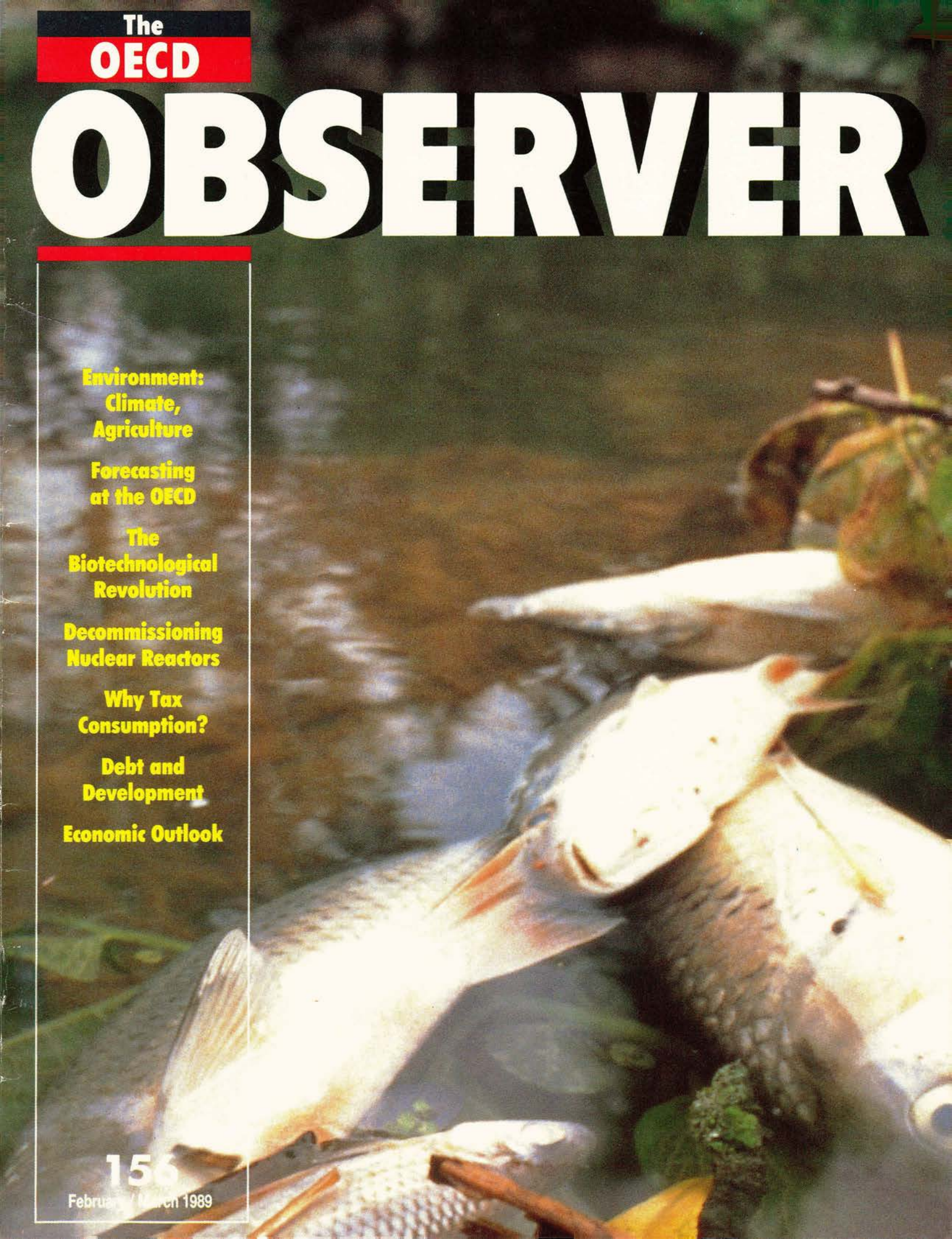
The OECD

OBSERVER



Environment: Climate, Agriculture

Forecasting at the OECD

The Biotechnological Revolution

Decommissioning Nuclear Reactors

Why Tax Consumption?

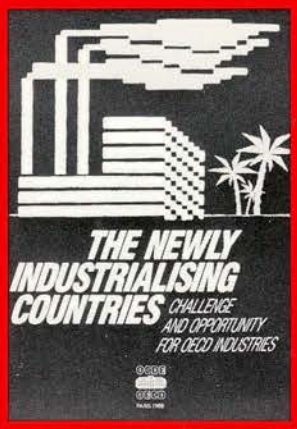
Debt and Development

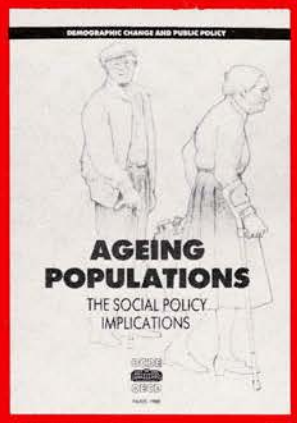
Economic Outlook

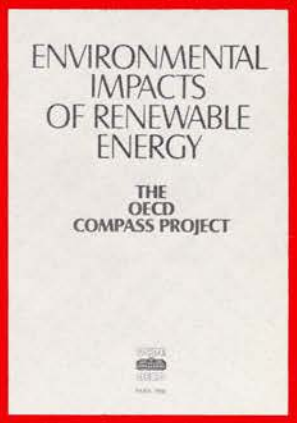
156
February/March 1989

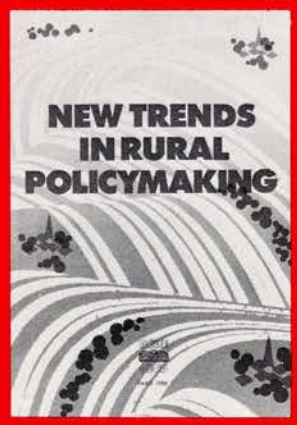
Fill in the order form with this issue

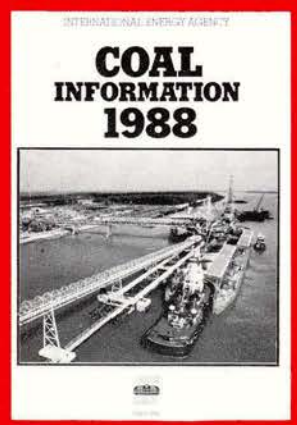
the 10 best sellers of the past 2 months

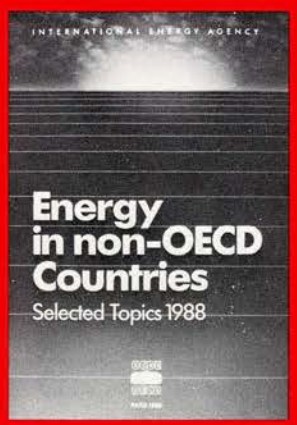


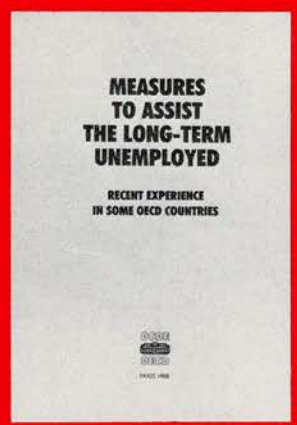


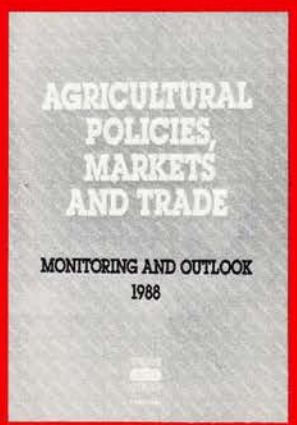












The OECD OBSERVER

Published every two months in English and French by the ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT.

Editorial Address:
OECD Publications Service
Château de la Muette
2, rue André-Pascal
F 75775 PARIS CEDEX 16
Tel. (1) 45-24-82-00

Single copies
£2.50 US$4.50 FF20.00 DM8.00

Annual Subscription Rates
£11.70 US$22.00 FF100.00 DM43.00
Tel. (1) 45-24-81-66

Editor
Ulla Ranhall-Reyners
Associate Editor
Martin Anderson
Assistants
Yannick Bultynck
Brigid Gallen
Art, Production and Layout
Gérald Tingaud
Photo Research
Silvia Thompson-Lépot

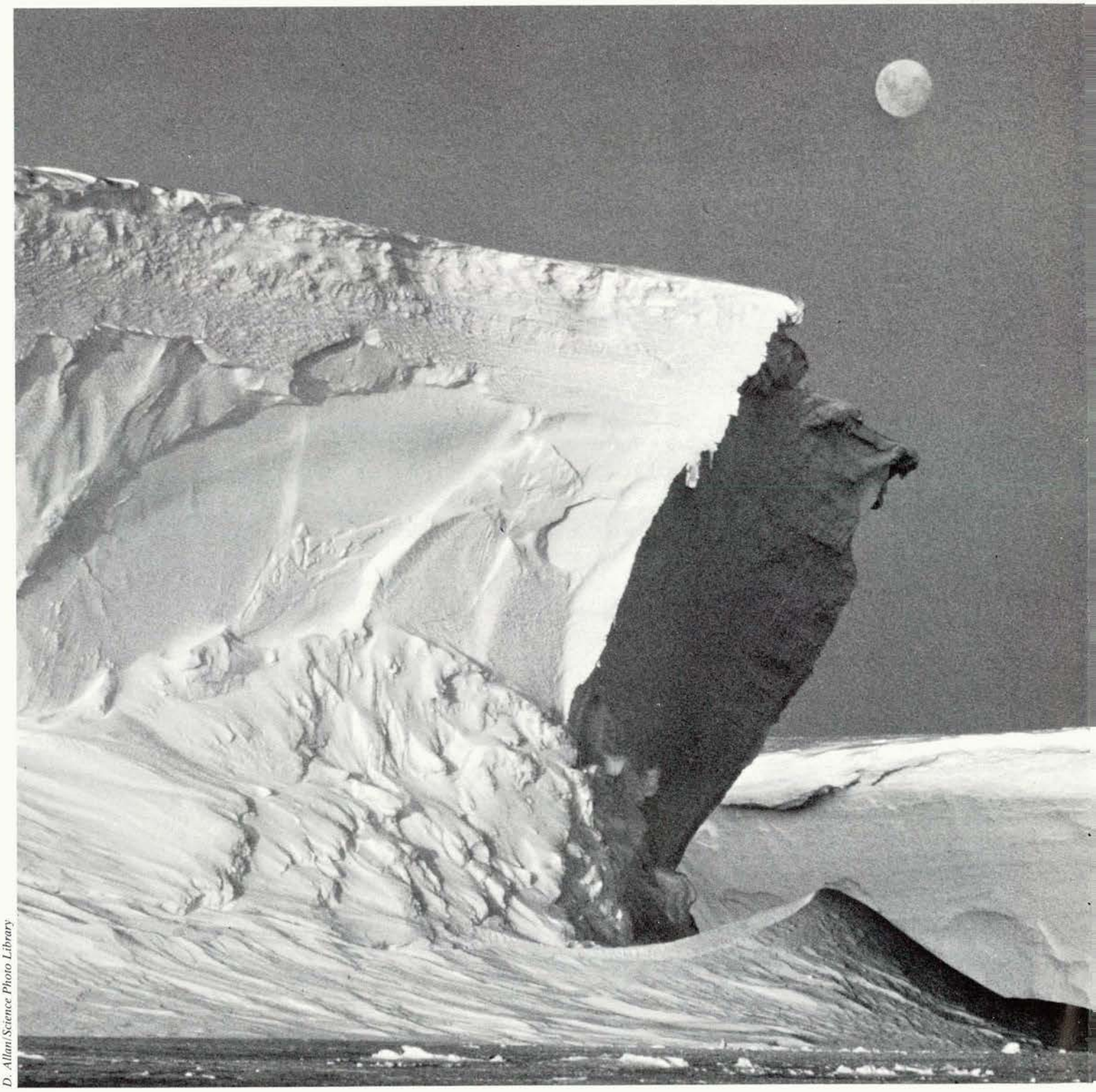
CONTENTS

156
February/March 1989

Cover: Bellavia/R.E.A.

Pollution endangers many aspects of the environment: agricultural fertilisers and pesticides can poison rivers and groundwater, and the build-up of industrial gases and the acceleration of deforestation threaten atmospheric stability. What can international co-operation do to reverse the trend?

The War



D. Allan/Science Photo Library

ming of the Earth

Gérard Dorin

The debate about the gradual warming of the earth's climate is building up not only in scientific circles but also in the press and among the public at large. The OECD has recently launched a project intended to improve assessment of the impact of, and potential solutions to, this complex issue.

The scale of man's activities and the pace of their development have now reached the point where their cumulative effects on the environment are undermining the delicate natural and geophysical equilibria of the entire planet.

The thermal balance of the earth's surface, which is governed by solar radiation, is highly sensitive to the concentrations of certain low-level gases: CO_2 (carbon dioxide), N_2O (nitrous oxide) and CH_4 (methane), referred to as 'greenhouse' gases for this reason. These gases occur naturally in the atmosphere, but as a result of man's activities their concentrations have increased significantly. Other gases such as chlorofluorocarbons are exclusively man-made chemical products.

What do these gases do? In layman's terms, they allow heat radiating from the sun in the short wavelength spectrum (such as ultraviolet rays) to penetrate the earth's atmosphere but prevent the heat that the earth radiates back out to space in the long wavelength spectrum (infra-red rays) from escaping. This is the 'greenhouse' effect. In other words, they act as a kind of one-way thermal barrier by allowing heat from the sun to enter the atmosphere, but preventing it from leaving. The result is a gradual warming of the earth's atmosphere, land masses and oceans.

To judge from the geological record, previous changes in the world's climate seem often to have been closely linked to the amount of atmospheric CO_2. Research into palaeoclimatology should help provide a clearer understanding of these phenomena and indicate the appropriate steps to be taken.

CO_2 is essential for life on earth. But any disruption in its natural cycle or level of concentration may have serious consequences. The rapid emergence of industrial civilisation has led to a sharp increase in the concentration of atmospheric CO_2, chiefly as a result of burning fossil fuels but also because of massive deforestation of large areas of the planet. N_2O is produced naturally through the denitrification of soils; the present rise in N_2O levels is the result of burning fossil fuels and also of a massive increase in the use of nitrates as fertilisers. Methane (CH_4) is produced in part by fermentation, particularly in wetlands; the current increase can chiefly be blamed on oil and gas, but also, for example, on the development of rice cultivation and intensive animal-rearing.

CFCs: Man-made Destroyers

Chlorofluorocarbons (CFCs, including freon) differ from these naturally occurring gases. They are exclusively man-made chemical products, are virtually indestructible and have the dubious distinction of not only actively contributing to the greenhouse effect but also destroying ozone in the stratosphere. It is common knowledge that the ozone layer surrounding the earth at high altitude is vital for the continued existence of all life on earth; it protects mankind against the extremely harmful short-wavelength radiation (UV-B in particular) that reaches the earth from space. Such radiation can seriously damage human health—causing cataracts, skin cancers such as melanomas, and so on—but it also affects wildlife and plant life in general. Increased outbreaks of such cancers in parts of the world exposed to prolonged and intense sunlight show that this phenomenon poses a real threat. Recent studies and observations have shown that the depletion of the ozone layer is much more serious and has been far quicker than was initially thought.

Overwhelming Energy Consumption

Energy consumption worldwide has now reached 10,000,000,000 tonnes of coal equivalent (tce) per year (in 1900 it amounted to 800 million tce). Over 80% of this energy is generated by burning fossil fuels (40% from oil, 24% from coal and 17% from gas), which releases some 20,000,000,000 tonnes of CO_2 into the atmosphere. The overwhelming magnitude of this figure provides some measure of the size of the problem. All other sources together account for merely 19%: 2% from hydroelectricity, 2% from nuclear power, 15% from biomass (i.e., wood, used mainly in the Third World).

