

# THE ENVIRONMENT INDUSTRY



The Foundation held a lecture and dinner discussion on the subject “UK Missing a Multi-Billion Pound Industry?” on 8 February 2000 at the Royal Society. The evening was sponsored by Joint Environmental Markets Unit, DTI/DETR and Science Systems plc and The Rt Hon The Lord Jenkin of Roding was in the chair. The speakers were The Lord Lewis of Newnham FRS, Mr John Waters, Director, Environmental Industries Commission, and Mr Ed Gallagher FREng.

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## The Lord Lewis of Newnham

*President, The Environmental Industries Commission*

*Summary: Lord Lewis stressed the speed with which both environmental concerns and activity had evolved and the need for new technology to deal with the problems that arose. In a world market that had been estimated at a mini mum of \$335 billion in the year 2000, the UK’s market share was falling relative to the USA, Germany and Japan. Mr Waters outlined the major environmental challenges that we faced and what drove the markets for environmental services. The UK was missing out on a huge industry and needed a national strategy to come to terms with it. Mr Gallagher also believed the UK was missing out, but suggested that an even bigger and better industry was on the way – improving the environment by genuine innovation, clever engineering, energy efficiency and clean technology.*

### **Introduction**

It is interesting to reflect the change in the emphasis on environmental problems over the last three decades. In the 1970s, consideration of the environment was very low on the priority list of social or industrial considerations. Due in part to the publication of the book *Silent Spring* by Rachel Carsons and the recognition of the dangers of certain pesticides such as DDT, the problems of the environment moved rapidly to centre stage. Problems in the environment are now recognised as being multi-variable, transboundary in nature and provide severe challenges to both science and technology.

Some of the major problems that have been recognised are

- (i) Global warming
- (ii) Ozone depletion

(iii) Increase in the number of motor vehicles

(iv) A variety of current and potential problems associated with water and air pollution.

However, the biggest single problem must be the rapid population explosion coupled with the drift of people from the rural to the urban communities.

The population problem is going to be difficult to solve, and will involve a major change in social thinking. However, in order to provide satisfactory solutions to some of the environmental problems considered above, a new group of industries has evolved, namely the Environmental Technologies and Services (ETS). This is a new industrial sector which is expanding rapidly to answer environmental needs in both the developed and the developing countries. In the case of the latter, the industrial expansion is being designed to seek to avoid the mistakes that were made by the developed countries before environmental problems were recognised.

Thus, there is serious concern in China where attempts are being made to avoid the mistakes of past manufacturing processes and to utilise as much as possible clean technology in their expansion programme. This provides many opportunities for the utilisation of environmental techniques that have been developed in the West and minimise the overall environmental problems for the world at large.

One of the main concerns in environmental pollution studies is the wide range of scientific and technological techniques that can be involved in a study of the problems. The recognition of environmental problems involves, firstly, the detection, measurement and extent of any contamination, followed by the removal and possible monitoring of the pollutants. All these problems may involve specialised techniques and a range of scientific and technological approaches. It can be difficult in many instances to find a simple solution, particularly in economic terms. It is important, if possible, to detect potential environmental difficulties before initiating a programme, as retro-fitting to existing industrial plants to remove environmental pollution is always an expensive operation.

An encouraging feature, however, is the recognition that the solution of such problems often provides an opportunity for interaction between different sectors of industry and society. I was pleased to note the efforts of the Research Councils in this area, utilising the potential of universities with possible collaboration with industry in the "kleen technology" programme of the EPSRC and the extensive environmental programmes initiated by the NERC.

An example of such co-operation is a programme which relates to the new directive from the EU on waste disposal. This is to investigate the flushing bioreactor as a possible solution to leachate and gas emission problems from landfill sites – a very common

method of waste disposal in this country. This is being carried out in the Engineering Department of the University of Southampton in conjunction with industry.

As a measure of the general impact of environmental problems in the chemical world, it is of interest to note that the Royal Society of Chemistry is publishing a journal Green Chemistry which is devoted to the development of chemical procedures that are environmentally acceptable.

