty and environmental sustainability.

WHAT IS THE UK'S FOOTPRINT?

Negative: Given the plethora of institutions, describing the British aid forest footprint is difficult. It has been argued by some that historically forestry projects have had relatively little impact compared to the indirect and often negative impacts on forests of other development projects and programmes. The UK has a flourishing NGO sector involved in development, including many conservation groups. Here, as in government institutions, mistakes have been made in the past and there have been accusations of neo-colonialism and the imposition of 'solutions' – including complaints against WWF. Deciding on the overall footprint from the public and private aid effort remains extremely difficult and controversial. The UK, along with all other OECD countries, was heavily criticised in the past for the extent to which aid is linked with export of commodities and expertise from UK companies, such that much 'aid' is actually ploughed straight back into UK industry and also for a very 'top-down' approach to development. DFID itself concluded, in a recent evaluation, that 'environment has become the forgotten cornerstone of sustainable development' (Flint *et al*, 2000).

Positive: The 1990s saw a radical shift in DFID's thinking about how to reach the poor through forestry and an increasing emphasis on poverty alleviation. Rejecting the top-down approach of 'social forestry', current DFID forestry projects in India, Nepal and Cameroon are experimenting with various models of 'participatory forestry', 'community forestry' and 'joint forest management', which give local communities more rights over the planting and harvesting of trees and a

say in forest policy itself. The learning curve remains steep and the most obvious lesson that emerges is that in the five-cornered contest between donors, forestry departments, the private sector, NGOs and communities, no solution favours everyone. Instituting reforms in favour of the poor requires a dual shift, of power away from forest departments and of wealth away from commercial enterprises. Foreign development agencies, whose involvement requires the sanction of the host government, can be awkwardly placed to resolve these essentially political disputes of equity (Poffenberger and McGean, 1996; Hobley, 1996; Filer, 1997).

HOW IMPORTANT IS THE UK?

UK aid currently totals about £2.2 billion a year and is currently increasing. UK aid policies remain an important force in helping shape responses to environment and development both in recipient and in other donor countries.

WHO IS INVOLVED?

Although DFID controls the aid budget, other government departments are involved in links between aid and export. There is also a large NGO sector, ranging from religious groups like Christian Aid through development bodies like Oxfam and Action Aid to special interest groups like the Intermediate Technology Development Group.

RECOMMENDATIONS

A priority for DFID should be to push through major changes in the procedures and accountability of the multilateral development agencies, above all at the EC. Emphasis should be placed on ensuring that multilateral aid for infrastructure, agricultural and economic reforms do not have negative impacts on forests and forest dwellers. After careful study and consultation, forest policy objectives, as part of wide environmental objectives, should be integrated into trade and agriculture negotiations.

The DFID and UK NGOs need to continue the work in reaching the rural poor in its projects to ensure that local inequalities do not block people from getting intended benefits and to ensure that local environmental realities are taken into account. To effect these changes, DFID will need to work in partnership with civil society organisations.

The bilateral aid programme, and private development programmes, should be complemented by new policies and procedural guidelines which set out more clearly how the environment is mainstreamed within DFID programmes and respect the rights of vulnerable sectors of society. DFID's Target Strategy paper on sustainability is a good step in this direction (DFID, 2000).

DFID should have performance targets for the environment that can be monitored at the country programme and global level (WWF-UK, 2000).

Footprint 12

UK POLICY

The UK influences international forest policy through its aid provisions, its stance in international organisations, treaty negotiations and initiatives, its attitudes towards imports and, perhaps most fundamentally, the attitude of its private sector and its citizens.

WHAT IS THE UK'S FOOTPRINT?