Deforestation and Desertification

Rapid deforestation, which although a worldwide phenomenon is concentrated mainly in the tropics, and the desertification of vast tracts of land have also contributed to the build-up in atmospheric CO_2. Why? When a forest is destroyed, the timber is transformed into CO_2 either by being burned or through biological decomposition and

Gérard Dorin deals with issues involving energy and the environment in the Environment Directorate of the OECD.

subsequent oxidation; the same is true of the large quantities of organic materials to be found in forest humus (particularly in tropical rainforests). The effects of this transformation are adding to the fact that the clearing of forests simultaneously eliminates a huge reservoir in which CO_2 is absorbed through photosynthesis.

Deforestation and desertification are closely linked. The surface area of tropical rainforest has shrunk alarmingly over the last few decades as a result of demographic pressure for farmland, firewood and lumber. After a few years deforested land often becomes unsuitable for agriculture, especially if it lies on a slope (through soil depletion, erosion, and so on). The forest is often no longer capable of regeneration and the land becomes semi-arid. Once the forest has disappeared, rainfall diminishes, the soil deteriorates and dries out, and the climate in the region gradually becomes more arid. The resulting familiar vicious circle, when combined with increased atmospheric CO_2, is likely to exacerbate climatic changes and desertification, as in the Sahel region.

The implications of this gradual warming for hundreds of millions of people may be catastrophic: rapid rises in sea level, prolonged drought, upheaval in the Earth's general climate.

Rises in Sea Level

The oceans are warming up. The sea level is currently rising at a rate of approximately 2 millimetres a year, a considerable amount. This rise in turn leads to coastal erosion, which has already reached worrying proportions in many areas of the world. It is thought that the rise in sea level will be accelerated through melting at the polar ice caps and thermal expansion of the ocean water as it becomes warmer. Scientists estimate that sea level will rise from ½ to 2 metres by the end of the next century (provided that the stability of the enormous coastal ice shelves in Antarctica remains unaffected). Since the world's most densely populated areas (Bangladesh, the Nile delta, China, Indonesia, Japan, the Netherlands) and most urban conglomerations are to be found at sea level, the dramatic socio-economic and political implications of this rapid rise in sea level can easily be grasped.

In low-lying and densely populated coastal plains (such as Bangladesh), for example, sea walls could be built as a temporary measure to protect against flooding. But how can one stop the areas within these walls from being flooded when after heavy rainfall (particularly during the monsoon) it is increasingly difficult for the water to drain into the sea? These areas will tend to become marshy and saline, and their indigent inhabitants will flock into the major cities in what is now, unfortunately, a familiar pattern.

According to recent reports, the size and number of icebergs breaking off from the ice sheets in Antarctica seem to be increasing. Approximately 80% of the world's ice is to be found in Antarctica in sheets up to several thousand metres thick (Greenland has 20% and all other glaciers together account for less than 1%). The vast Ross and Weddell ice shelves in western Antarctica are poorly anchored to the basement rock (located below sea level) with the result that sea water penetrates into the gap between the rock and the ice over immense areas. With the rise in ocean temperatures, there is a danger that these glaciers might slip, perhaps even before the end of the next century, and break off into the sea (thereby raising sea level by about 5 to 6 metres).

Deviation of Ocean Currents

Another cause for concern is the recent change in the pattern of ocean currents, an example being 'El Niño' in the Pacific and the successive droughts in South America which it seems to have caused. The main ocean currents

INTERNATIONAL ACTION

Awareness is steadily growing of the magnitude of the danger that climatic changes represent for the future of the world, and perhaps faster than for any other environmental issue they have previously had to face. International co-operation has been actively pursued over the last few years, chiefly in the sciences, in an attempt to refine man's ability to predict the probable evolution of these changes, their speed of development, causes and potential consequences. The Toronto Conference in June 1988 was a turning point politically. The formation of an 'Intergovernmental Panel' on climatic changes in Geneva in November 1988 also represented an important practical step towards such co-operation between governments with the help of the international organisations concerned (UNEP, WMO, ICSU, OECD, CEC, FAO, UNDP).

WHAT ROLE FOR THE OECD?

OECD member countries, the most highly developed and industrialised in the world, hold a special responsibility to confront these climatic changes. They must combine their efforts and take action now so that appropriate technologies, strategies and policies, particularly those that will reduce the production of greenhouse gases, can be developed before it is too late.

The OECD is directing its efforts, in concert with other organisations, along three main lines of approach:

- assessment of the foreseeable socio-economic effects of climatic changes, for both OECD member countries and the worldwide economic equilibrium
- review of major energy/environment implications, in particular through projections of worldwide emission rates for greenhouse gases from different alternative energy sources (this work is being carried out in close collaboration with the International Energy Agency (IEA))
- formulation of policies of control in the form of preventative and corrective measures in the areas and activities concerned.

A. Nogues/Sygma

How much of the world's forests will be turned to desert before the end of the century?

have a major impact on the weather (temperature, rainfall) in the continents that they wash, and changes might have serious implications. What might happen to Europe were the Gulf Stream ever to change course doesn't bear thinking about.

The Threat of Drought

In the last decade or so, major droughts have become more frequent in many areas of the world such as the Sahel, Ethiopia and Brazil; the list of such areas is impressive—and depressing. Is it merely coincidence, or is it a sign of changes that have already taken place in the world's climate? Major droughts, particularly when they last a number of years, as is now often the case, can ruin agriculture and national economies and bring about real catastrophes in human and social terms, through famine and forced exoduses; they may even have political repercussions (conflicts and destabilisation). Even though developed countries are sometimes affected, such as the United States in 1988, the severest impact is likely to be felt in developing countries in tropical and sub-tropical latitudes where any damage will be compounded by a shortage of technical and economic resources.

In the tropics in particular, attempting to replace the shortage of rainfall through irrigation will pose enormous problems: how to find the vast quantities of water required, pay for the construction and maintenance of an irrigation system and then combat the adverse repercussions of such systems (increased soil salinity, and parasitic diseases such as bilharzia and malaria, which already afflict hundreds of millions of people in these regions)?

□□

What can be done to try to avert these developments? The problem is overwhelming and will call for all nations to make extraordinary efforts for a long period of time. The fight will have to be led simultaneously on a number of fronts. Firstly, preventative measures will have to be taken. Emission of all greenhouse gases (CO_2, N_2O, CH_4, CFCs) will have to be reduced considerably. Large-scale reforestation is required at all latitudes to bring about a massive and permanent increase in the Earth's capacity to deal with CO_2. Corrective measures will also have to be taken (in water engineering, agricultural practices, and in economic and social activities) to try to counter the adverse effects of these phenomena. Will the world's nations be willing to pay the high price that these efforts of vital importance to the global community will demand? ■

OECD Bibliography

- **Environmental Impacts of Renewable Energy,** 1988
- **Energy and Cleaner Air,** 1987
- **Renewable Sources of Energy,** 1987
- **Coal. Environmental Policies and Institutions,** 1987
- **Environmental Effects of Automotive Transport,** 1986
- **Environmental Effects of Electricity Generation,** 1985.

Cultivating the Environment

Ferenc Juhasz and David Juckes

How much is agricultural policy in the late 1980s shaped by concerns that are decades old? Food shortages after the Second World War dominated the farming policies of the day. Prices were set to maximise production and agricultural research and development directed to the same end. The farm population still formed a high proportion of the total, though already falling fast (in the USA, for example, it fell by 27% in the 1950s but was still 8% at the end of this period; in France it fell by a quarter over roughly the same time though that drop still left one in five workers employed in agriculture). Modern inputs and techniques were seen not as a threat to the environment but a means of supplying the expectations of an increasing population.

To counter the shortages of the 1940s and '50s many governments instituted large subsidies to boost agricultural production. Farmers responded to this stimulus and production quickly doubled, even tripled, in many countries.

This increase required the intensification of production, in part because the amount of land available was gradually shrinking. Farmers had to use more fertilisers, doubling, even tripling, the amount per acre to boost output. To combat pests and diseases new chemicals were developed and applied in ever-increasing quantities. The modernisation of the farm sector turned agriculture into a highly mechanised industry, resulting not only in a huge increase in the number of tractors and other farm machinery but also in larger and heavier machinery and equipment. As a result agricultural production has swung into surplus, and food shortages seem a thing of the past.

Modern agricultural techniques assure food security and provide both rural and industrial employment. But the adverse economic and environmental effects of subsidised and intensive agriculture, and the surpluses that result from artificially high prices, are of increasing concern. Many governments now share the view that the removal or reduction of expensive protectionist measures and subsidies for agriculture could also ease the pressure on the environment.[1]

Shifting Attitudes to the Countryside

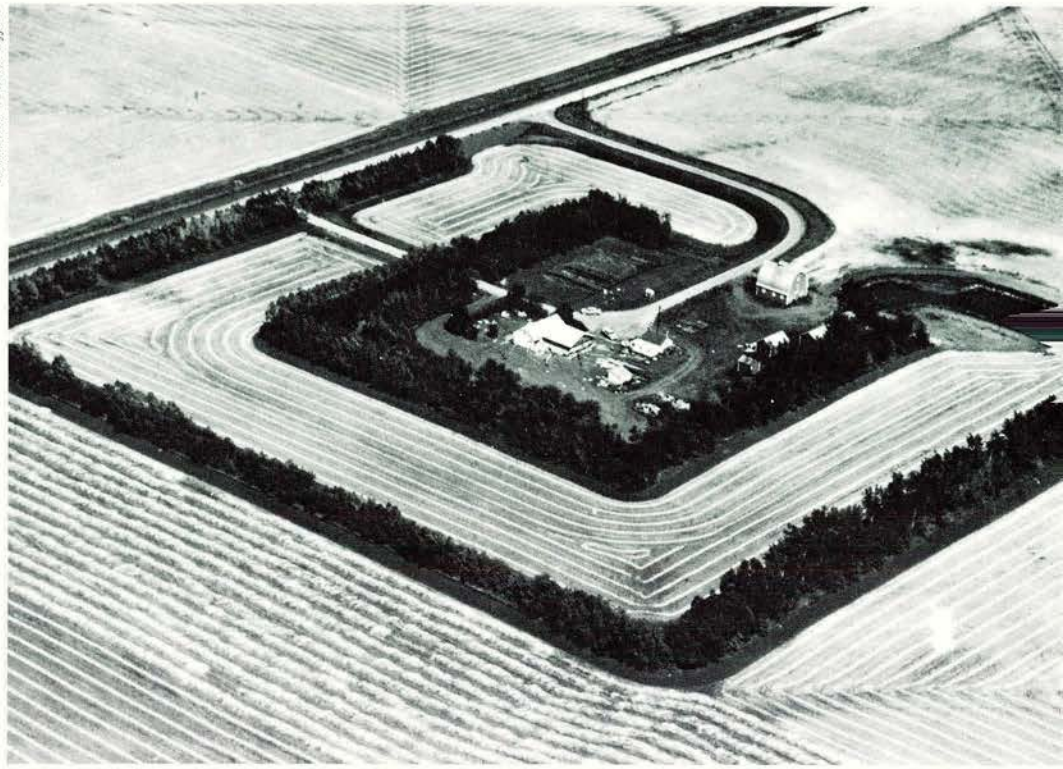
As agricultural methods have changed, so have attitudes towards agriculture in the OECD countries. With increasing wealth, leisure and mobility people have come to regard the countryside as a 'playground' or a living area the qualities of which should be safeguarded. Mounting awareness of the sensitivity of the environment has led people to question the safety of many bio-active products. Together, these developments have transformed the popular view of agriculture so that some now regard it as a real threat to the environment.

Pollution of groundwater from the intensive use of chemical fertilisers and from animal manure can be detected in many areas in the form of nitrates, necessitating expensive biological and mechanical filtering before it can be used as drinking water. This is a threat that is likely to increase rapidly, as the

Ferenc Juhasz works on natural resources in the Environment Directorate of the OECD.

David Juckes concentrates on technological issues in the OECD Directorate for Food, Agriculture and Fisheries.

1. **Agricultural and Environmental Policies: Opportunities for Integration,** OECD Publications, Paris, 1989.



Canadian Tourist Office

Must increased agricultural productivity be at the expense of the environment?

high fertiliser inputs of recent years leach through to groundwater.

Pollution from pesticides can be detected also in surface waters—and subsequently in drinking water—and in food residues. Moreover, many plant and animal species have become extinct, the unintended victims of agricultural chemicals. In Germany, for example, in an area of Lower Saxony where crops are farmed intensively, only 14 species of plant are known to have disappeared in the 80 years from 1870 to 1950, but in the 28 years to 1978, fully 131 species vanished. And how many have gone in the decade since then?

Intensive mechanisation and the foodstuffs used for intensive animal production also cause soil pollution and erosion. Further, the over-use of water and sustained irrigation of soil produces salinisation. Bringing land that is easily eroded and wetlands under cultivation also leads to loss of topsoil and of biological diversity and wildlife habitat.

Moreover, the aesthetic quality and attractiveness of the countryside have also suffered through the destruction of hedges and water courses and the creation of large, monotonous fields for mechanised farming.

Changing Political Realities

As the magnitude of the actual and potential environmental damage manifested itself in the late 1970s, public awareness was alerted and demand for remedial action made itself heard in most OECD countries (box, below).

It was clear that the resolution of complex economic, political, technical, institutional problems would take time and money. Awkward questions about the acceptability of the emerging damage began to be voiced: how much more can the environment take, how much is it going to cost, in lost income and cleaning-up costs—and who should pay (box, p. 10)? ▷▷

CLEANING UP, COUNTRY BY COUNTRY

The use of agricultural chemicals produces the most insidious and damaging impacts both on human health and the environment. After a long battle, this has now been recognised, and most countries are taking counter-measures. The most progressive are the Northern European countries, and the Commission of the European Communities is also in the process of developing a uniform set of regulations for its twelve member countries.

What has become clear is that environmental regulations alone cannot produce a solution. An entire array of new and innovative measures is required. They range from high taxes on chemicals to setting aside land to avoid the use of chemicals. Radical results were achieved also in countries – such as New Zealand and Australia – where output subsidies were reduced. In spite of these measures the severe threat to groundwater supplies continues to grow.

The use and disposal of manure from intensive animal rearing now pose major management problems for farmers in Western and Northern Europe. In the Netherlands, for example, it was found that with sufficient investment for proper storage facilities and appropriate application methods, the leaching of nitrates could be reduced. The difficulty lies in funding the appropriate investment. Some farmers, especially older ones, cannot afford it.

Soil erosion is causing widespread concern in the United States, Australia, Southern Europe and in the mountainous regions of other countries. It erodes the long-run sustainability of the soil and leads to sedimentation in rivers, lakes and dams. Its total cost could reach as much as $6 billion annually in the United States alone. Well-targeted conservation measures, tying subsidies for farm produce to the implementation of specified conservation measures, will produce results over a longer period.

The character of the rural landscape, often regarded as a national heritage, has been formed by farming practices and land-use policies in the past, and farmers play an important role in its preservation. The drive for increased farm output can threaten it. Among other measures, several European countries have introduced schemes to prevent the clearing of hedgerows. Incentive schemes are being offered to farmers to preserve wetlands. And some governments have acquired conservation sites of major international significance.

Economic realities were beginning to assert themselves, too. The costs of agricultural subsidy programmes and of financing the storage of butter, beef, grain, wine and other products were meeting strong resistance from finance ministers, taxpayers and consumers. The disruptive effects on international trade of dumping these surpluses at as little as a third of their production costs on the world market threatened to spark off a trade war among OECD member countries. The stage was set for a long and difficult confrontation between the major agricultural producers: the United States and Canada, the EEC, and Australia and New Zealand.

Political realities have also changed since farming subsidies were first introduced. The political weight of the farming sector has declined while that of the environmental lobby has increased. Democracies responding to these changing preferences could not avoid facing up to the central political choice: how much agriculture and how much protection of the environment?

Protection or Protectionism?

It was in this context that two OECD Committees, one on Agriculture and the other on Environment, embarked on a combined programme to assess how agricultural and environmental policies could be integrated in a way that would produce cheap but practical solutions. And consistent policies would be cheaper and would produce what people want.

WHO PAYS?

High and rising nitrate levels in groundwater in the United Kingdom (the result of the intensive use of fertilisers) could mean £200 million in new capital expenditure over the next ten years and annual operating outlays of £10 million to keep drinking water safe. Should farmers, consumers or taxpayers meet these costs? Should the agricultural practices that have created this situation be prohibited?