The use of chlorinated solvents, which play such an important role in chemical industrial processes, has been one of the prime areas of study reported in this Journal. Recent legislation has banned or restricted the use of these solvents because of their adverse environmental impact. The use of super-critical carbon dioxide as an alternative solvent for many extraction processes has been very successful and has been employed for a number of years. It is used in preference to chlorinated organic solvents for the extraction of caffeine from coffee beans. More recently, water under high temperatures and pressures has been employed as a replacement solvent for organic solvents. It is now recognised that water may be considered as existing in three different forms. As well as water under normal conditions of temperature and pressure, "near critical" water exists in the temperature range of 250°-374° and at pressures of the order of 60 bar, whilst "super critical" water exists at temperatures above 374° and pressures of greater than 230 atmospheres. These three different modes of water have very different properties. Thus "near critical" water is completely miscible with many organic solvents such as toluene. This allows for a whole new chemistry to be available and in many instances the replacement of chlorinated solvents by the more benign "near critical" water. "Super critical" water has been used by the USA Department of Defence to detoxify military waste.

## **Regulations**

As the above example illustrates, regulations and standards are important instruments in promoting new science and technologies and a strong home market is one of the best bases from which to export.

The USA is now the world's largest exporter of environmental technology and services. This in part is related to the extensive environmental laws that exist in the USA, and have existed for a number of years. This has forced industry or the communities to develop solutions to the problems arising from these laws. A simple example is the development of catalytic converters for motor vehicles in the USA, and the development of zero emission cars.

Examples from other parts of the world are:

The development of alternative energy sources to fossil fuels, which was pioneered in the case of wind energy by Denmark. As a result,

the majority of the wind power devices used in the UK are made in Denmark. The Danish industry has a turnover of ~ 700 million ecu with 60% of the world market.

One of the major problems in the area of Global Warming is the removal of CO<sub>2</sub> from smoke stack gases. In Norway the Statoil Oil Company is removing CO<sub>2</sub> from its natural gas stream, which is collected offshore, to make the natural gas more acceptable to customers. The CO<sub>2</sub> is then disposed of by injecting the separated CO<sub>2</sub>, of the order of 1 million tonnes, directly into a well 1000 metres below the sea bed. The cost of the separator, \$80 million, was offset by the gain from the “carbon tax” savings that Norway instituted in the early 1990s of \$50 per tonne of CO<sub>2</sub> emitted – about \$50 million per year.



*Sir Robin Ibbs, member of the Foundation's Council (right), talking to Lord Lewis, the introductory speaker at the event.*

An example from the UK relates to the change in the law concerning the disposal of domestic waste. The new EU ruling involves the reduction in the biodegradable content of the waste to 35% of the 1995 figure by 2020. This has been projected as leading to a potential use of incinerators as an alternative method of waste disposal. However, this in turn has led to a recognition of the lack of data on waste streams in this country. Not only is there a paucity of data on the quantity of waste being produced over an extended period of time, since records were only started in data collection in 1995, but the composition and the predicted rate of growth of municipal waste is not well understood.

At the moment the extra number of incinerators it is estimated are required to deal with this problem is given as between 25 and 155, the large variation in the number of incinerators reflecting, in part, the problems of waste assessment. As each of these incinerators costs of the order of £50 million, this programme implies a major capital investment. A consideration of the manufacturing sources of incinerators also emphasises the lack of production within the UK.

### **Market and Access to Market**

The Joint Environmental Market Unit (JEMU) of the UK estimates that the world market was at least 280 billion dollars per annum in 1997, and is forecast to increase to about 335 billion dollars by the year 2000 and to 640 billion dollars by 2010.

The market share of the UK is, however, falling relative to that of our main competitors, the USA, Germany and Japan.

One of the problems in dealing with the export market is that the leaders of the UK environmental industry are often small- to medium-sized businesses (SME), and the needs and abilities to develop the opportunities are very different from the larger companies which have their own resources and export facilities. A number of schemes have been mounted in an attempt to help with these problems.

### **UK Schemes**

Both the DTI and DERT have schemes to help with the export trade. The JEMU has been set up by the DTI to help with some of the problems that SME encounter in their attempts to develop overseas trade. This provides identification contacts, exhibitions and demonstration lectures on or in the potential overseas markets. Success has also been achieved in this country through environmental demonstration sites, from which businessmen can become aware of the advantages of environmental technology and the variety that is available. However, there appears to be a need for the government to develop methods for allowing closer contact between the smaller companies in this field and the customer.