The UK has been a consistent supporter of the World Trade Organisation, even when it has seemed to undermine environmental controls, and of the World Bank throughout its period of greatest controversy over forests. It is hard to measure the indirect impacts of World Bank and IMF 'structural adjustment' programmes, whereby money is loaned to cash-strapped developing countries in exchange for 'structural reforms' – often including cut backs on public spending and the opening up of previously protected economies to foreign capital. During the 1980s, NGOs exposed many flawed World Bank projects that were both marginalizing indigenous peoples and poor farmers and destroying rainforest. In response, the World Bank created an Environment Department; adopted revised policies on indigenous peoples, forced resettlement and tropical forests; provided access to information about its activities; and started to involve NGOs and community groups. Very gradually, these reforms have begun to have an effect and although NGOs continue to uncover controversial projects, the seriously destructive, government-run mega-projects of the kind exposed in the 1980s are now less evident. Fully one quarter of all British aid monies is also channelled through the European Commission. An investigation by the Rainforest Foundation (UK) has revealed the consequences of this largely unaccountable aid. Projects have regularly dodged EC policy guidelines and procedures and have been poorly monitored and evaluated. In Nigeria, EC monies used to establish oil palm plantations have resulted in forests being bulldozed and local people dispossessed. The UK has supported a number of important environmental policies and statements relating to forests over the last few years, including a statement from the G8 in 1998 and pro-forest statements by the Convention on Biological Diversity and the Pan European Process. UK companies have had a mixed impact; in the past often detrimental and by no means always perfect today as shown in the previous eleven case studies, but sometimes quite positive such as the high level of support for the Forest Stewardship Council, changes in practices in the oil and mining industries and the gradual emergence of ethical investments. UK citizen support for the environment remains high with for example both the Royal Society for the Protection of Birds and the National Trust having over a million members (admittedly these are the more conservative environmental groups).

HOW IMPORTANT IS THE UK?

The UK is a member of the G8, the group of the world's most powerful economies, of the European Union and the Commonwealth. It plays a key role in organisations like the World Bank and the various United Nations bodies and therefore has an unusually influential role, compared to its size, in helping set international policy on forests.

RECOMMENDATIONS

The government should use its influence in large institutions, such as the World Bank, G8, WTO and UN organisations, to ensure those environmental and social issues relevant to sustainable forest management reflect the values discussed and outlined in this report.

At a national level, the Export Credit Guarantee Department (ECGD) of the Department of Trade and Industry should only give support to companies for projects that provide long-term sustainable development. No support should be given to those companies that do not have clear environmental and social policies, or to companies that undermine national and international forest conservation policies.

CONCLUSIONS AND RECOMMENDATIONS

The case studies and statistics compiled for this report show that the UK is still having a net negative forest footprint on the world's forests. The UK is a net drain on resources in sectors where resource extraction and subsequent refining and manufacturing are known to be causing damage. The UK is also a net source of elements that have a net cost to the world's forests. Impacts might be summarised as follows:

The extent to which each of these impacts is negative is a matter of debate. The net costs and benefits of UK aid, for example, have generated intense discussion even within the consultants and WWF staff involved in or commenting on this project.

UK COMPANIES ACTING ABROAD

UK-based oil and mining companies, engineering businesses, timber traders and those involved in agriculture continue to damage forests through mismanagement and lack of care. There are exceptions of course, with companies working hard to minimise the costs and play a positive role in sustainable development. The growth of forest certification is quoted as an important example. On the other hand, it is sad to see some newer industries, such as bioprospecting (ie demands for new commodities), repeating many of the faults of the past.

Changes come gradually: continued problems in some areas of the timber trade are for example distracting from progress being made elsewhere. Large corporations often disagree internally about the pace and extent of change. Decisions to protect the environment made at board level sometimes do not filter down to field level; in other cases operators are willing to change but are hampered by directors worried about profits. One part of a transnational company can sometimes be doing its best to act responsibly while another has a bad social and environmental record – the case of Shell is pertinent. There is still an enormous gulf in perception of the environment movement within large companies, with some company staff regarding NGOs as virtually alien beings while others are happy to collaborate. One of the real gains of the forest certification process has been that representatives of environmental NGOs and the industry have started to talk. The role of shareholders is also important in many larger companies and has only just started to be addressed by most mainstream environmental groups.

EXPORTING PROBLEMS

A second major role for the UK is as an exporter of problems to other forests. Our role in the spread of invasive species was enormous in the past, in part because of the deliberate introduction of UK species into some of the colonies such as New Zealand and Australia. Today, a larger role is export of various pollutants. Even though emissions of sulphur and nitrogen oxides has declined since the mid 1980s, pollution still impacts on many forest ecosystems beyond our shores. While the debate about impacts on trees still continues, the role of air pollution in destroying many other plant and animal species is no longer in any doubt.