Over the last 15 years most OECD countries have implemented the 'polluter-pays principle' in their industrial sectors, as a means of internalising the 'social costs' of pollution. It has been difficult to apply the principle to agriculture because the identification of the impact of pollution from agriculture has lagged behind that of industry, and because prices have been largely independent of market demand.

The costs of cleaning up and prevention are thus largely borne by the taxpayer. Only recently (and in a very few countries) have attempts been made to internalise these costs so that the farmer and, ultimately, the consumer, bear some of the environmental costs of farming activity. But farmers argue, not unreasonably, that it is unfair to penalise them now for acting precisely as governments have overtly encouraged them to do through advice and subsidies for the past twenty years.

There is also increasing agreement now that interests and individuals who benefit from farmers' actions aimed specifically at environmental improvement – as opposed to techniques to prevent or clean up pollution – should help cover the costs. Where a farmer may change his practices, revert to older, 'extensive' methods, or even remove land from production to preserve its aesthetic or biological qualities, such actions are being increasingly promoted – and recompensed – by governments.

Policy-makers must also decide whether to pass mandatory regulation or to encourage voluntary change. In many countries – the United States, United Kingdom, Sweden – voluntary participation by farmers is encouraged through education, advice and incentive payments, and it has often proved effective. Strong regulatory measures have also had to be applied, against aerial spraying, for example, the excessive use of chemicals and the ill-timed or excessive spreading of manure.

Three specific solutions were proposed by the Committees:

- enhancing the beneficial role agriculture can play, particularly in landscape amenity and conservation
- reduction of agricultural pollution in a way that would assist the structural re-adjustment of the agricultural sector
- targetting measures intended to put the agricultural sector on a sound economic basis to produce maximum environmental benefits.

The Practicalities of Reform

The results of this assessment are encouraging and augur well for the future. Some countries are already taking strong measures to suppress the worst effects of agricultural pollution, and others have established mechanisms to integrate policies. OECD governments have now agreed that there are already ample opportunities for them to harmonise their environmental and agricultural objectives and policies immediately.

Agriculture and Environment Ministers should specify policy objectives which are clear, concise and measurable and, deliberately or not, have the minimum of unintended adverse effects on one another. They should re-organise the machinery which implements policies to achieve the desired integration. The devolution of decision-making, creating a sense of local responsibility, would help to produce appropriate local solutions.

Agricultural inputs, such as fertilisers, pesticides, feed additives and irrigation water, should be managed and used in ways that produce the minimum of damaging effects. Standards, registration procedures and testing methods for these products should be harmonised and made more stringent. Their over-application should be reduced by various means, including pricing policies which cover the costs of their harmful effects. In some cases quantitative restrictions on their use might be required.

Farming practices in the application of chemicals, in irrigation, in soil preparation and in animal husbandry have to be changed. Advisory services should be further developed to encourage farmers to use the management practices best suited to their areas. Management agreements and cost-sharing programmes for environmental improvements are the most recent ideas that require promotion. Other measures that governments should take include research and education to develop and popularise 'environmentally friendly' agricultural practices.

OECD governments now recognise that they are facing a challenging and unique opportunity to reform agricultural policies in line with their budgetary reforms and the environmental aspirations of their citizens. This will take time but the opportunity is there and a start can be made now.

Letting the Market Help

Reductions in agricultural price support, and other appropriate measures, will allow market signals to influence the orientation of agricultural production. They have already been agreed to in principle by OECD governments. Lower subsidies will often lead to reduced inputs and therefore less pollution.

Price support schemes that are allowed to continue should be tied to corresponding obligations on farmers to improve the environment—so-called 'cross-compliance' requirements. Any farmer mistreating his soil or expanding production on wetlands could be excluded from the price-support or income-maintenance scheme.

Direct income-support schemes might be required, particularly in the transition period, to encourage market-oriented agricultural production. These measures should replace subsidies tied to production and should be targetted toward regional development and environmental improvement.

Diversification of agriculture to hardwood forests, organic farming and alternative products would also result in environmental improvements.

'Land set-aside schemes' are an alternative way of lowering production and reducing inputs and pollution. If these schemes are targetted towards particularly sensitive areas, such as areas where groundwater is recharged, their environmental benefits could be high.

□□

OECD governments are faced with a conflict between the public demand for a better environment and agricultural activities, some of which have an adverse effect on the environment. Economic realities also demand a reform of the agricultural sector. And international trade is threatened by the disorderly marketing of subsidised agricultural products. ■

Adamini/Gamma

Some governments have acquired tracts of land to ensure their environmental quality.

OECD Bibliography

- **Water Pollution by Fertilizers and Pesticides**, 1986
- **Management of Water Projects**, 1985
- **The Implications of Different Means of Agricultural Support**, 1983.

M. Claude/UNESCO

High priests in Egypt.

The Uncertain Art of Forecasting

Nicholas Vanston

From the dawn of history, certain individuals have been treated with a mixture of awe and hostility because of their (usually erratic) ability to foretell the future. In Egypt they were priests, shamans in Siberia, prophets in the wilderness—and economic forecasters in the OECD.

The tools of trade of the professional forecaster have varied over the millennia, but have generally consisted of something more or less concrete—tea-leaves, animal entrails, computer listings—together with a large measure of subjective judgement. Forecasters make their living by 'interpreting the data', as we say nowadays, and a successful forecaster may be simply lucky, or have a flair based on experience, knowledge, a good memory, and the ability to put together seemingly unrelated bits of information which then spell a message.

No one knows what went on in the mind of a Roman augur. Twentieth-century observers find it difficult to believe that the birth of a two-headed calf in Germany would inexorably lead to the death of an emperor in Rome, for example, but perhaps the forecaster concerned had already noticed signs of a fatal illness in the emperor in question. Nowadays, forecasters—economic forecasters, at any rate—are much more inclined to place their faith in empirically established and theoretically satisfactory causal mechanisms. If the government raises tax rates, people will have less money to spend than previously, so they will probably spend less, and sales will fall. By analysing what happened in the past in similar circumstances, the forecaster hopes to be able to make a reasonably accurate prediction of what would happen in the future.

Virtually all economic forecasting is based on this method. Relationships

Nicholas Vanston is in charge of balance-of-payments forecasting in the OECD's Economics and Statistics Department, and until recently was responsible for co-ordinating forecasting activities there.

which were stable in the past are assumed to remain so in the future. Economic forecasters are therefore accused of 'steering the car by looking in the rear mirror'. It is a fair criticism, but if the windscreen is opaque, and as long as the road is reasonably straight and broad, what is the alternative?

Seeing It in the Stars

Indeed, the methods used by economic forecasters are similar to those used by scientists. Astronomers can predict eclipses of the sun or the moon to within a fraction of a second scores of years in advance. Rocket engineers can similarly predict the trajectory of an interplanetary probe to within a few metres when it is a million kilometres from Earth.

How? Because the laws which govern gravitational attraction between large objects have already been established to a very high degree of accuracy, and it is safe to assume that they will continue to operate. On the other hand, it is inherently impossible to measure both the position and the velocity of an electron or other elementary particle. The famous 'Heisenberg uncertainty principle' operates. In the physical sciences, the smaller the object the fuzzier it becomes when you try to take a closer look at it. The highly accurate predictions of astronomers and engineers are possible only because they are dealing with large objects.

The Unpredictability of Individuals

For the economist, individual people play the same role as electrons for the physicist: their individual behaviour is unpredictable, because individual decisions as to what to buy, how much to buy, where to work, what sort of work to do, and so on, are influenced by many factors, only some of them economic. But if you have a large number of individuals, many of these non-economic factors cancel one another out, and so predicting the behaviour of all the households in the country turns out to be much easier than predicting the behaviour of just one household.

But the non-economic factors never 'cancel themselves out' entirely and so there is inevitably a margin of uncertainty in any economic prediction. Worse than this, the economic laws themselves change through time as institutions evolve and as the structure of society itself changes. In the 1950s and '60s, for example, mainstream economists believed that they understood how industrial economies functioned, and how to keep them growing at top efficiency with low unemployment and low inflation. And in fact those decades were ones of unprecedented economic prosperity in the OECD area. But inflation started to rise and the traditional ways of controlling it seemed no longer to work very well. The oil shocks of the 1970s plunged the OECD into recession, and the old tools appeared to be irrelevant.

Musée de l'homme, Paris

Shamans in Siberia.

In reality, the tools were still good ones for the sorts of problems they had solved in the past, but they were ill-adapted to the new problems. It was like trying to extract screws with a pair of pliers. But even economists learn from experience, and with time they invented the screwdriver. The range of forecasting techniques was extended to include the impact of non-OECD country developments on OECD country economies, how changes in the price of oil affect decisions on production, investment and employment, how trade unions and employers react to inflation, how consumers react to changes in inflation rates and exchange rates, and so on.

Improving the Toolbox

The toolbox of professional forecasters at the OECD and elsewhere is thus now bigger and heavier than it used to be, and forecasters can tackle a wider range of problems than before. But it is a moot point whether the size of the toolbox has increased as fast as the problems themselves. There are those who believe that the world has become so complex and so interrelated that it is absurd to pretend any more that anybody can comprehend how it works, let alone predict its evolution. They point to the fact that, thanks to computerisation, all the stock markets and foreign exchange markets in the world are now effectively connected together 24 hours a day, and that the volume of speculative trade on them swamps the 'real' trade. In those circumstances, rational decision-taking and hence rationally based forecasting is doomed to failure, they say, with individual companies being buffeted by the vagaries of international financial markets, themselves prey to the slightest rumour and swayed by short-term sentiment.

But it is an ill wind that blows nobody good. A side-effect of the enormous strides that have taken place in information processing is that there are more data available to be analysed,

they are produced more quickly, and the methods of analysis are now very much more sophisticated and very much quicker. Thirty years ago, the world was perhaps a simpler place, but economic analysts would usually be working with a few simple economic statistics referring to a period that lay already several months in the past. It was, as the British Prime Minister, Harold Macmillan, said at the time, like looking up trains in last year's timetable. Even when the analyst had the statistics, the range of analytic techniques available to him was very sparse. He could plot a graph by hand, or calculate correlation coefficients using a mechanical calculator.

That deficiency was doubly frustrating because there existed much more sophisticated statistical techniques which had been specially developed by and for economists. The best known was (and still is) econometric analysis, the theory of which existed already before the Second World War. The calculations involved in even the simplest econometric application are so laborious if done by hand, though, that practical applications were few until modern computers started to become available to economists working in universities and government administrations. By the mid-1960s, 'running an equation' on the sort of computer available in such institutions might take a couple of minutes, as opposed to half a day if done by hand. Nowadays it probably takes about a tenth of a second.

Bread, Jam and Computers

With computing power becoming rapidly cheaper and better (a cheap personal computer of 1989 is probably more powerful than the OECD mainframe computer of 1975), economists became much more ambitious. No longer content with simply 'running equations' in order to make quantitative estimates of, say, the impact of a 10% rise in the price of bread on the demand for jam, they started to construct very large multi-equation models of individual markets, countries—even the entire world.

Grimaud/Paris

The Tarot card for good fortune.

The rationale for constructing such models is that although one may well have clear ideas of how the individual bits and pieces of a system work, it is extraordinarily difficult to analyse how the complete system in which they are embedded will function if one sector is nudged a little. If there is one ball on a billiard table, it is fairly easy to guess where it will end up if it is hit in a certain direction. But if there is a score of them, working out where they will all end up after they have rebounded off one another repeatedly as well as off the sides of the table is a problem that requires some difficult mathematics and a lot of calculation. In economics, moreover, the billiard table is not even flat and it keeps changing its size and shape.

Models, Maths and Billiard Balls

But governments have to know where all the balls are at any given moment and various institutions, of which the OECD is one, have devoted much time and computing facilities to building large models in order to tell them. The OECD model is known as 'INTERLINK' and is one of the few existing models that actually analyses the entire world. Most large 'macro-econometric' models have been built and are operated by national administrations or research institutes. Their main interest is in their own economy, and the rest of the world is of interest only to the extent that it affects their economy.

The OECD, on the other hand, has to make detailed analyses and forecasts of each OECD country. Furthermore, the non-OECD world can affect OECD economies significantly, even though, in terms of GNP and trade, the OECD area is more important by far. The two oil shocks of the 1970s and the Third World debt crisis of the early 1980s are a sufficient reminder that the OECD can be 'blown off course' by events it is powerless to control. The reaction to those events has been to model the supply, use and demand for fuels in extraordinary detail within the INTERLINK model and, more recently, to treat the 'problem debtor' countries more explicitly. Like generals, model-makers are always fighting the last war, and like generals their equipment becomes more and more complex through time.

Adding Up the World

The result of all this activity, as far as the OECD Secretariat is concerned, is the twice-yearly economic forecasts, or 'conditional projections' as we like to call them, that are published in the OECD's *Economic Outlook* each summer and winter as well as in the *Economic Surveys* published regularly for each OECD country. This forecasting work has been carried out in the OECD Secretariat for many years, even before the *Economic Outlook* began to be published in 1967.

In those days, the OECD was one of the very few institutions publishing forecasts for some OECD countries, especially the smaller ones, and they were scrutinised with much interest,

especially by politicians and journalists. The OECD gained a reputation for producing intellectually respectable forecasts, and it remains true that the forecasts published in the *Economic Outlook* represent the views of the Secretariat and not necessarily those of member governments. Very importantly, because the forecasts cover the whole world, and because the world has to add up correctly, the OECD forecasts are internationally consistent: world exports are equal to world imports. The forecasts made by individual member governments do not have this property: collectively, they may be too pessimistic or optimistic about their foreign trade.

With some exceptions, the INTERLINK model is not used in the preparation of the individual country forecasts in the early stages. But as soon as the country specialists (the 'Desks') have made their preliminary forecasts, the model is used to examine them for consistency, both domestically and internationally. The country specialists and the topic specialists (on, say, trade or monetary policy) exchange views and information, and at the end of this iterative process, an agreed set of forecasts is published.

The natural question to ask is, how good are they? The answer is, good enough for their purpose. Unlike the soothsayers of old, the OECD economic forecasters are not paid to tell governments and the wider world what will happen. They are paid to tell governments what the most likely outcome will be *if* economic policies are not changed and if exchange rates do not change. That is why they are referred to as 'conditional projections'. The reason for this terminology is that the OECD Secretariat, since its foundation, has been charged with analysing the implications of the economic policies of its member governments in order to determine whether or not those policies are optimal. It often happens, therefore, that outcomes are quite different from those projected, because economic policies were changed in the meantime (perhaps on account of the forecasts themselves) or because exchange rates (or oil prices) turned out to be very different from those assumed.

L. Jouan/OECD

Economic forecasters at the OECD: members of the Economics and Statistics Department at the press conference for the latest Economic Outlook *(see central section of this OECD Observer).*

It also happens that outcomes are different even when the assumptions proved to be accurate—we all make mistakes. For example, when the price of oil fell sharply in 1986, the OECD Secretariat forecast that inflation would fall and that real growth would accelerate substantially after a short delay. In fact, it took a year or more for growth to respond.

And sometimes we get it right (well, nearly). After the stock-market crisis last October we said that there would be no recession, but that growth would slow down. There was no recession, and growth did slow down. True, growth was much stronger at the time than we appreciated, and it has slowed down less than we expected. But the message was essentially a correct one for policy-makers.

In the end, if the message for policy-makers is the correct one, we are doing our job correctly. If we give advance warning of an increase in inflation, or of unemployment, or of a looming balance-of-payments crisis, perhaps something can be done now that will lead to a better outcome. If we find through our analysis that whatever is done, the outcome will hardly be better and may be even worse, then that too is valuable information. If we correctly predict the growth of GNP to three decimal places but miss completely a doubling of the rate of inflation, we are doing our clients a disservice.