A fresh appraisal of the financial support is called for in the UK, since assistance with project finance is a frequent point of concern in this field. Other governments who are competitors provide such support.

One of the difficulties for the SME in selling their products to overseas countries involves the tendering process. The DTI do provide useful information in this respect via the JEMU programme. However, government funding is restricted to programmes over £50 billion. This in general places the contracts outside the category of consideration for many of the SME, and contrasts with the position in Scotland where there is a pilot project to assist local firms to bid for projects in the range of £1 million to £30 million. In Canada there is also a Capital Projects Bidding Programme, that supplies for tendering for work in excess of £1 million.

### **EU Schemes**

The current EU fifth framework programme is concerned with the development of new and more environmentally friendly technologies. The EU has attempted to make programmes accessible to SME. Technology transfer centres have been established across the whole of the UK. The CRAFT (Co-operative Research Action for Technology) programme is especially geared to helping SME apply to these joint programmes and link up with larger companies across Europe.

This is a mechanism for access to new technology and new

opportunities for export. However, at the moment they do not appear to be helping significantly with the export programme.

A programme associated with help to Eastern European countries via the PHARE programme is JOP ( Joint Opportunity Phare), whilst for interaction with the Far East there is a programme based in Singapore, RIET (Regional Institute Environmental Technology).

## **EIC**

A major body that is concerned with the development of environmental trade is the Environmental Industries Commission (EIC), who produced a significant report in 1999 "Government Support for the Export of Environmental Technologies and services".

In this report they highlighted three areas as being in need of attention:

1. Financial support for feasibility studies and business plans. They pointed out that in the USA the Department of Trade and Development devotes approximately \$56 million to feasibility studies, many of which are devoted to environmental studies.
2. Financial support towards the cost of tendering for environmental projects. (At the moment, the limit is for projects above the £50 million mark.)
3. The last is for project finance especially in developing countries.

As examples from other countries they cite that Japan has a special environmental yen credit scheme. There is a Spanish fund for development aid offering project finance with interest rates of 1-1.5% within a 20 year term. Similar types of support are available in Denmark, Canada, Italy, Belgium and Australia.

In the government reply to these points it was pointed out that the EIC acknowledged that the package of services provided by the government is similar to that of other OECD countries. However, the reply emphasised that the government has been disappointed that its contribution has not been used as effectively as possible. Recent trade missions to parts of the world have been poorly attended and in some cases cancelled altogether.

It was also pointed out that until 1995 the overseas projects fund could be used to fund feasibility studies, but the facility was withdrawn as independent study indicated that such studies rarely led to the commissioning of further work. There is little doubt that help by the government to the export of environmental technology is one of their prime concerns, and the problem of how to deal with the SME section is not easy and not restricted to the environmental industries. However, there is undoubtedly a major potential market which is growing at a significant rate and provides for opportunities

that must be taken by the UK industry.

## **Eur Ing John Waters, BSc CEng MICE MCIWEM**

*Director, Environmental Resources Management (ERM), Chair of the Environmental Industries Commission, Contaminated Land Working Group*

### **Introduction**

The environmental technology and service industry is one of the largest potential growth sectors in our economy. As we have heard, the worldwide market is already \$300 billion and is predicted by the OECD to reach \$640 billion by the year 2010. Clearly, the potential size of the environmental business opportunity is substantial indeed. It is already bigger than the aerospace or pharmaceutical industries.

So this diverse industry is already significant in terms of revenues, but let's just reflect for a moment as to why it is so crucially important. An excellent, if somewhat sobering, summary of the environmental challenges facing the planet can be found in the United Nations, Global Environmental Outlook 2000. Key points include:

- Annual carbon dioxide emissions have increased four-fold in the last fifty years, contributing to discernible climate change;
- We are fertilising the Earth on such a scale that nitrogen loading is causing acidification and ecosystem impacts in freshwater, and oxygen starvation and subsequent fish kills arising from algal blooms in coastal waters;
- Chemical risks pose an increasing threat to human health and the environment – pesticide use causes 5 million acute poisonings a year, equivalent to impacting almost twice the population within the Birmingham metropolitan area;
- 65 million hectares of forest were lost in the five years to 1995, exacerbating the increasing problems with soil erosion and threatening food production; and by the year 2025, as much as two thirds of the world's population may be subject to water rationing/shortage and water security will be a cause of rising international tension.