And again, despite some improvements, the UK is still an important net exporter of carbon dioxide and other greenhouse gas emissions. Following the false ‘energy crisis’ of the 1970s, the UK population has rebounded into apparently ever greater energy use, and we have lagged behind many other countries in our development of alternatives to fossil fuels, such as solar and wind power. Privatisation and lack of investment in the public transport system sends huge numbers of people into their cars, adding dramatically to fossil fuel use and local and international air pollution.

More controversially, the UK also contains an enormous number of travellers. Impacts vary, and in total are probably greater for marine environments than forests, but a range of detrimental impacts are now well recognised. Significantly, individual tourism (particularly to remote places) is almost as important a factor as mass tourism to a few localities, so that self-styled ‘travellers’ cannot assume that their holidays are cost-free even if they avoid the major tourism destinations.

POLICIES AFFECTING THE FOREST FOOTPRINT

The UK has an important political role – whether through the export of forest management skills or by funding particular projects. UK negotiating positions in meetings such as those deciding the international trade regime may have a larger net impact than the actions of a few rogue companies. The government's stated desire to address problems of environment and social policy open up the possibility of the UK playing a more positive role in promoting sustainable development in forest regions in the future. The recent move, even if yet unproven, to scrap Third World debt is an example of how we can play a positive leadership role. Aid policies are examined here, in part because of their historical link with the colonial regime and the large number of UK-funded aid projects in forested areas. Although there have been positive changes in UK aid practices in the last few years, controversies surrounding many of the aid projects and, in the recent past, the uncomfortable links between aid funding and the promotion of UK industry have had major implications for our forest footprint.

LIGHTENING THE LOAD

Positive forest footprints have also been identified, including actions by governments, industry and individuals. The UK's Department for International Development has a fresh focus on poverty alleviation and increasing emphasis on small-scale, community approaches to forest management. The UK has a thriving environmental movement. There is also general agreement about the way in which we should be going amongst NGOs – albeit with differences of opinion about tactics. The signing of a UK Forests Memorandum in 1994 helped work out a common platform. The forest industry has simultaneously been one of the worst villains in terms of its negative forest footprint and also the sector that has done the most to address the problem. The UK has played a central role in the development of independent certification of forest products, through the UK 95+ Group and the support of the state UK forestry body in terms of agreeing national standards for forest management. The buying power of UK companies has also played an important role in encouraging forest certification elsewhere, particularly but not solely in Europe.

The aim of this report has been to identify some of the problems resulting from the UK's forest footprint and also some benefits – mainly in terms of policy – where the UK is playing a positive role in changing production and consumption patterns. Is the net balance of our forest-related activities positive or negative? Unfortunately, almost certainly the latter. The UK is still a major net consumer of timber and other products which impact forests at rates that are either not sustainable now or would not be sustainable if copied by the rest of the world. UK companies still have a destructive impact on forests through mining, fossil fuel extraction, large engineering projects and agriculture. We are also an exporter of several important pollutants that are changing, and impoverishing, many forests, particularly in Europe.

The positive gains made in the last few years are unfortunately more than offset by the losses. It is depressing to see that twenty-five years after the birth of the 'modern' environmental movement, so many of the problems still remain in place. Nonetheless, changes over the past ten years show that the footprint is neither fixed nor inevitably bad.

RECOMMENDATIONS

We believe that the concept of forest footprint has considerable worth as a way of reflecting environmental and social values relevant to forest conservation and management. If fully developed, the footprint could be a way of everyone being able to judge his or her impact on the world's forests. However, the work carried out in drawing together this report shows clearly the need for further research and increased sophistication of methodologies. One major recommendation is therefore the need for further research into the extent and importance of our forest footprint.

In general terms, WWF urges the UK government to support efforts to address environmental and social problems in the world's forests. This should include support for the aims and objectives of the WWF/IUCN *Global Forest Strategy* (see appendix 1). In addition, we would also recommend that the principles drawn up by WWF and IUCN on protected areas and indigenous/traditional peoples are implemented (see appendix 2). One concrete step in this process would be recognition and support of the joint forest conservation programme of the WWF-World Bank Alliance (see Alliance website: www-esd.worldbank.org/wwf).