□□

We come in for our fair share of gentle ridicule from the press and from our colleagues when our projections go astray, but no member government seriously questions the value of our forecasting work, and certainly media interest in our forecasts remains high, even though now the OECD is but one of very many forecasting institutions. ■

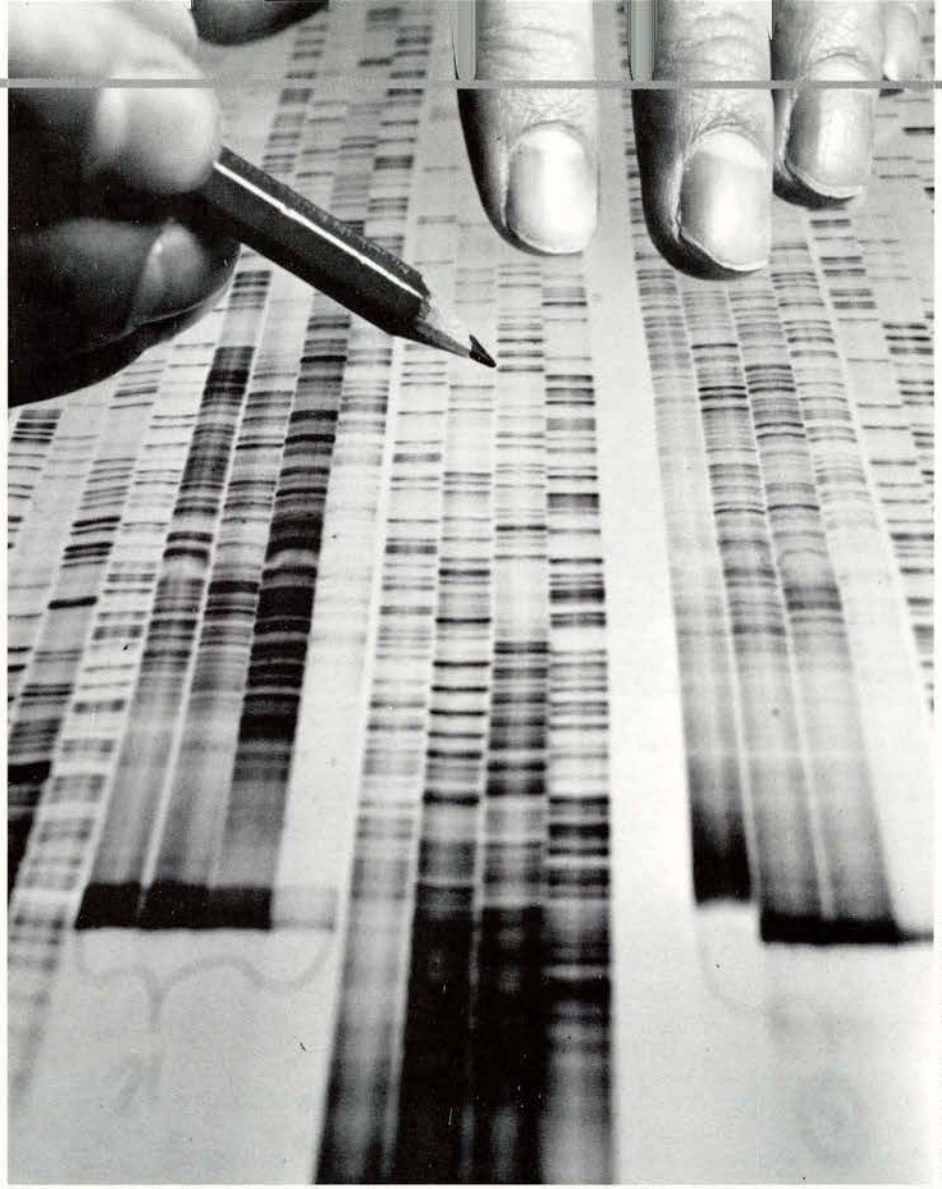
OECD Bibliography

- **OECD Economic Outlook**, published in June and December
- **OECD Economic Surveys** (on each member country), published annually
- **OECD Economic Studies**, published Spring and Autumn.

The impact of biotechnological advances on industrialised and developing countries alike will probably be far-reaching. Biotechnology is distinguished from other major technologies of the 20th century as its impacts on the quality of life, its human and social consequences, are arriving

Salomon Wald

earlier and may go deeper than some of its macro-economic impacts. In the longer term, it seems poised to transform existing trade patterns, both by creating entirely new products and undermining existing price structures.
It may stimulate entirely new jobs but could also cause unemployment, especially in countries over-dependent on exports of a single commodity. It makes possible dramatic improvements in the treatment of disease, with worrying implicationsfor public health budgets, and, in some developing countries, population growth as well.
It raises ethical questions that humankind has rarely had to address before. A new OECD report surveys past, present and future developments.[1]



S. Stammers/Science Photo Library

Biotechnological advance has allowed genetic patterns to be used to confirm identity in civil and criminal law suits.

The Biotechnological Revolution

Biotechnology is not an industrial or agricultural sector—it is a broad, generic technology. It is the third technological revolution this century, after nuclear energy and information technology. For hundreds of years its evolution was slow, and empirical, as small advances were made at the margins of knowledge. But modern R&D (in particular, recombinant DNA, cell-fusion and other scientific breakthroughs of the last decade) have transformed biotechnology into an efficient and swiftly growing set of tools and applications.[2] The next ten

Salomon Wald specialises in biotechnology issues in the OECD Directorate for Science, Technology and Industry.

years will see even more changes in a discipline intimately linked with man and life. These are early days.

Biotechnology in Industry

Biotechnology has the potential to improve the international competitiveness of advanced countries, and to open up entirely new markets. The leaders will be the big multinational corporations primarily concerned with chemicals, pharmaceuticals and food processing, although small companies will continue to make vital contributions to science and technology. For the large corporations, biotechnology will provide the means for improving or consolidating their competitive position. With time, there will be a growing diversity of biotechnological products coming from a variety of industries, and demand for them is expected to grow.

Many of the companies that are not already developing and using contemporary biotechnological techniques plan to do so in the coming years. While biotechnology remains but one tool in their corporate strategies, a remarkably large proportion of firms see in it a new generic technology that, like the computer, calls for a permanent pool of in-house expertise. The move of industry into biotechnology is correspondingly broadly based, rapid—and probably irreversible.

The considerable resources required in biotechnological R&D favour highly industrialised countries and large companies. Yet the fruits of this new technology have a particular interest for the Third World, although many of the companies concerned (Japanese ones apart) seem to show little interest in that potential market. Biotechnology could help developing countries deal with their health concerns and meet their food requirements.

Biotechnology will not be the predominant technology for most industries and services this century, and is not likely to become the main basis for new investment and economic growth until the second or third decade of the 21st century. Yet it will bring a further reduction in the use of materials and energy per unit of GDP in OECD economies and make for a more rational innovation process. In any case, its effects on society, on the way people live, are likely to be more important than its quantitative impact on economic performance.

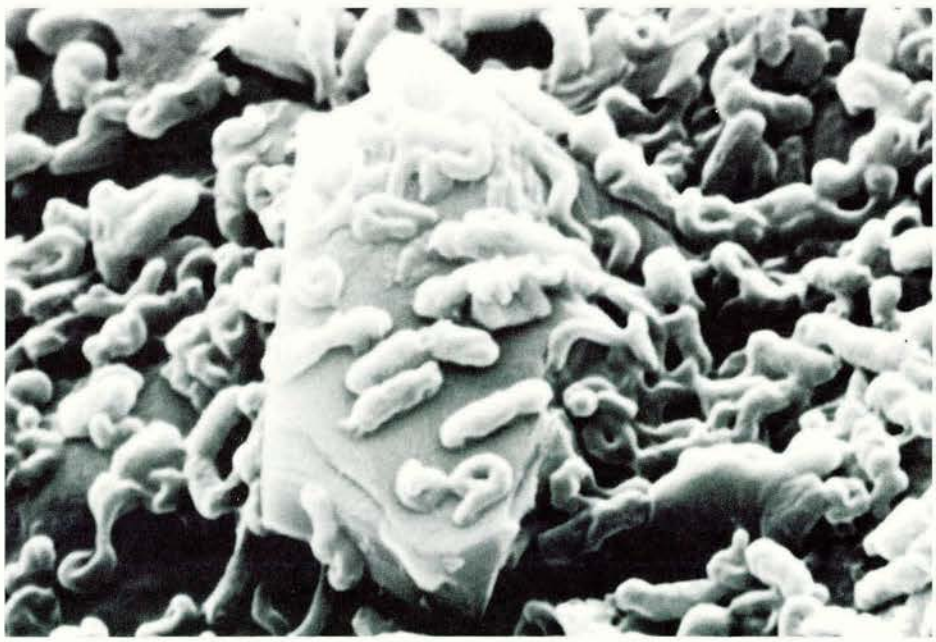
Capital, Investment and Patents

Far-reaching transformation of the technologies currently in use must inevitably lead to large-scale investment in the new, perhaps at the expense of the old. But changes in capital stock, in the 'skill profile' and organisational structure of industry will not occur overnight. And recognition of the length of the time-scale involved will help avert two opposing dangers: 'technological super-optimism', which tends to ignore the hard economic realities of relative costs, profitability and consumer acceptance of entirely new products, and 'technological conservatism', which fails to recognise the enormous potential at stake.

Commercial investment in biotechnology was given a big boost by court decisions to grant patent protection to its inventions, on the grounds that the new technology, often derived from genetic modification, was ascribable to human ingenuity. But it is widely argued that the large-scale diffusion of biotechnology will depend critically on better international harmonisation of patent protection.[3]

Drugs, Disease and Diagnosis

Understanding of the mechanisms of life and the causes of disease will continue to grow through the study of genes, revolutionising the underlying concepts in this still new area of



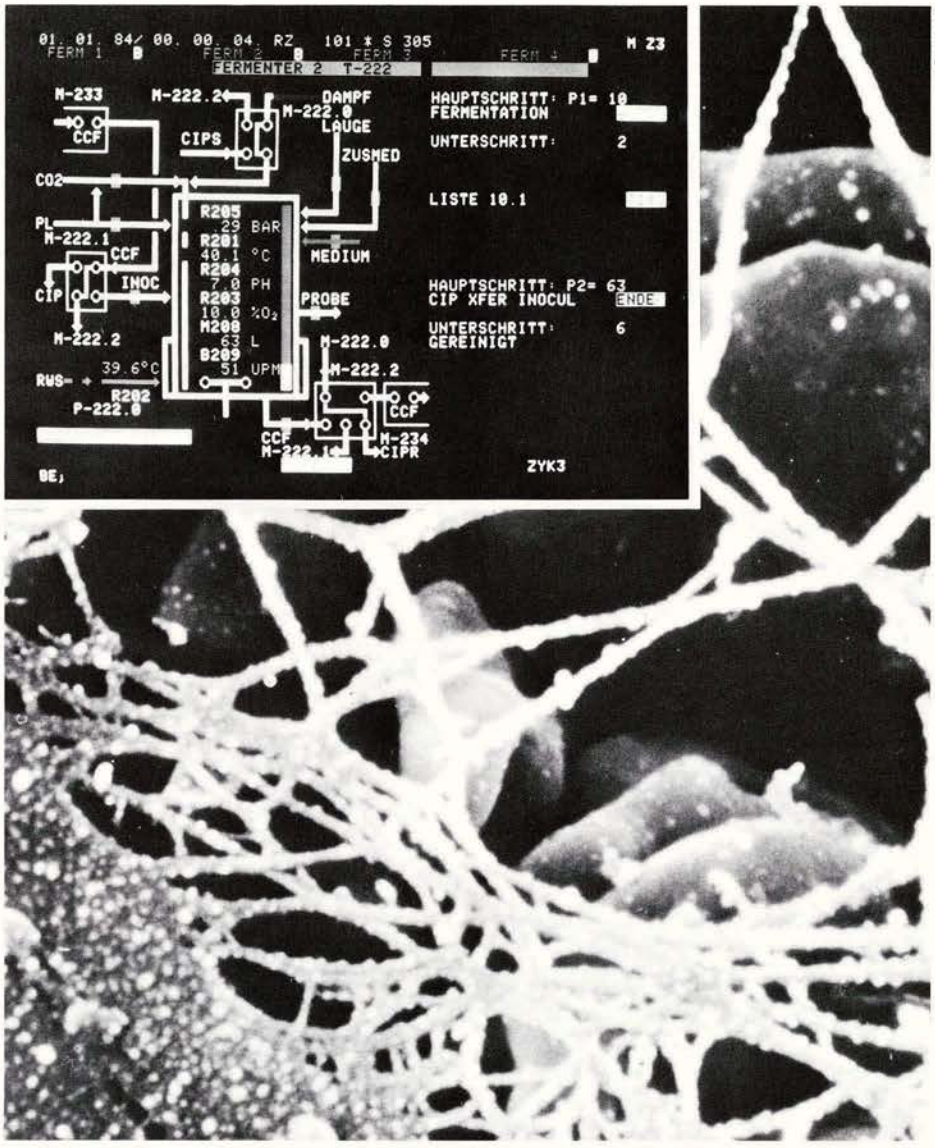
Giant Bay Resources Ltd., Canada

Another biotechnological breakthrough, here in mining: Thiobacillus ferro-oxidans breaking down pyrite, magnified 12,000 times.

1. **Biotechnology: Economic and Wider Impacts**, OECD Publications, Paris, 1989.

2. See Bruna Teso, 'The Promise of Biotechnology...and some Constraints', **The OECD Observer**, No. 118, September 1982.

3. See Ebba Dohlman, 'International Piracy and Intellectual Property', **The OECD Observer**, No. 154, October/November 1988.



Siemens

Some of the earliest applications of biotechnology have been in medicine – the monitoring of myocardial infarction is one recent example.

research. To judge from past experience, future progress might again be distinguished from that in other technologies by the rapidity of scientific and technical developments, which has often confounded the forecasts of experts and observers. Some important recent discoveries are already being applied. Genetic or DNA-fingerprinting, which was developed in the early 1980s and enables individuals to be identified from the DNA contained in their body fluids or hair, is now being used in paternity suits and crime detection.

For the time being, advances in biotechnology are taking place first and foremost in pharmaceutics and health care. A number of products have already emerged, such as insulin produced by bacteria, interferons for the possible treatment of diseases such as cancers and leukemia, the human growth hormone, a natural enzyme for dissolving blood clots and a hepatitis-B sub-unit vaccine. Animals can now be used as bioreactors to produce rare proteins. The combination of genetic- and protein-engineering technologies will allow drugs to be more specifically targetted, to have fewer adverse side-effects and to be more efficient. And most importantly, more than 200 diagnostic tests have been developed for detecting diseases.

In health care, indeed, the main general trend is towards disease diagnosis and prevention (through new vaccines) rather than cure, although diagnostic advances will also require other changes, not least the automation of sampling and the instrumentation necessary to analyse organic material from a large number of people. Biotechnology is playing a key role in enhancing understanding of AIDS and biotechnologically generated products may provide a solution to this most urgent of public health concerns before the end of the century.[4] In the longer term, gene therapy, which will be revolutionised by the development of recombinant DNA techniques, may offer the prospect of curing genetic disorders at a time when the number of disorders recognised as being of genetic origin has already jumped to over 3,000, compared to an estimated 400–500 some thirty years ago.

But such advances could bring their own problems. One of the biggest killers in the Third World is hepatitis-B. Simple diagnostic and preventive treatments have already been devised, but are currently too expensive to be widely deployed; once they can be produced more cheaply, there will obviously be enormous additional pressures on family planning programmes.[5]

There will be changes, too, in the health care systems of the industrialised countries. Home-testing for pregnancy is now perhaps one of the best-known domestic applications of biotechnology. But what of potentially terminal diseases, such as AIDS or cancer? Home-testing is now theoretically possible but can it be recommended in such instances, where medical and psychological counselling is of prime importance? And will the medical establishment—a powerful lobby in most developed countries—acquiesce in a loss (even marginal) of its power? The defence of corporate interests, too, could slow down the diffusion of new techniques, and not only in medicine and pharmaceutics.