I could go on quoting the scale of the challenge; suffice to say that the providers of environmental technologies and services are going to be needed like never before. The ETS industry includes sectors able to respond to the challenges such as:

- air pollution control;
- water and waste water treatment;
- waste management;
- contaminated land remediation;
- energy management;
- environmental monitoring equipment;
- noise and vibration control; and
- environmental services.

The OECD indicate that about 75% of the market is in equipment production. The remaining 25% consists of services such as environmental consulting and management services. End-of-pipe technologies currently account for 80% of total investment, although the trend is moving towards waste minimisation and clean process solutions.

There have been a number of studies that have investigated what drives the market for these services. The top five drivers are:

- regulation
- reputation (stakeholder pressures)
- liability (risk of expenditure)
- cost savings
- the avoidance of incidents

### **Legislation is a major driving force**

A recent survey found that it was legislation that drove 90% of the respondent purchasers from mainstream industry to invest in environmental protection measures. However, regulation without effective and consistent enforcement is wholly unsatisfactory. The creation of the Environment Agency in the mid-1990s was welcomed because it consolidated the activities of a number of different regulators into one national body.

Over the past five years the Agency has worked hard to reduce the regional variation in approach to enforcement. But the Agency's effectiveness is hampered by inadequate resources, confusing legislation and the low level of fines imposed on polluters. One other issue that concerns me is the devolution of increasing environmental powers to Local Authorities – one example being the New Contaminated Land Regime, whereby the Local Authorities, rather than the EA, will be the enforcing body for many sites impacted by contamination. I suspect inconsistency in enforcement to re-emerge as a key issue in the coming years.

But why does home market regulation and enforcement matter to companies aiming to compete in a global market?

The most competitive ETS industries are found in countries with stringent environmental regulations. Germany has become the leader within the international ETS industry with 21% world market share, followed by America with 16% and Japan with 13%. The UK, by contrast, has between 4 to 8%, depending on which statistics you read. Stringent German environmental legislation has also led to innovation, enabling mainstream German industry to find better, more cost-effective means of complying with regulation. As standards elsewhere inevitably rise, these market leaders are in an excellent position to further increase exports of environmental technology.

This fact is recognised in the UK. In the words of a DTI report, “the



competitive status of the UK's environmental protection technology industry is dependent on the requirements and implementation of domestic legislation". In 1994, JEMU commissioned a study on Succeeding in the Changing Global Market. The key theme of the report was the success of the UK environmental industry with ETS exports exceeding imports to the tune of £532m in 1997. On the basis of these figures the UK's trade surplus is rising at a greater rate than the market growth, surely a healthy sign?

Yet while the UK saw growth of between 30 to 50% in exports to North America, Middle East, Africa and Japan in the two years to 1997, there was a slight decline in exports to other European Union countries, a market that represents almost 50% of our total ETS exports. Some of our world class water and waste water treatment companies have been purchased by overseas utility companies.

It is sometimes suggested that the UK leads the way in research and development, but fails to capitalise on the commercial potential from the fruits of this R&D. Statistics, however, show that Germany, the US and Japan are dominating the ETS industry technologically, with shares (as an EC study revealed) of 29%, 22% and 12% respectively of the world's patents, compared to the UK's 6% share.

A country's success in ETS export markets can also be measured in jobs created. Not surprisingly, the largest number of ETS jobs have been created in the successful world leaders. There are 1,800,000 jobs in the American industry, a similar amount in Germany and 590,000 in Japan. And as the world ETS market expands so will the employment benefits to these countries.

So why have Germany, Japan and the US developed such dominant positions?

Crucially, their governments perceive this industry as being of strategic importance. They have developed pro-active policies on R&D funding, export promotion, tax incentives and regulation to help their companies win dominant shares of the fast growing world markets.

The support for British ETS companies pales into insignificance compared to the proactive support measures of Germany, the US and Japan. Although there have been some encouraging signs emerging from DETR, notably from Michael Meacher, since the Labour Government came to power, there appears to be a lack of focus on the industry at the highest levels of government.