WWF has identified a range of specific issues where the UK government, business community and general public can help lighten the UK's forest footprint and support the development of more equitable and sustainable forest policies. As the case studies show, in many areas our footprint has already been considerably lightened and many of the recommendations below are beginning to be implemented. However, to truly achieve more equitable and sustainable forest policies all the areas listed below will need to be acted upon.

- Existing aid policies should be strengthened and integrated to initiatives linked with the maintenance and provision of sustainable resources for local communities: in the case of work in forest ecosystems this should include sustainable management of forest resources for a range of environmental and social benefits.

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- The government should seek to ensure that trade rules, such as those of the WTO, do not undermine environmental and social safeguards, and that the standardisation of rules should aim to strengthen rather than weaken existing legislation. It should seek clarification of the relationship between WTO and multilateral environmental agreements to ensure that the two mutually support sustainable development.
- As part of this commitment, the UK government should continue to promote sustainable forest management and to support the development of independent forest certification through the Forest Stewardship Council, with particular emphasis on support for certification of small, community based forest management initiatives at home and abroad.
- UK companies and development projects should avoid projects in sensitive forest ecosystems and follow the same environmental and social guidelines in all their global operations, including strong codes of conduct and a commitment to full and transparent social, ethical and environmental reporting. Companies should provide full, cumulative, independent and participatory environmental and social impact assessments on any development projects. This should include:

  - Collecting adequate base line data before implementing the project;
  - Developing emergency responses to worst-case scenarios;
  - Considering alternative land/forest and water uses and lost opportunities;
  - Providing full public disclosure at least 60 days in advance of decisions;
  - Assessing indirect impacts (transportation, settlements, logging, etc.);
  - Monitoring and regular assessment.

- Government, industry and consumers should support reduction policies for non-renewable resources, including recycling. In particular further reductions in air pollution are essential to reduce impacts on forest ecosystems. As part of this commitment, the UK government should urge other developed countries to increase the rate of reduction of their greenhouse gas emissions.

- Any involvement in activities in forests should include technical and financial provision to cover restoration, reclamation, risk reduction and emergency action.
- Government, industry and consumers should unite to ensure sustainable and more equitable consumption through provision of information, independent environmental and social assessment and adequate chain of custody monitoring. Individual decisions by UK consumers and investors will play a key role in determining the country's long-term forest footprint.
- Issues of illegal resource extraction pose severe problems for both local communities and the environment. UK government aid and foreign policies should address these problems by:
  - Support for community forest management initiatives that help control illegal use;
  - Confiscation at port of entry of materials known or suspected to have been extracted illegally;
  - Supporting conservation programmes for threatened forest species and ecosystems;
  - Working with industry to replace timbers and other forest materials whose use threatens survival of biodiversity.
- Any UK involvement in resource extraction operations and other commercial activities in forest areas should respect protected area management objectives. This should include:
  - No involvement in major commercial exploration or extraction in protected areas;
  - Investment should be withheld from projects in countries without adequate legal frameworks and from enterprises without adequate codes of conduct.
- Projects should be integrated into wider development initiatives through ecoregional or bioregional planning, taking into account the sustainability of overall land uses, and recognising communities' rights including participation in planning decisions.
- There should be full respect to the rights of indigenous and other traditional peoples, including land rights, and they should be able to share fully and equitably in the benefits associated with any developments or trade in association with other stakeholders.
- Aid programmes should not be used to support the forcible resettlement of local people or the permanent settlement of people practising rotational-agriculture or nomadic-hunting systems.

APPENDIX 1

WWF/IUCN Global Forest Strategy

A vision for the world's forests: **The world will have more extensive, more diverse and higher quality forest landscapes. These will meet human needs and aspirations fairly, while conserving biological diversity and fulfilling the ecosystem functions necessary for all life on earth.**

WWF and IUCN therefore challenge the world to reach the following goal: **Halt and reverse the loss and degradation of forests and woodlands**

Objectives: **Meeting this challenge requires action by governments, the private sector, non-governmental organisations and individuals. IUCN and WWF have identified the following objectives:**

1. **Establish a network of ecologically representative, socially beneficial and effectively managed forest protected areas.**
2. **Achieve environmentally appropriate, socially beneficial and economically viable management of forests outside protected areas.**
3. **Develop and implement environmentally appropriate and socially beneficial programmes to restore deforested and degraded forest landscapes.**
4. **Protect forests from pollution and global warming by reducing polluting emissions and managing forests for resilience to climate change.**
5. **Ensure that political and commercial decisions taken in other sectors safeguard forest resources and result in a fair distribution of associated costs and benefits.**

APPENDIX 2

Principles and guidelines on protected areas and indigenous/traditional peoples

WWF and IUCN have together agreed an important set of principles and guidelines regarding conservation and indigenous/traditional peoples: these or similar principles should also be a cornerstone of UK policy.