The Transformation of Agriculture

Agriculture is one of the world's largest sectors and it, too, will be transformed by biotechnology, which has the potential to boost food produc-

4. See Carl Wahren, 'Can AIDS be Contained?', **The OECD Observer**, No. 154, October/November 1988.

5. See Carl Wahren, 'Family Planning Costs and Benefits', **The OECD Observer**, No. 155, December 1988/January 1989.

tion substantially, both through increasing crop growth rates and improving the growth efficiency of livestock, and to reduce residues from pesticides and other agro-chemicals. Man will be able to create plants that are resistant to disease, insects and herbicides, or are capable of surviving in inhospitable climates. The momentum is accelerating, and the next decade will see enormous advances in the development of plants and trees—not least, maize, wheat and rice—that offer high growth rates and improved seed qualities, and tolerate salt or stress.

Livestock is also benefitting from the products of biotechnology. Biotechnologically produced natural hormones can increase the milk yield for the same amount of feed, and can enhance animals' growth rates. Better vaccines are being produced for foot-and-mouth disease and other animal illnesses. Sex-specific semen might also be used in animal reproduction to produce the desired quantities of each sex—giving rise to ethical concerns that this technique could be used in human reproduction.

Many of these advances are also applicable in the food and feed industry. Applying molecular biology to wheat breeding could improve its bread-making qualities. Improved enzymes for food processing will lead to more efficient and cost-effective industrial food production. Biotechnology products and processes may be used as thickening agents and natural preservatives or to enhance flavour.

Concern has been expressed on how the powerful new tools of biotechnology could exacerbate current problems of agricultural surplus. To avoid this complication, agricultural biotechnology should be directed more towards qualitative than quantitative goals: food with better taste and aroma, that is safer, has fewer chemical residues (which implies the replacement of present agro-chemicals by biological techniques), and further specialisation and diversification of food products in order to respond to specific demands.

Moreover, the development of new and economically viable, and particularly industrial, uses of agricultural products has become a vital challenge. Biotechnology could become a decisive tool in the transformation of the agriculture necessary in OECD countries. For example, the growing importance of biodegradability and environmental compatibility might be better satisfied through products based on transformation of biomass than through synthetic products.

G. Tompkinson/Cosmos/Aspect Picture Library

In agriculture biotechnology is improving plant yields, producing new strains, increasing resistance—and transforming the patterns of world trade.

What Effects on Trade?

Biotechnology is already making itself felt in agricultural trade. A maize-based sweetener, high fructose corn syrup (HFCS), derived from starch through the use of enzymes, is now having an effect on international sugar trade, since HFCS production costs have fallen in recent years, partly as a result of a sharp fall in the cost of enzymes. World HFCS consumption was equivalent to over 6% of world sugar consumption in 1985, up from under 1% in 1975. As a result, industrialised countries have managed to reduce their imports of sugar, while developing countries saw their share of internationally-traded sugar plunge from 90% in 1975 to 67% in 1981.

In vitro propagation of plants and cell tissue culture could increase the supply of many plant species, speeding up the production of large numbers of plants or clones, making them available all the year round instead of on a seasonal basis, improving their quality, and facilitating the reproduction of species that are hard to propagate naturally once they flower. Such tech-

niques might improve the supply of palm trees, for example, helping producers respond to the rapid rise in world demand for palm oil. Palm trees can only be grown in tropical countries, but they have to be replaced every 25 to 30 years and are hard to propagate in the wild. Producers from industrialised countries might thus compete against suppliers of alternative oils and fats derived from coconuts, sunflowers and cottonseed.

Countries, especially industrialised countries, that previously had to rely on commodities imported from others, are therefore likely to be able to produce some of them competitively themselves. The effects on world trade could be profound. And where a developing country relies heavily on a single crop (as, say, Bangladesh once did on jute) employment effects, too, could well be traumatic. Moreover, such countries often tend to rely on earnings from agricultural exports to service their external debt; if this source of income disappears, or is severely attenuated, it may not be long before another debt crisis figures on the agenda of world economic summits.[6]

Yet new products, awaking unexpected consumer demands, will also create entirely new markets and new trade. It is presently not possible to estimate all likely net results of the various trade-disturbing and trade-creating effects of biotechnology.

A Marriage of Technologies?

Molecular electronics and biochip technology are concepts which have arisen from discussions on how electronic or computer components could mimic living cell capabilities to store and retrieve information in a dense form. In the scientific community, there are proponents as well as sceptics of the possibility of building a computer made up of proteins and other molecules functioning as electronic devices—and even the proponents do not believe that the possibility could become reality before many decades have passed and before totally new synthetic approaches have been developed. Nevertheless, in recent years, activities in the area of bioelectronics have intensified in several countries despite the technological obstacles. One reason for this interest lies in defence concerns: biochips, biocomputers and the information technologies based on them would not be susceptible to the impact of nuclear radiations. If, in the long term, the linking of biological and information technologies becomes possible, the resulting specific devices would be endowed with much higher capacities for information storage and processing than are possible with current information technologies. This breakthrough would influence economic and human activity more generally, and in ways which are presently difficult to imagine.

Ethics and Acceptability

Public acceptance of, and confidence in, biotechnology may prove to be the main factor determining its rate of diffusion. The debate on the potential risks and benefits started long before any new products or processes were developed: it has already been going on for 15 years. The issues involve both the subjective attitude of the public towards biotechnology, which reflects a number of reactions—including emotional ones—and the acceptability of the technology according to scientific criteria approved by the scientific community.

Even where a product or process may be scientifically acceptable, therefore, a company could judge that public reaction to it may be unfavourable, with the result that management may prefer not to market the new product. Some companies have already taken that line of least resistance. Thus both rational and irrational responses could inhibit the diffusion of biotechnology.

There are four main causes for disquiet in the public perception of biotechnology:

- ethical considerations about genetic modifications, especially in humans
- safety concerns about the introduction of modified micro-organisms into the environment, such as modified micro-organisms which would protect crops from frost damage
- fears about the (unfounded) reputation of biotechnology as an allegedly radical technology, with unpredictable and irreversible consequences
- worries that it may cause unemployment.

□□

It can reasonably be expected that the increasing number of products arriving in the health and environment markets will influence public discussion in favour of biotechnology. Current developments in biotechnology may suffer delays because of public concerns, whether they are justified or not, and their more or less inevitable political exploitation. In the long term, however, mankind will not be able to solve its major health, environment and perhaps even food problems without the new exciting and steadily improving tools of biotechnology. After all, it is also one of the oldest and safest techniques mankind has known since prehistoric times, and to which it owes bread, wine and beer, amongst other things. ■

6. See pp. 21-23.

OECD Bibliography

- **Biotechnology and the Changing Role of Government**, 1988
- **Recombinant DNA Safety Considerations**, 1986
- F.K. Beier, R.S. Crespi and J. Straus, **Biotechnology and Patent Protection. International Review**, 1985
- Alan Bull, Geoffrey Holt and Malcolm D. Lilly, **Biotechnology. International Trends and Perspectives**, 1982.

Structural Adjustment for Debt Distress

Helmut Führer

It now seems commonplace that poor countries face chronic difficulties in servicing their debt. Ambitious development aspirations demand substantial resources. Investment requirements tend to exceed domestic savings, and there is thus underlying pressure to use any external borrowing potential to the full. Acute squeezes on liquidity are therefore bound to occur.

Debt crises have been a regular feature of the world economy since the Second World War. The Paris Club, the multilateral forum for restructuring offical debts, started its operations in 1956, with the restructuring of debt for Argentina. But recent developments are of a different character and on a much more massive scale. For five to six years some forty countries have simultaneously been facing severe problems of debt-servicing practically without interruption and without any clear end in sight.

Yet it must also be emphasised that many Third World countries, at all

Helmut Führer is Director of Development Co-operation for the OECD.

Bundesbildstelle, Bonn

A large part of the credit borrowed in the 1970s was used to finance unviable investment projects.

stages of income and development, have managed to avoid acute debt-servicing problems and maintain steady growth during the last decade. And these countries, including China and India, account for approximately two-thirds of total Third World population and about half of Third World GNP.

Three basic factors led to the current debt impasse in many countries: excessive borrowing, defective policies leading to inefficient uses of resources, and unfavourable world economic conditions.

The strategy which has been developed and pronounced by the international community in the framework of International Monetary Fund/World Bank activities, Economic Summits and the OECD has stressed a series of interrelated measures to cope with the situation:

- policies by industrialised countries to expand economic growth and to improve access by developing countries to their markets
- policies by debtor countries to address external and internal financial imbalances, and supply measures to lay the foundations for efficient production growth in the medium term, for example, through sectoral policies, diversification of exports and fuller use of the private sector
- adequate financing for debtor countries pursuing such policies
- debt relief on concessional terms for those very poor debtor countries that are making determined efforts towards adjustment.

Table
EXTERNAL DEBT OF SUB-SAHARAN AFRICA
$ billion

	1970	*1982*	*1986*	*1987*	*1988[a]*
Debt[1]	12	72	113	129	137
Debt Service Costs	1	9	11	12	12
Debt Service Ratio[2]	14	24	34	32	32

1. Including short-term debt and obligations to the IMF. The debt increase in recent years is due in part to interest capitalisation.
2. Debt service as percentage of exports of goods and services.
a. Estimate, excluding valuation effects.
Source: OECD.

Berlin, September 1988: the Paris Club uses the IMF/World Bank meeting to announce new measures for the restructuring of debt.

IMF

The Debt Problems of the Poorest

Among the poorer developing countries, debt problems have been especially serious in Sub-Saharan Africa (Table). As in the Latin American debtor countries, a source of the problem is the very substantial increase in their commercial borrowing in the 1970s. The boom in commodities (chiefly foodstuffs and metals) during the 1960s and '70s had improved the creditworthiness of the countries exporting them, and it led to heavy external borrowing, driven by both demand for and supply of capital. The total external debt of Sub-Saharan Africa increased from about US$12 billion in 1970 to some $70 billion in 1982 and almost $130 billion in 1987. The annual cost of servicing the debt correspondingly increased from $1 billion to more than $10 billion, mainly for export credits from OECD countries, multilateral loans and some bank credits.

Like other debtor countries, African borrowers were caught by the sharp change in world economic conditions. The steep rise in the debt service ratio in the 1980s is the combined result of the growing servicing obligations and the slackening of export earnings because of deteriorating terms of trade.

It also became clear that the opportunities of the commodity boom had been used badly. A large part of the borrowed resources were used to fund defective policies and unviable investment projects and, in several cases, flight capital (as with Nigeria, Sudan and Zaire) invested abroad rather than at home.

The most decisive and promising range of actions now being taken to tackle the debt burden are the efforts

Bundesbildstelle, Bonn

The sharp rise in commodity prices encouraged unrealistic expectations in bankers and borrowers alike.

of the African countries with the support and advice of the World Bank, IMF, UNDP and the aid donors, to improve their economic strategies and policies.

Structural Adjustment in Africa

There has recently been a major improvement in the policy dialogue between donor and recipient nations and in international action to mobilise resources for structural-adjustment programmes.

There is a sharp difference here between the African low-income (LIC) debtor countries and the highly indebted Latin American middle-income (MIC) developing countries. In the case of the MIC debtor countries, net resource of flows from private external sources have virtually collapsed since the Mexican payment crisis of 1982, which damaged the confidence of the banks. In the case of the African LICs, on the other hand, net flows of resources were maintained, even increased, during the 1980s since a large part of them are from bi- and multilateral official sources, and are essentially granted in the form of aid.

Within these total financial flows to African LICs there is a growing emphasis on the funding of structural adjustment programmes. Very considerable amounts of money are now being mobilised, in co-ordinated international action under the leadership of the World Bank, to finance these policies in the poorest, most heavily indebted African countries. Africa will also benefit from the 'Enhanced Structural Adjustment Facility' recently established, on soft terms, by the IMF.

Mechanisms of co-ordination of aid were recently established in the framework of the Special Programme of Assistance (SPA) of the World Bank for some twenty Sub-Saharan African countries; they involve general donor co-ordination in meetings as well as local co-ordination in the capital of each recipient country.

At the Economic Summit in June 1988 a major new impetus was given to international action to relieve the debt of the poorest countries; it reflects a recognition of their special plight. The participants in the Summit welcomed proposals to ease further the servicing burdens of those of the poorest countries that are undertaking adjustment programmes. A consensus was established at the Summit on rescheduling their official debt and achieving a burden-sharing arrangement with a framework of comparability that allows official creditors to choose among concessional interest rates on shorter maturities, longer repayment periods at commercial rates, partial write-offs of debt-service obligations, or a combination of these options. The Paris Club was able to announce during the meeting of the World Bank and IMF in Berlin in September last year that practical arrangements for implementation had been worked out. Already Madagascar and Mali have had their debt restructured along these lines.

□□

Whether the action now launched will be sufficient remains to be seen. A decisive factor will be the persistent pursuit of structural adjustment by debtor countries. It is difficult to see a major improvement in African development prospects without improved export earnings from primary and processed commodities. That in turn depends on the ability of OECD countries to sustain faster growth and their willingness to open their markets. The international debt problem, therefore, should not be seen in isolation: it will be tackled effectively only if one bears in mind the critical interlinkage of all relevant aspects of policy: trade, finance, structural-adjustment policies by debtor and creditor countries, and development co-operation. ■

OECD Bibliography

- Helmut Reisen and Axel van Trotsenburg, **Developing Country Debt: The Budgetary and Transfer Problem**, 1988
- **External Debt Statistics**, 1988
- **Geographical Distribution of Financial Flows to Developing Countries**, 1988
- **Financing and External Debt of Developing Countries–1986 Survey**, 1987
- **Development Co-operation: Efforts and Policies of the Members of the Development Assistance Committee**, published annually.

Taxing Consumption

Kenneth Messere and John Nørregaard

Governments have to decide how much revenue they wish to raise from taxing consumption relative to other revenue resources—mainly personal income taxes and social security contributions. Another choice is what kind of consumption tax to adopt. The most striking development in taxation during the last two decades has been the move of 16 out of the 24 OECD countries to value-added taxes (VAT), bringing the OECD total to 18. A third question that countries with VAT have to address is its coverage and rate structure.

These and other policy issues are discussed in a recent OECD report on taxing goods and services,[1] which also provides a comprehensive survey of the methods adopted by OECD countries and the practical problems they encounter.

Perhaps because it can be so painful to pay certain taxes—on property, net wealth, bequests or corporate profits, for example—it is not generally appreciated that in nearly all OECD countries around 85% of total tax revenues are derived from only three kinds of taxes: personal income taxes, social security contributions[2] and consumption taxes of which VAT is one. Major changes in the tax mix thus involve alterations in the balance of these three revenue sources, even though corporation and property taxes are quite important in a number of countries. The Figure shows that between 1965 and 1975 there was a large shift away from consumption taxes towards income taxes and social security contributions, and that since the mid-1970s this trend has been halted even if not reversed. Why was this so?

During most of the 1960s and early 1970s the combination of high growth and inflation pushed taxpayers into higher-rate tax-brackets and at the same time eroded the value of their various tax reliefs. This phenomenon of 'fiscal drag' enabled income-tax revenues to increase as a proportion of GDP without any change in legislation. In addition, with rising standards of living taxpayers did not protest against, or perhaps even did not notice, the increase in their income tax bills. Nor did they object to increases in their social security contributions to support their welfare states, especially as these contributions were often perceived as a sort of insurance payment. Consumption taxes require an increase in rates to bring in more revenue, and in the case of excises even to raise the same amount.[3] In those heady days most governments did not feel they had to take such unpopular measures.

Choices between Taxes

After the first oil shock in 1973/74, with stagflation and falls in real disposable incomes, taxpayers were no longer prepared to pay increasing amounts of income tax. Instead, they demanded reductions or negotiated wage increases in terms that were net of tax. Nor, with increasing unemployment, could payroll taxes remain a buoyant source of revenue. Governments were accordingly forced to increase consumption taxes. Rates were raised and the tax base was frequently broadened, generally by taxing hitherto untaxed services.