I would like to give a couple of examples of the last point:

- the New Contaminated Land Regime, the need for which was recognised by the Environment Select Committee back in 1990, still has to be implemented over 10 years later. The date when this guidance comes into force has been repeatedly delayed by DETR, and still the current deadline of April this

year looks optimistic. These delays have created confusion in the development sector, uncertainty about the extent of remediation required and threaten greenbelt land. As a result, the assessment and remediation market, according to MSI worth £710 million this year, has seen very few UK innovators develop.

- The air quality regulations covering VOC abatement were delayed for two years. A number of UK abatement technology companies who had invested in the production capacity to manufacture the equipment were left with no regulatory driver to their market until 1999. This not only severely affected the home market and negatively affected their cash flow, but also compounded their problems in selling the equipment overseas.

So far I have concentrated on regulation as the prime driver of the ETS market. Let's look at some of the others.

### **The environmental impact**

Increasingly, major industrial companies are recognising the impact of their operations on the environment. Some are proactively encouraging governments to take action. Recently, Ford, like Shell and BP Amoco before them, withdrew from the Global Climate Coalition, an organisation which promotes doubt about global warming, and opposes government action to curtail carbon emissions. In the US, major corporations have established the Business Environmental Leadership Council and have been pushing Congress to action on carbon emissions reduction and have set ambitious goals to cut emissions and improve energy efficiency. In many cases they are working with NGOs and responding positively to stakeholder pressures.

Historically, the argument has been made that environmental protection costs impair international competitiveness for mainstream industry. Cost estimates from industry scared many policy-makers. But is there actually any truth in this argument?

A 1994 World Bank policy research working paper, "Competitiveness and Environmental Standards", concluded that "countries that adjust early and invest in environmental protection technology can maintain and even create comparative advantage in environmentally sensitive industries".

Substantial financial savings can be made from pollution prevention measures. A host of recent waste minimisation projects have now proved that costs can be cut and competitiveness improved through waste reduction and recycling, reduced material use and energy efficiency.

The Aire and Calder project was the UK's first major demonstration of the benefits of waste minimisation and cleaner technology, with savings for the eleven participating companies of over £2 million a year within the first 18 months, with another £2 million to be

achieved over the next two years. Over 70% of the measures had a payback period of less than one year, and only 10% will take more than two years to see a return on investment.

The overall conclusion was that “the financial case for adopting a philosophy of waste minimisation is so overwhelming that companies should need little further encouragement to save money and the environment”.

## **The UK situation**

So, back to this evening’s central question: is the UK missing out on a multi-billion pound industry? Undoubtedly, yes. As I have illustrated, while we have a strongly growing ETS industry and there are signs it is slowly eroding into German dominance, in world terms we are not in the premier league. So how do UK companies get promoted to take a greater share of the worldwide market? I have a number of suggestions.

1. I believe there is an urgent need for a national strategy for promoting the ETS industry. It is to be welcomed that two years ago JEMU published a five year business plan to promote the UK industry. However, with the exception of the water and waste sectors, the industry is characterised by small- and medium-sized industries. This means there is a dearth of reliable data not only on the current size of the industry, but it is also extremely difficult to evaluate the success of any initiatives. Government has a key role to play to establish the size and needs of the ETS industry. From such a study, then, measures to develop and support research, evaluate investment and export promotion and develop/expand tax incentives programmes to any company purchasing such technologies and techniques can be made. The key is that the level of support to British ETS companies must be comparable to that provided by the UK’s major competitor countries. The Prime Minister and the Treasury must play an active role in public education on the imperative of sustainable development and the development of a world class ETS industry.

Of course, companies within the ETS industry need to ensure they contribute actively to the debate about the opportunities and threats facing them. While the diversity of the industry is a strength, it is also a weakness in cohesively promoting the commercial benefit of our activities for the UK. The need for an authoritative voice at the highest levels of government was a prime reason for the formation of the Environment Industries Commission in 1995 and has been key to its subsequent success.

2. As I have explained, the demand for the ETS industry is generated primarily by legislation. There is no substitute for predictable and consistent enforcement of strong environmental regulations. The government urgently needs to tackle the inadequate resources of the Environment Agency and local authorities in areas such as air pollution control and contaminated land management. Also, fines

need to be at a level that are materially significant to change polluters' behaviour. This will provide a home market from which to build a solid export base.