The key principles presented in the WWF and IUCN/WCPA document (Beltrán, 2000) are:

PRINCIPLE 1

Indigenous and other traditional peoples have long associations with nature and a deep understanding of it. Often they have made significant contributions to the maintenance of many of the earth's most fragile ecosystems, through their traditional sustainable resource use practices and culture-based respect for nature. Therefore, there should be no inherent conflict between the objectives of protected areas and the existence, within and around their borders, of indigenous and other traditional peoples. Moreover, they should be recognised as rightful, equal partners in the development and implementation of conservation strategies that affect their lands, territories, waters, coastal seas, and other resources, in particular the establishment and management of protected areas.

PRINCIPLE 2

Agreements drawn up between conservation institutions, including protected area management agencies, and indigenous and other traditional peoples for the establishment and management of protected areas affecting those lands, territories, waters, coastal seas, and other resources should be based on full respect for the rights of indigenous and other traditional peoples to traditional, sustainable use of their lands, territories, waters, coastal seas, and other resources. At the same time, such agreements should be based on the recognition by indigenous and other traditional peoples of their responsibility to conserve biodiversity, ecological integrity and natural resources harboured in those protected areas.

PRINCIPLE 3

The principles of decentralisation, participation, transparency and accountability should be taken into account in all matters pertaining to the mutual interests of protected areas and indigenous and other traditional peoples.

PRINCIPLE 4

Indigenous and other traditional peoples should be able to share fully and equitably in the benefits associated with protected areas, with due recognition to the rights of other legitimate stakeholders.

PRINCIPLE 5

The rights of indigenous and other traditional peoples in connection with protected areas are often an international responsibility, since many of the lands, territories, waters, coastal seas, and other resources which they own or otherwise occupy or use cross national boundaries, as indeed do many of the ecosystems in need of protection.

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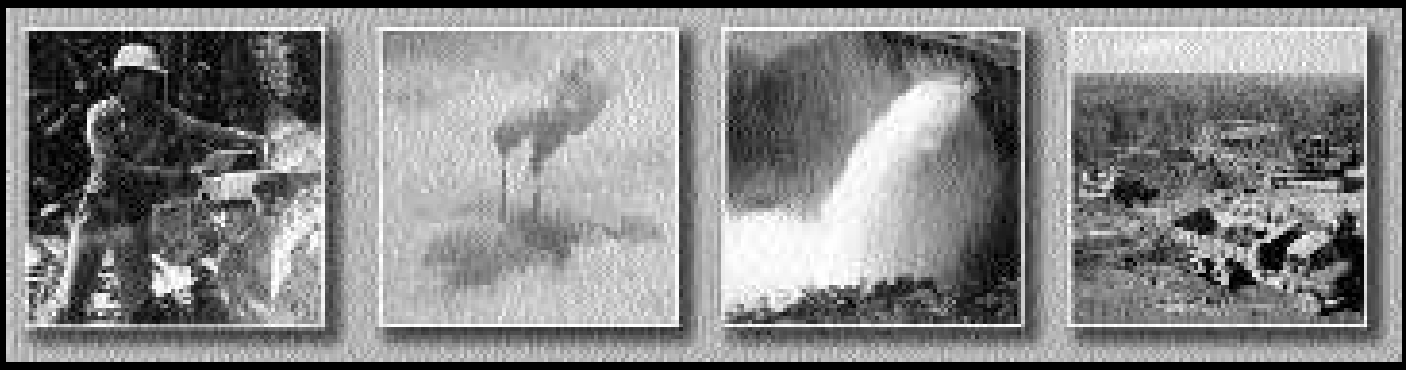

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