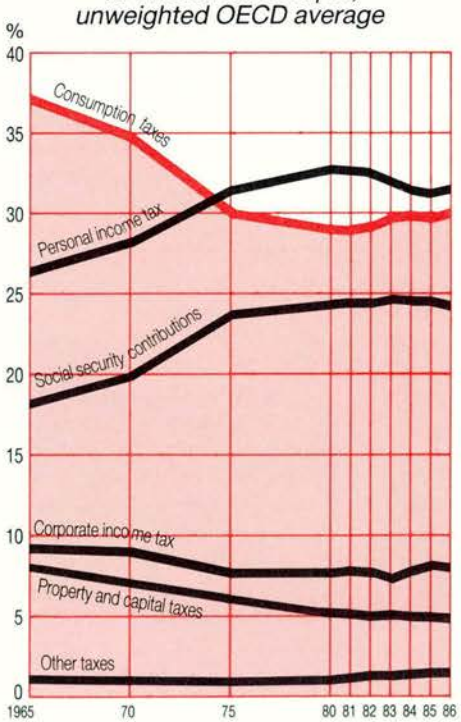
Aware of the growing preference of their voters for increased taxation of what they spend rather than reductions in their take-home pay, governments also have recently had other motives for moving towards consumption taxation. A good general consumption tax is seen as less prone to evasion, leading to fewer economic distortions than the income tax, and having fewer harmful effects on work incentives. The increasing of consumption taxes also has its drawbacks: they are likely to be more conducive to inflation and more regressive than revenue-equivalent increases in income tax. A number of governments nevertheless see these drawbacks as less important than those of increasing income taxes or social security contributions and are intending in the future to increase their reliance on taxing consumption.

Kenneth Messere and John Nørregaard are members of the Fiscal Affairs Division of the OECD Directorate for Financial, Fiscal and Enterprise Affairs.

Increasing reliance on consumption taxes has in practice had little effect on aggregate prices. It is true that the increases in VAT in the early 1970s in Denmark and in 1979 in the United Kingdom were almost fully reflected in increases in the consumer price index, but the existing empirical evidence suggests that usually the introduction and increase of VAT has had little effect on retail prices. Governments will obviously avoid introducing a VAT at a time when the economy is overheated. And the temporary imposition of price controls can prevent traders using the advent of the VAT as an excuse for unduly high price increases.

An important factor in this shift to consumption taxation is its changing composition. In 1965 selective consumption tax revenues (around 80% of which were derived from excises on drinking, smoking and motoring) were, on average, over twice as important as general consumption taxes on a wide range of goods and services. By 1985 they were more or less equally important. It is safe to predict that, with the recent introduction of VAT in Greece, New Zealand, Portugal, Spain and Turkey, during the next few years VAT will become increasingly more important than the traditional excises. Because its much wider base (of potentially almost all consumer expenditures) makes VAT a much more buoyant source of revenue than the traditional excises, governments who wish to do so will find it easier to shift the tax mix towards taxation of consumption.

THE MAJOR REVENUE SOURCES OF OECD GOVERNMENTS
% of total tax receipts, unweighted OECD average



Source: Revenue Statistics of OECD Member Countries 1975–1987, OECD.

How Much Revenue?

Is VAT a money machine? Governments wanting to introduce VAT would prefer a negative answer to avoid frightening their voting taxpayers. Without the compensation of heavy cuts in income or payroll taxes, or without being forced to adopt it to be able to join the European Communities, governments have not always been successful in the pursuit of VAT. 'TVA = taxe va augmenter' ('tax will increase') was a slogan which helped to have it rejected in Swiss referenda. The Japanese government has failed on more than one occasion to introduce VAT, though it now seems probable that it has succeeded. Concern has been expressed by various politicians and academics in the United States at allowing the federal government access to such a large potential source of revenue.

In practice, VAT has been a powerful source of revenue. In 1975, throughout the OECD (with the exception of Greece) VAT receipts were invariably higher as a percentage of GDP than those from other general consumption taxes. In all countries, apart from France, during the eleven years to 1986 they grew more as a percentage of GDP than receipts from general consumption taxes in those countries without VAT. This suggests, without proving it, that VAT is potentially a bigger source of revenue than other general consumption taxes.

G. Baldrati for the OECD

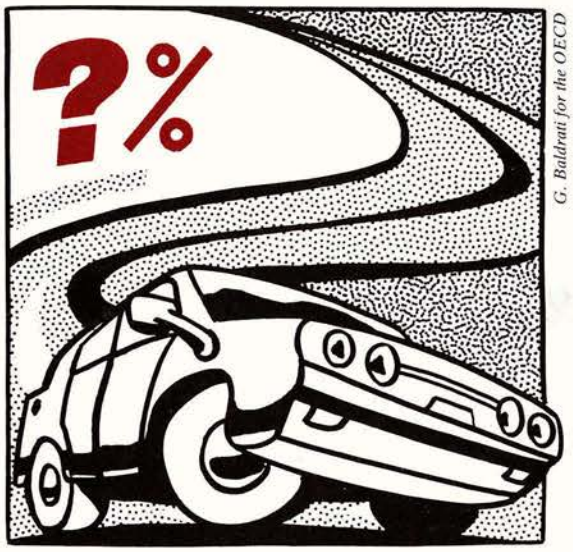
The Move to VAT

In 1966 VAT existed in only two OECD countries (Finland and France) and there only in partial form. As of January 1989 VAT is in operation in 18 countries and is likely to come into force during 1989 in another three (Canada, Iceland, Japan). Only Australia, Switzerland and the United

1. **Taxing Consumption**, OECD Publications, Paris, 1988.

2. Some governments prefer to regard social security contributions more as an insurance premium, and in some countries they may be perceived in a different way from other taxes. But they are clearly taxes: they are compulsory, payable to government and unilateral (i.e., rewards obtained bear no predetermined relation to contributions paid). Moreover, social security benefits have to be paid for somehow; whether this is done mostly or entirely by earmarked social security contributions or other, non-specific, levies is a matter of political choice and varies between countries.

3. The taxation of selective excises is mostly based on the strength of alcohol, weight of tobacco and volume of mineral oils and so without rate increases, revenues decline in real terms if there is inflation.



G. Baldrati for the OECD

States are not committed to its adoption.

There are many interconnected reasons for this move to VAT:

- to raise more revenue from consumption taxes
- to make consumption taxes more neutral in their effects on consumers' choices and producers' decisions
- to bring the consumption tax nearer to one on final consumption of households rather than on business inputs
- to join the European Communities where the adoption of VAT is a mandatory condition of membership.

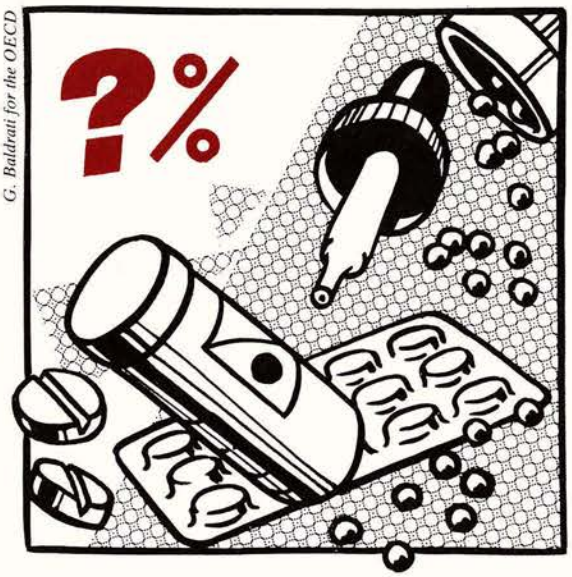
There is a general consensus that, of the various kinds of general consumption taxes on a broad range of goods and services, the best two from all points of view are VAT, where tax is charged each time goods or their components are sold but the seller gets a refund of tax paid on his inputs, and retail sales taxes (RST), where tax is paid only once on sales by registered persons to unregistered persons—usually retailers to consumers. The preference of most OECD countries for VAT over RST seems due to its ability to raise more revenue and in a more neutral kind of way, since it is easier to tax services under VAT than under RST and to relieve producer goods from the tax. VAT has also certain built-in defences against tax evasion which, though by no means watertight, are lacking in RST.

The debate on VAT versus RST cannot be divorced from the tax environment prevailing in the countries operating them. A VAT country with low tax compliance and an inefficient tax administration may, for example, be less efficacious in preventing tax evasion than an efficient RST administration, whose taxpayers are predominantly honest—as would seem to be true of the three countries still uncommitted to VAT.

What Kind of Structure?

There is a conflict between various goals, as reflected by the different choices of governments (Table). Neutrality, lower tax administrative costs and traders' compliance costs, resistance to evasion and to pressure groups, all point to a single rate on the widest practicable[4] range of goods and services. Distributional and social objectives, on the other hand, would support a lower or zero rate on such products as basic foodstuffs and medicines and/or 'merit goods' such as books and newspapers, and perhaps higher rates on certain luxury products.

Most commentators tend to agree that the theoretical arguments are unequivocally in favour of a single rate. In addition to the basic argument about lack of neutrality, a multi-rate consumption tax system suffers from a number of other more practical problems: first, the goods and services in each rate-category have to be clearly defined—which, being difficult, may lead to ambiguities and thereby distortions, tax evasion and higher administrative and compliance costs; second, lower rates, zero-rating or exemptions extend the tax relief to individuals and families with higher incomes. This problem of precise 'targetting' means that the revenue cost of providing the relief may be relatively high, leading to a higher tax



G. Baldrati for the OECD

rate on taxable goods and services to provide sufficient revenue, and thereby accentuating the distortive effects of a multi-rate system.

Those sympathetic to redistributional objectives may suggest that differentiated VAT rates are an inferior way of achieving such objectives. For example, the tax/benefit position of the Scandinavian countries, with one high rate on almost all goods, is more progressive than multi-rate systems because of the generous transfer

G. Baldrati for the OECD

Table
VAT RATES IN OECD MEMBER COUNTRIES

	Lower Rates[1] %	Standard Rate %	Standard Rate yield[2] %	Higher Rates %
Austria	10	20	59	32
Belgium	1 6 17	19	35	25 33
Denmark	–	22	100	–
Finland	–	19.05	100	–
France	2.1 4 5.5 7 13	18.6	86	33⅓
Germany	7	14	90	–
Greece	3 6	18	n.a.	36
Ireland	0 2.4 10	25	57	–
Italy	2 9	18	74	38
Luxembourg	3 6	12	55	–
Netherlands	6	20	90	–
New Zealand	–	10	n.a.	–
Norway	–	20	100	–
Portugal	0 8	16	70	–
Spain	6	12	66	33
Sweden	–	23.5	96	–
Turkey	1 5	12	n.a.	15 50 60 100
United Kingdom	–	15	100	–

1. Ignores minor zero-rated items.
2. Percentage of VAT yield derived from standard rates. Latest available information (July 1988); may refer to earlier years, when the standard rate may have been different.
n.a. = not available.

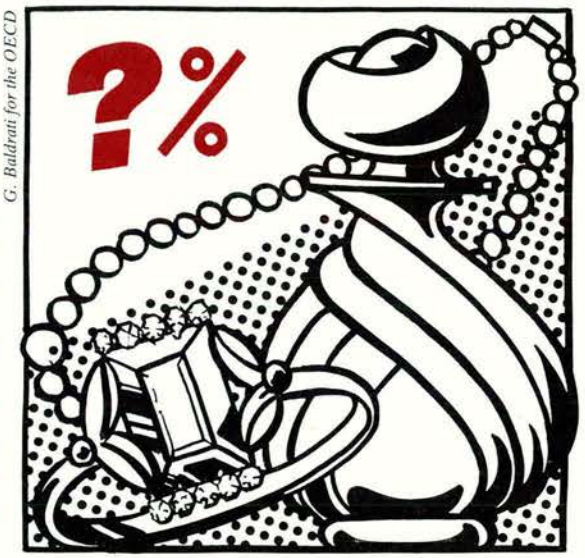
payments prevailing there. Or rebates can be given to the lower paid, as in Canada, whose government has expressed hopes of following New Zealand in introducing the technically superior single-rate VAT. But proponents of multi-rate systems remain sceptical, pointing out that, while such alleviating measures could be taken, in principle, there is no reason to believe that the governments of many countries would take them in practice.

What Has Happened?

With the single exception of New Zealand, countries where the pre-VAT system was multi-rate have remained with multi-rate systems and those with pre-VAT single-rate systems (only the Nordic countries) have remained with single-rate systems. There are good pragmatic reasons for this. To change from a multi-rate system to a single-rate system (or conversely) would entail a shift in relative prices of different goods and services—which could have repercussions on prices and employment in depressed areas (in the agricultural sector, for example, whose products are normally taxed at lower rates).

A further complication in the single-rate/two-rate/multi-rate debate is the preference of the Commission of the European Community for a standard rate of between 14 and 20% on most goods and services and a reduced rate of between 4 and 9% for certain 'essential' goods. This decision poses problems for some of its member countries who have only one rate (Denmark), those with higher rates in addition (Belgium, France, Greece, Italy) and those with zero rates (Ireland, Portugal, United Kingdom). It also causes difficulties for countries with standard rates well above the proposed rate band (Denmark, Ireland) and well below it (Luxembourg, Spain).

4. It is difficult in practice to subject financial services to VAT and they are invariably exempt.



G. Baldrati for the OECD

□□

It is obvious that no single set of rules or applications of VAT will satisfy all the criteria by which such a tax can be judged. And it is impossible to predict the political decisions that will be made about the introduction of new—or modification of existing—systems of taxing consumption. The debate on VAT, on what mix of goods and services it covers and on its rate structure, is bound to continue. ■

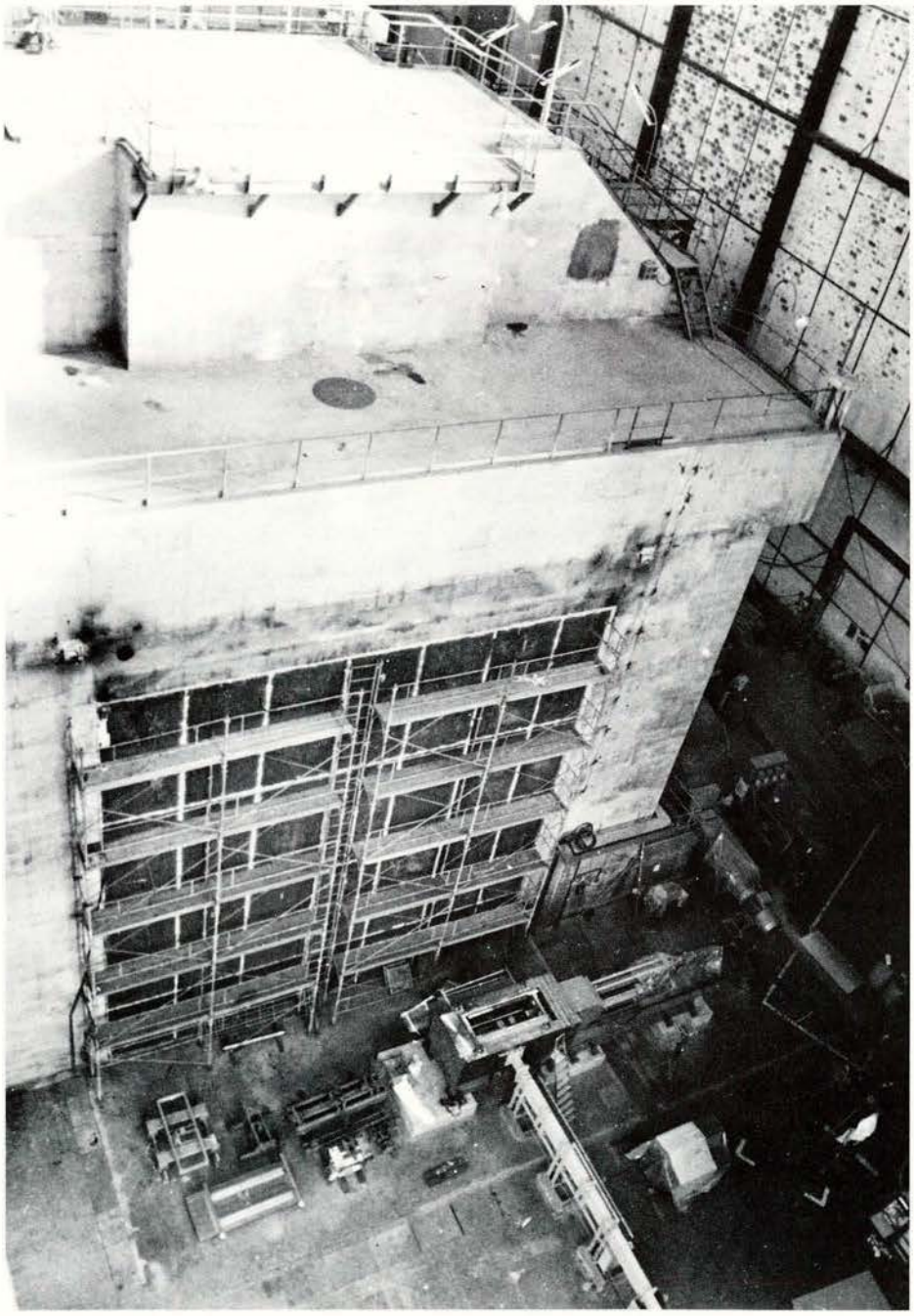
OECD Bibliography

- **Revenue Statistics of OECD Member Countries, 1965-1986**, 1987
- **Taxation in Developed Countries**, 1987
- **The Tax/Benefit Position of Production Workers, 1983-1986**, 1987.