3. Mainstream industry needs to be convinced of the need for sustainable development and the benefits of cleaner production and pollution control. Demonstrable success stories such as the Aire and Calder study need to be replicated and widely publicised.

4. We must educate our youngsters to a world class standard. I believe the shortage of appropriately skilled graduates is serious and many other countries have higher educational standards that will be the engine of their future growth.

Fundamentally, however, there is no substitute for an ETS company single-mindedly pursuing its own export strategy. My company, ERM, recognised that we needed to be a worldwide provider in the 1980s. We are now in 34 countries, employing 2500 people worldwide, almost 300 in the UK, with sales of around £220 million. From our London HQ, we have been an early entrant into many of the key emerging markets, such as China where we now have four offices. We provide a diverse range of environmental consulting services, but working with our local staff we tailor the individual country services to meet the needs of the market. In some locations, this may be policy advice to help develop environmental legislation, through to the development of social strategies to support ethical sourcing and employment in countries such as Vietnam.

There is much to be done if Britain is to compete more effectively with Germany, Japan and the US. But as we have seen at ERM, the potential rewards for Britain, in terms of profits, jobs, environmental trade surpluses and protecting the Earth's limited resources are enormous.

## Mr Ed Gallagher

*Chief Executive, Environment Agency*

### **Introduction**

For many of you here tonight the statement that "I am the regulator – I am here to help" will evoke at best a wry smile and at worse a hollow laugh. There are many who believe that it is not exchange rates, the minimum wage, low productivity, high interest rates, a lack of capital investment or poor research and development which is responsible for Britain's ills. It is the burden of regulation which causes the most problems imposing bureaucracy and additional costs while tilting a once level playing field in favour of those continental and international competitors who are not so constrained.

Even those who stoically comply with a plethora of confusing and disconnected regulations, feel some frustration. You could add one more regulator to that list. Looking at the information which is

requested from the Agency, we have to consider whether the Data Protection Act of 1998 applies, or whether it is covered by the proposed Freedom of Information Act next year or the existing Environmental Information Regulations of 1992, the Human Rights Act of 1998, or the Public Register sections of the Environment Protection Act of 1990 and the Environment Act of 1995, the Copyright Act of 1956, the Designs and Patents Act of 1988, or the commercial confidentiality and national security implications of the Environment Act of 1995.

However, in a competitive world every advantage is taken, even of regulation. There are numerous examples of industry making environmentally sounding statements, but which have a sharp commercial edge to them. The statement that “clinical waste regulation is too lax” was made by those manufacturers who were disappointed that the proposed regulations do not force everyone to use the specialist equipment and undertake the extra training for which they had prepared. Arguments for higher landfill taxes often come from those who run incineration plants seeking to direct work to their facilities.

There is one group, of course, for whom tougher environmental regulation is always requested. Those who make their living by supplying consultancy services, abatement equipment, or clean technology, feel market forces, the growth of population or increasing taxes on goods are not sufficient in themselves to develop their markets.

## **The role of regulation**

How then can regulation help? It is important to distinguish between what the government can do by setting policy and what the Environment Agency and other regulators like local government and the Health & Safety Executive can do.

The Environment Agency enforces the law. It has prosecuted over two thousand people and sent twenty-two people to jail for environmental offences, sending a clear signal that poor environmental performance will not be tolerated. Of course, once a company has been prosecuted the environment has already been damaged and the Agency therefore devotes significant effort to preventing and minimising waste and pollution working in collaboration with industries, both large and small.

The Agency has recently negotiated significant sums – up to £8 billion – to be spent on improving the water environment and reductions of around 60% in sulphur dioxide emissions, actions which will both improve the environment and create significant opportunities for new businesses, technologies and employment.

The Agency also aims to influence new environmental legislation, 80% of which comes from Europe, and promotes messages to influential organisations like regional development agencies that an

offer of the biggest subsidy, the cheapest labour and the largest number of green field sites to concrete over is not a way to attract and keep industry in the longer term. Integrated transport systems, good education facilities and a decent environment are equally crucial.

The Agency also seeks to educate both the next generation and those shortly to enter the workforce as managers. The Agency has programmes for schools and is increasingly working with universities and professional institutions to ensure that the environment and sustainability are at the heart of all the professions.

For smaller businesses in particular, the Agency provides videos, compact discs and Internet information to enable them to identify quickly the important things which they need to do to protect the environment from the mass of legislation that faces them.