What Lifespan for Nuclear Reactors?

Geoffrey H. Stevens

Fifty-one nuclear power plants in the OECD area will be 25 years old by 1995, and a further 240 will reach that age by 2010. Like all engineered constructions, nuclear plants are designed for a finite operating life, normally up to 40 years. The consequences of a decision to withdraw a plant from service, temporarily or permanently, necessitate much prior study which should start several years before the end of the design life. The OECD Nuclear Energy Agency has recently undertaken work to facilitate these decisions.[1]



OECD/NEA

During the decommissioning of a nuclear reactor part of the concrete covering is removed to give access to the fuel channels.

The projected life-time of a reactor is based on a series of physical and economic factors and, in effect, embodies a prediction of the minimum period over which the plant can be expected to perform satisfactorily. It does not necessarily define the point after which safety cannot be guaranteed.

But the approach of the end of this period raises questions. Should the plant be closed down? Or could it continue operation, perhaps after some refurbishing? While this type of decision is common to all sorts of manufacturing plant and equipment, for nuclear plants the quite different consideration of plant licensing also arises. If a plant is to continue to comply with national regulations, major refurbishment or the modification of operating conditions may be necessary. If this cannot be done economically, the alternative to life extension is 'decommissioning', a process intended to ensure that what is left of the structures of the plant remains safe. Either course involves large costs—about as much as the revenue from the sale of 1% of the electricity produced over the reactor's life.

To Close or Keep Alive?

Nuclear power plants have been operating in OECD countries since 1957. Decisions on the fate of some of the early ones have already been taken. (Bradwell in the United Kingdom had its life extended, and Berkeley was closed down; so, too, was Latina in Italy). Over the next decade decisions on many more nuclear plants will have to be taken.

Before any decommissioning takes place, nuclear fuel and radioactive material not in use are removed, in accordance with normal operating procedures. It is common practice to identify three stages of decommissioning—each with associated surveillance requirements.

Geoffrey H. Stevens is Head of the Nuclear Development Division in the OECD Nuclear Energy Agency.

Three Stages to Safety

In Stage 1 openings are sealed and the contamination barrier maintained, access to radioactive areas controlled, radioactive monitoring equipment maintained and used regularly, and the plant and the buildings checked to be in good condition.

In Stage 2 the volume of plant and buildings requiring containment is reduced as far as possible, the sealing around it is reinforced, and the biological shield of thick, specially formulated concrete (originally engineered to protect the operators from radiation) extended, if appropriate, to surround it completely. Access to the contaminated area is now impossible. The original containment building may be decontaminated (for example, by cutting out and removing radioactive material, washing surfaces with special chemicals) and removed if it is not required for radiological safety reasons. Surveillance outside the contamination barrier can be reduced to external inspection of the sealed parts, spot checks and environmental monitoring.

In Stage 3 all parts of the plant which are significantly more radioactive than the surrounding natural environment are removed. No further surveillance is necessary and the site can be released without restrictions on access because of residual radioactivity. The first and second stages are viewed as interim measures leading to Stage 3, but may be considered as alternatives to each other.

Many factors condition the decision on how to proceed. National nuclear policy is important in setting responsibilities and timing. Immediate action to remove radioactive components presupposes a site where they can be disposed of. And delayed implementation presupposes a commitment to retain nuclear technology until action is taken. The characteristics of the nuclear installation and the longevity of its radioactive burden will be important: a delay of some decades for Stage 2 or 3 may considerably reduce the radiation risks to the people working on the site being decommissioned.

Sites used for nuclear power plants are valuable: they typically have low seismic activity, are close to cooling water, have access to electricity distribution networks, and have gained local acceptance for nuclear power. The owner of the site (frequently the nuclear agency itself) might therefore want to make it available for re-use as soon as possible, although implementation might be delayed in the expectation that technological progress would make the job easier and cheaper at a later stage.

In making their assessments of the feasibility of decommissioning, the NEA Expert Group took note of the experience of Belgium, France, Germany, Sweden and the United States in decommissioning 19 small power reactors and five fuel cycle facilities, including seven plants taken to Stage 3.

The Group also pointed out that maintenance and repair work on commercial power reactors afforded useful experience as well, as do decontamination and restoration after accidents. Remote inspection and manipulation in radioactive environments have been developed in these projects, together with more effective decontamination techniques. All these techniques will be applicable in future decommissioning projects. Indeed, they are currently being applied in a co-operative programme of ten projects on reactors in eight countries ranging up to 256 Megawatts electrical (MWe) in size. This last reactor is big enough to supply, for example, the electricity requirements of about 350,000 households in Germany. ▷▷

1. In 1985 a mechanism for exchanging technical information on 10 current projects was established, and in 1986 the report of an Expert Group was published: **Decommissioning of Nuclear Facilities: Feasibility, Needs and Costs**, OECD Publications, Paris. In 1987, jointly with the International Atomic Energy Authority, a Symposium was held on Plant Life Extension; and a Specialist Meeting was held on life limiting aspects of reactor vessel and core structures.

Waste Management: No *Particular* Problem

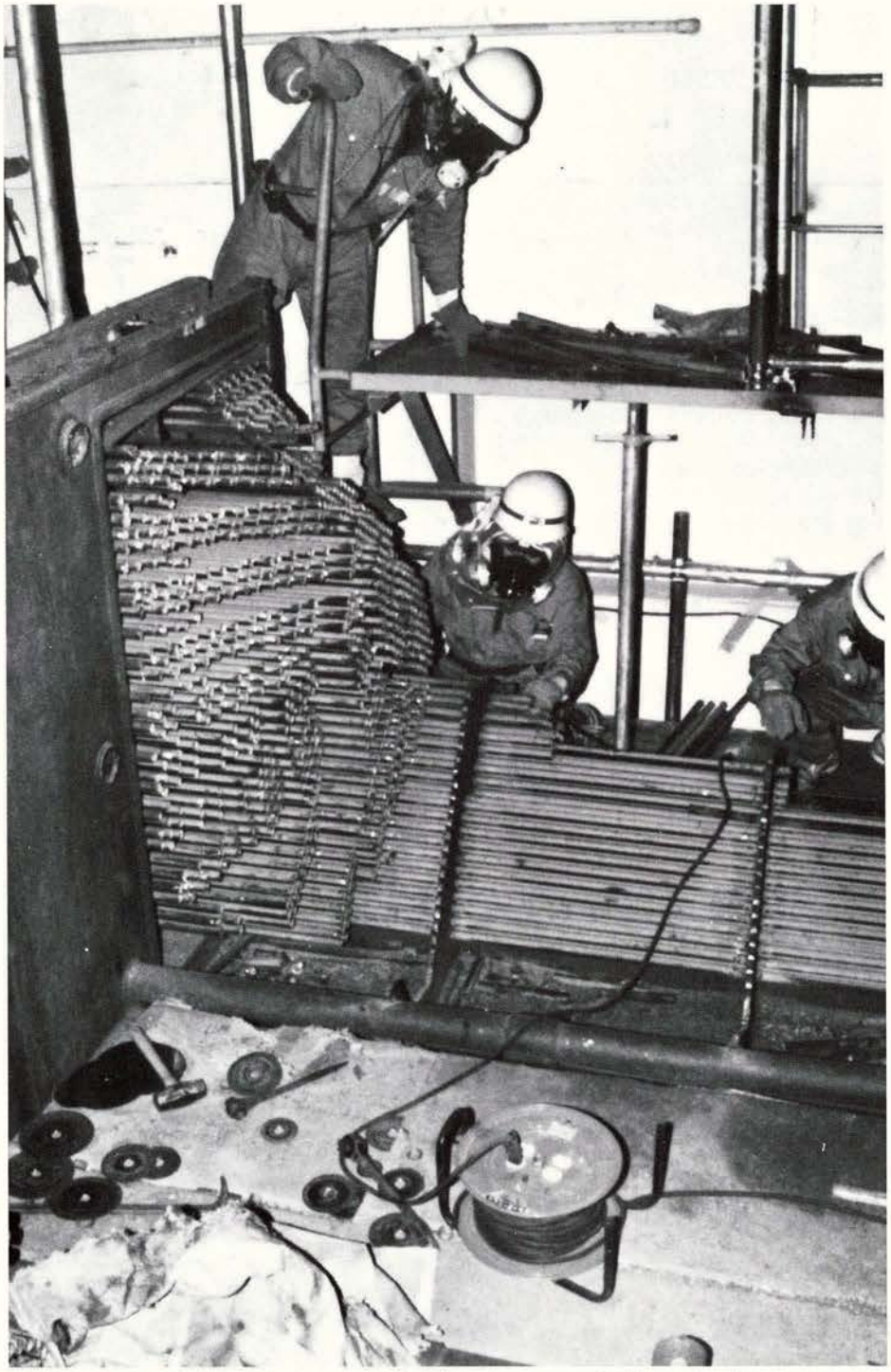
Decommissioning, of course, gives rise to radioactive waste. This waste does not differ in its technical characteristics from that of other phases of nuclear power operations. For the most part its radioactivity will be low. A reactor is expected to produce the same amounts of wastes in the course of its life as it does when it is decommissioned. Many countries already have wide experience of the safe handling of these wastes. The small amounts of high-level wastes produced by irradiation of material in the reactor core will require the same special attention which is given in facilities developed for spent fuel and for the wastes arising from reprocessing.

How Much Does It Cost?

There are no precise figures for the costs of decommissioning. But estimates have been made for a variety of nuclear plants on the basis of past experience and expectations of technical developments. The lack of precision arises in part from the many variations possible between countries in the effect of the timing of the operations. A delay would incur additional surveillance and building maintenance costs, for example, whereas dismantling may well become less hazardous and cheaper.

Yet, although cost rates for the different activities will tilt the balance in opposite directions in different countries, the overall cost is typically expected to lie between 10 and 15% of the initial cost of constructing the plant. That estimate was made in 1985 and it has since been confirmed by the experience of decommissioning projects now in progress. The economic penalty is much lower, as the expense of decommissioning is incurred many years after the benefits of electricity use have been gained.

OECD/NEA



The early stages of decommissioning: cooling pipes are removed with an electric saw.

Decommissioning, the Expert Group concluded, is 'technologically feasible, the waste volumes manageable and the costs affordable'.

Extension of Plant Life

But decommissioning is not necessarily the right choice as soon as the design life or licence period of a plant ends. For many reasons the best policy could be the extension of plant life. The plant must, of course, continue to meet safety requirements. And adaptations to that end might be so costly that life extension is ruled out. In many cases, nonetheless, the refurbishment of an existing plant will probably be the most economic way of providing adequate generating capacity. It has been estimated by the US Department of Energy that over the next couple of decades plant life extension could save

$180 billion in the United States and that extension for the United Kingdom's early Magnox reactors could save £1 billion.[2]

Refurbishment can be very costly. Investors in an electricity plant will therefore have to be confident that it will give reliable and safe service over a prolonged period. That confidence can come only from detailed consideration of the state of the plant, identification of critical components and systems, knowledge of how they have already aged through radiation or other stresses and good models of the aging processes to enable accurate predictions to be made of safe operating limits. This is particularly true for components or structures that cannot be replaced or renovated such as those inside the core.

Monitoring and Research... Well in Advance

Much work is already done routinely to check the progress of aging, but if decisions about life extension are to be made some intensification of this work will be required. Particular incidents in the life of a plant which might have caused departures from normal conditions will have to be analysed.

2. **Nuclear Power Plant Life Extension**, OECD Publications, Paris, 1987.

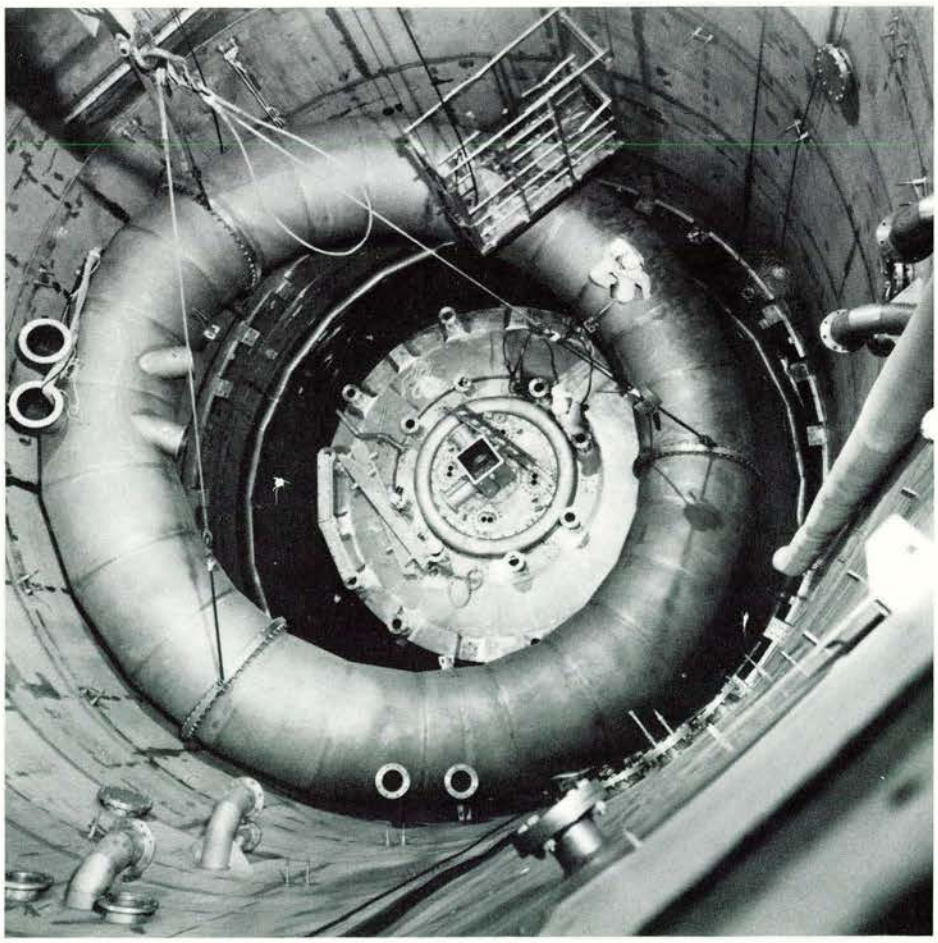
Further research on properties of materials will be required to provide additional data from which aging effects can be extrapolated. In some cases, the analysis of components from decommissioned reactors will be particularly helpful in this research. The work must begin well before the end of the design life or licence period because the maintenance programmes during the plant life will affect the physical possibilities and economies of safely extending it.

Records of plant and component histories will be crucial to the granting of licence renewals, and their accuracy and detail are receiving increased attention. But this raises a question of efficient archiving. During the operation of any plant there is an enormous amount of information available about it. How much of it should be retained?

□□

The experts who have studied the problems are confident that there are good technical solutions for both decommissioning and life extension. They recognise that the relevant data bases have to be developed further before regulators and utilities can share their confidence. The benefits of international collaboration are clear: information can be shared and research and development strategies refined. ■

OECD/NEA



The pressure vessel of the Pegase Light Water Experimental Reactor at Cadarache in the south of France being transformed into a storage facility for nuclear fuel.