The Agency also supports companies in their efforts to gain business in Eastern Europe, in particular in those countries that seek to gain membership of the European Community.

### **The environmental industry**

I am sure all this is helpful to develop the markets for environmental protection but I would question some of the assumptions made about its growth.

Is this a market for small and medium enterprises? Whilst it is true that all oak trees grow from small acorns, this sounds to me like a “big boy” market, and I expect there will be considerable consolidation in the future.

I also have some doubts about how sustainable this market is as a separate entity. For five years there will be a number of easy gains such as dual flush toilets, timers to control heating systems and segregating waste. All of these are easily proved to be cost effective for all businesses. For about ten years there will be an opportunity for genuine innovation, clever engineering, energy efficiency and clean technology.

After that, if the population continues to grow and the availability of incineration and landfill sites remains limited, we will be faced with fundamental change and new materials and technologies such as the fuel cell as an alternative to cleaner petrol engines, for example.

We will need to look at product design, building in sustainability from the beginning. Simply putting a filter on a smoke stack, collecting the ash and throwing it away in a hole in the ground may well improve air quality, but it does not improve the environment.

Lifestyle changes for us all are inevitable. Most people will cultivate a ‘distaste for waste’ over the next 20 years. They will exercise their purchasing preferences in a way that will force industry to design

products which last longer and are not just used once then thrown away.

So, in answer to the question proposed tonight “Are we missing a multi-million pound industry?”, I believe we are. But there is a bigger and a better one on the way and we must make sure we do not miss that one too.

## **Discussion**

There was agreement with the speakers that delays in introducing regulatory requirements based on proper science and inadequate judicial reaction to breaches of regulation were harmful both to the environment and the development of the industry. But improvements were happening – magistrates’ clerks were now more knowledgeable, some firms were beginning to specify their potential environmental liabilities in annual reports, and the financial community was becoming interested in both the costs of environment and the profits that could be derived from improving it. But aspirations were still well out of kilter with actual achievements – e.g. 8% recycling achieved against a 25% aim.

There were different views about the incentives industry needed to invest to improve the environment and cope with regulation.

Some thought that, at any rate in SMEs, cash flow inhibitions and managerial distractions would lead to minimal expenditure and a consequential need for systematic and rigorous inspection. Others thought that extensive inspection was wasteful and inevitably ineffective. It would be better to provide incentives for industries to improve their practices to the best possible extent – rather than to the minimum required by regulation.

This meant not only financial incentives but widespread education of those involved in industry so that they knew what was possible. Part of the process would be for industrialists to be far more open with regulators about what was possible. They would have to be able to discuss possibilities knowing that their words would not be unfairly used against them – this meant not only a common understanding of the need for environmental improvement between regulators and industry, but also a flexible approach from the regulators to the problems of individual industries. But the background would be those companies which did not employ the latest technology and science would go out of business.

Innovation, not only from the environmental services industry but from all industries, was the key. The Foresight Panel recommendation that every company should report on innovation was encouraging and should be followed. A scheme on the lines of the Dutch award for the best environmental scheme could also help, but it was noted that this scheme followed a long-term planning process.

There were, however, two warnings against assuming that education and enthusiasm would solve all problems. First, however keen the public might be on environmental improvement, no-one welcomed the immediate effects in their backyard, if it meant building an incinerator or a waste water plant there. Nor were worries about employment prospects, if firms alleged that they might go out of business because of environmental requirements, to be lightly dismissed.

Moreover, there was a danger that the UK environmental industry might think that, just because it was operating in such a worthy cause, it had a right to participate in the market. It did not. If competitors could stifle it, they would, and it would be the industry's own fault if they succeeded, because such a success would show that the UK industry had not kept its science and technology up to world class.

Different views were also expressed on the weight to be given, on the one hand, to clear and definite regulation and, on the other, to discussion and forward planning between government, industry and consumers. Both were essential, but there was always a danger that continued debate and planning would lead to aspirations and fudge rather than action. But too precise regulation could inhibit new ideas and concepts. Perhaps the balance ought to lie on the side of regulation when seeking to remedy the past, while planning would be given greater weight when seeking to improve on the present.

*Sir Geoffrey Chipperfield*

*Jeff Gill*