OECD Bibliography

- **Nuclear Power Plant Life Extension**, 1987
- **Decommissioning of Nuclear Facilites: Feasibility, Needs and Costs**, 1986
- **Projected Costs of Generating Electricity from Nuclear and Coal-fired Power Stations for Commissioning in 1995**, 1985
- **Remote Handling in Nuclear Facilities**, 1984.

New OECD Publications

SUE • FILL IN THE FORM WITH THIS ISSUE • FILL IN THE FORM WITH THIS ISSUE • FILL IN THE FORM WITH THIS ISSUE • FILL IN T

General Economic Problems

OECD ECONOMIC OUTLOOK
ISSN 04774-5574
No. 44 - DECEMBER 1988
See the central pages of this **OECD Observer.**
Per issue:
F100 £11.70 US$22.00 DM43
1988 Subscription (No. 43/June & No. 44/December):
F130 £13.00 US$26.00 DM58
1989 Subscription (No. 45/June & No. 46/December):
F160 £18.70 US$35.00 DM69

OECD ECONOMIC SURVEYS
1988–1989 Series ISSN 0376-6438
Detailed annual surveys of economic trends and prospects for OECD countries.

ICELAND
(November 1988)
(10 89 17 1) ISBN 92-64-13163-9, 104 pp.

FRANCE
ITALY
NORWAY
Each book:
F50 £6.00 US$11.00 DM22
Subscription to the 1988–1989 Series:
F720 £84.30 US$158.00 DM310
(18 to 20 Studies to be published)

OECD ECONOMIC STUDIES
ISSN 0255-0822
Produced twice yearly, in Autumn and Spring, this periodical presents articles in the area of applied macro-economic and statistical analysis, with an international or cross-country dimension.

No. 11 - AUTUMN 1988
(November 1988)
Topics in this issue include:
• Total Factor Productivity: What happened to the pace of innovation in the 1970s and early 1980s?
• Debt Neutrality: Does private saving respond so as to neutralise the effects of fiscal deficits on total spending in the economy?
• Disinflation: Why did inflation come down in the 1980s?
• Unemployment: Are disincentives other than wage levels inhibiting firms from hiring additional workers and thus keeping unemployment high?
• Import Barriers: What can be inferred about the extent of non-tariff trade barriers from abnormal import shares of GNP?
Single copy:
F110 £12.90 US$24.20 DM47
1989 Subscription (2 issues):
F180 £21.00 US$40.00 DM78

Aid and Development

DEVELOPMENT CO-OPERATION
Efforts and Policies of the Members of the Development Assistance Committee. Report by the Chairman of the Development Assistance Committee. 1988 REPORT
(December 1988)
The 1988 Report of the Chairman of the Development Assistance Committee (DAC) marks a significant advance in donors' collective thinking about the problems of aid to developing countries. It first describes the current position and the main issues ahead. It then reviews trends in aid and other resource flows, and in aid policies, with an up-to-date account of donor policies on aid for structural adjustment and aid co-ordination. Finally the report presents the results of major new DAC work on principles for the selection and design of development projects.
(43 88 06 1) ISBN 92-64-13174-4, 254 pp.
F170 £20.00 US$37.50 DM74

PHOSPHATE SUPPLY PROSPECTS TO YEAR 2000.
Results of a Global Modelling Exercise
(November 1988)
Since phosphates are a depletable resource, the conventional wisdom is that the phosphate markets will be increasingly dominated by Morocco and a few other rock producers. This challenging study shows that Morocco is unlikely to further develop an important downstream processing industry, while large consumers, particularly big developing countries, will intensify the search for local sources of phosphates.
The book contains the results of a global modelling exercise based on a comparative cost analysis in different locations. Exhaustive annexes show how the exercise was conducted and concluded.
(41 88 03 1) ISBN 92-64-13100-0, 128 pp.
F80 £9.50 US$18.00 DM35

THE IMPACT OF DEVELOPMENT PROJECTS ON POVERTY
(January 1989)
The Inter-American Bank and the Development Centre of OECD co-sponsored a seminar to examine the impact of development projects on poverty. In this volume the expert contributions to the meeting, together with an account of the resulting discussion, offer potential answers to three critical questions. Should the yardstick of impact on poverty be applied to the analysis of projects? Should donors take this criterion into account in project selection? If so, what is the best way of assessing the impact of a particular project on poverty?
(41 88 07 1) ISBN 92-64-13162-0, 104 pp.
F75 £9.00 US$16.50 DM33

THE SAHEL FACING THE FUTURE.
(November 1988)
The drought which ravaged the Sahel region of West Africa in the beginning of the 1970s gave rise to serious study of the region and its medium- and long-term future. In spite of significant increases in international official development assistance and aid from NGOs, as well as major efforts by the Sahel countries themselves to strengthen their economies, their situation has hardly improved. The 'Future Study' of the Sahel countries for the period 1985–2010 examines the perspectives of the region over the next 25 years, and explores under which conditions a future acceptable to the Sahelians could become reality.

See **The OECD Observer**, No. 153, August/September 1988.
(44 88 01 1) ISBN 92-64-13157-4, 268 pp.
F125 £15.00 US$27.50 DM54

REGISTER OF DEVELOPMENT RESEARCH ACTIVITIES IN LATIN AMERICA/REPERTOIRE DES ACTIVITES DE RECHERCHE EN MATIERE DE DEVELOPPEMENT EN AMERIQUE LATINE/REGISTRO DE ACTIVIDADES DE INVESTIGACION SOBRE DESARROLLO EN AMERICA LATINA
(December 1988)
(40 88 04 3) ISBN 92-64-03089-1, 594 pp.
F320 £37.50 US$70.50 DM138

Energy

NEA (Nuclear Energy Agency)

Series 'Feasibility of Disposal of High-Level Radioactive Waste into Seabed'

VOLUME I - OVERVIEW OF RESEARCH AND CONCLUSIONS
(November 1988)
One of the options suggested for disposal of high-level radioactive waste resulting from the generation of nuclear power is burial beneath the deep ocean floor in geologically stable sediment formations which have no economic value. The eight-volume series provides an assessment of the technical feasibility and radiological safety of this disposal concept based on the results of ten years of co-operation and information exchange among the member countries participating in the NEA Seabed Working Group. This volume provides an overview of the research and a summary of the results.
(66 88 09 1) ISBN 92-64-13164-7
F90 £11.00 US$20.00 DM39

The following Volumes will be published in 1989. A special 30% Discount Order may be entered for the complete set of eight volumes at a price of:
F994 £116 US$219 DM427(66 88 00 1)

Volume II - RADIOLOGICAL ASSESSMENT
(66 88 10 1) ISBN 92-64-13165-5
F220 £26.00 US$48.50 DM95

VOLUME III - GEOSCIENCE CHARACTERISATION STUDIES
(66 88 11 1) ISBN 92-64-13166-3
F220 £26.00 US$48.50 DM95

VOLUME IV - ENGINEERING
(66 88 12 1) ISBN 92-64-13167-1
F170 £20.00 US$36.50 DM74

10 BESTSELLERS
Codes and Prices

(To order, please use the form inserted in this issue.)

1. **THE NEWLY INDUSTRIALISING COUNTRIES**
Challenge and Opportunity for OECD Industries
(70 88 01 1) ISBN 92-64-13041-1
FF90 £11.00 US$20.00 DM39

2. **AGEING POPULATIONS**
The Social Policy Implications
(81 88 02 1) ISBN 92-64-13113-2
FF100 £12.00 US$22.00 DM43

3. **NEW TRENDS IN RURAL POLICYMAKING**
(42 88 01 1) ISBN 92-64-13135-3
FF80 £9.50 US$18.00 DM35

4. **COAL INFORMATION 1988**
(61 88 07 1) ISBN 92-64-13112-4
FF430 £50.50 US$95.00 DM185

5. **MEASURES TO ASSIST THE LONG-TERM UNEMPLOYED**
Recent Experience in some OECD Countries
(81 88 06 1) ISBN 92-64-13134-5
FF60 £7.50 US$13.50 DM26

6. **DISABLED YOUTH**
The Right to Adult Status
(96 88 02 1) ISBN 92-64-13132-9
FF55 £6.50 US$12.50 DM24

7. **ENVIRONMENTAL IMPACTS OF RENEWABLE ENERGY**
The OECD Compass Project
(97 88 06 1) ISBN 92-64-13151-5
FF70 £8.50 US$15.50 DM31

8. **SCIENCE AND TECHNOLOGY POLICY OUTLOOK 1988**
(92 88 03 1) ISBN 92-64-13076-4
FF80 £9.50 US$18.00 DM35

9. **ENERGY IN NON-OECD COUNTRIES**
(61 88 08 1) ISBN 92-64-13115-9
FF80 £9.50 US$18.00 DM35

10. **AGRICULTURAL POLICIES, MARKETS AND TRADE**
Monitoring and Outlook 1988
(51 88 03 1) ISBN 92-64-13126-4
FF100 £12.00 US$22.00 DM43

VOLUME V - DISPERSAL OF RADIONUCLIDES IN THE OCEANS: MODELS, DATA SETS AND REGIONAL DESCRIPTIONS
(66 88 13 1) ISBN 92-64-13168-X
F280 £33.00 US$62.00 DM121

VOLUME VI - DEEP-SEA BIOLOGY, RADIOLOGICAL PROCESSES AND RADIOBIOLOGY
(66 88 14 1) ISBN 92-64-13169-8
F150 £18.00 US$33.00 DM65

VOLUME VII - REVIEW OF LABORATORY INVESTIGATIONS OF RADIONUCLIDES MIGRATION THROUGH DEEP-SEA SEDIMENTS
(66 88 15 1) ISBN 92-64-13170-1
F190 £22.50 US$42.00 DM82

VOLUME VIII - REVIEW OF PROCESSES NEAR A BURIED WASTE CANISTER
(66 88 16 1) ISBN 92-64-13171-X
F100 £12.00 US$22.00 DM43

Science and Technology

ICCP 'Information, Computer and Communication Policy' Series

No. 17 - INTERNATIONALISATION OF SOFTWARE AND COMPUTER SERVICES
(January 1989)
The market for software and computer services is increasingly international. Many of the leading companies in industry are expanding into foreign markets by setting up direct subsidiaries or acquiring local firms or granting licences. Although there are no significant obstacles to internationalisation, some problems concerning access to public-sector markets, telecommunications and software protection still exist.
(93 88 06 1) ISBN 92-64-13139-2, 210 pp.
F120 £14.50 US$26.50 DM52

STI REVIEW - SCIENCE, TECHNOLOGY, INDUSTRY
ISSN 1010-5247 (Half-yearly)

NO. 4 - AUTUMN 1988
(November 1988)
- A Survey of International Technology Licensing
- Technical Co-operation Agreements between Firms
- Measuring the Economic Effects of Technology

• Exports of Technology by Spanish Companies
(90 88 01 1) ISBN 92-64-13172-8
Per issue:
F110 £12.90 US$24.20 DM47
1989 Subscription:
F180 £21.00 US$40.00 DM48

Fiscal Affairs

TAXING CONSUMPTION
(December 1988)
See pp. 24-27 of this **OECD Observer**.
(23 88 09 1) ISBN 92-64-13160-4, 288 pp.
F170 £20.00 US$37.50 DM74

Competition Policy

INTERNATIONAL MERGERS AND COMPETITION POLICY/FUSIONS INTERNATIONALES ET POLITIQUE DE CONCURRENCE (December 1988) Bilingual
(24 88 03 3) ISBN 92-64-03143-X, 130 pp.
F90 £11.00 US$20.00 DM39

Transport

MARITIME TRANSPORT 1987
(December 1988)
Substantial improvements in all sectors of the world's shipping market has characterised 1987. Tonnage supply in the tanker and dry bulk sectors in particular were much nearer a balance than during preceding years and freight rates showed satisfactory developments during the second half of 1987. Throughout 1988 the tonnage demand/supply equation is expected to improve, accompanied by further upward gains in rates and overall profitability for shipowners.
(76 88 01 1) ISBN 92-64-13104-3, 152 pp.
F90 £11.00 US$20.00 DM39

Tourism

TOURISM POLICY AND INTERNATIONAL TOURISM IN OECD MEMBER COUNTRIES. Evolution of Tourism in OECD Member Countries in 1987
(November 1988)
The year 1987 was the best of the decade for international tourism in the OECD area. Tourism now represents a quarter of the value of services exported by member countries and contributes to generating jobs in numerous other sectors. A special chapter examines the importance and characteristics of employment in the hotel sector.
(78 88 01 1) ISBN 92-64-13158-2, 176 pp.
F130 £15.50 US$29.00 DM56
See **The OECD Observer**, No. 155, December 1988/January 1989.

1989 OECD CATALOGUE OF PUBLICATIONS (forthcoming)
Free of charge

Omission

Véronique Naud of A.A.A. took the cover photograph of our last issue (No. 155, December 1988/January 1989).

OECD STATISTICS ON MICRO-COMPUTER

Statistics from a number of OECD publications are available in computer-readable format for use on IBM-PC (or compatible) micro-computers. They offer subscribers easy, rapid access to a wide variety of economic and financial data on OECD member countries.

Data are provided on 5 ¼ double-sided, double-density diskettes in an OECD-specific format. Each diskette contains a simple program for translating the data into DIF, SYLK, LOTUS WKS or LOTUS PRN formats, for easy transfer to popular spreadsheet packages.

Statistical data currently available on micro-computer diskette include:

THE ECONOMIC OUTLOOK
Annual subscription, FF1,900 US$400
ANNUAL NATIONAL ACCOUNTS
Annual subscription, FF1,200 US$250
QUARTERLY NATIONAL ACCOUNTS
Annual subscription, FF2,200 US$460
MAIN ECONOMIC INDICATORS
Annual subscription, FF6,000 US$1,260
MAIN ECONOMIC INDICATORS
Historical Series
Price per decade set, FF2,000 US$420
EXTERNAL DEBT STATISTICS
Annual subscription, FF500 US$110
GEOGRAPHICAL DISTRIBUTION OF FINANCIAL FLOWS TO DEVELOPING COUNTRIES
Annual subscription, FF1,200 US$250
INTEREST RATES ON INTERNATIONAL RATES ON INTERNATIONAL AND DOMESTIC MARKETS
Annual subscription, FF2,500 US$525
STATISTICS OF EXTERNAL INDEBTNESS: BANK AND TRADE-RELATED NON-BANK EXTERNAL CLAIMS ON INDIVIDUAL BORROWING COUNTRIES AND TERRITORIES
Annual subscription, FF500 US$110
LEADING INDICATORS AND BUSINESS SURVEYS
Annual subscription, FF5,000 US$1,100
MAIN SCIENCE AND TECHNOLOGY INDICATORS
Annual subscription, FF500 US$110

Many statistical files are available also on magnetic tape for use on mainframe computers. For more information contact:

OECD Publication and Information Centres
in Washington, Tokyo or Bonn
or
Clients Services Unit
OECD Publications Service, Paris

Where to obtain OECD Publications

ARGENTINA
Carlos Hirsch S.R.L.,
Florida 165, 4º Piso,
(Galeria Guemes) 1333 Buenos Aires
Tel. 33.1787.2391 y 30.7122

AUSTRALIA
D.A. Book (Aust.) Pty. Ltd.
11-13 Station Street (P.O. Box 163)
Mitcham, Vic. 3132 Tel. (03) 873 4411

AUSTRIA
OECD Publications and Information
Centre, 4 Simrockstrasse,
5300 Bonn (Germany) Tel. (0228) 21.60.45
Gerold & Co., Graben 31, Wien 1 Tel. 52.22.35

BELGIUM
Jean de Lannoy,
Avenue du Roi 202
B-1060 Bruxelles Tel. (02) 538.51.69

CANADA
Renouf Publishing Company Ltd.
1294 Algoma Road, Ottawa, Ont. K1B 3W8
Tel. (613) 741-4333
Stores:
61 Sparks St., Ottawa, Ont. K1P 5A6
Tel. (613) 238-8985
211 Yonge St., Toronto, Ont. M5B 1M4
Tel. (416) 363-3171
Federal Publications Inc.,
301-303 King St. W.,
Toronto, Ont. M5V 1J5
Tel. (416)581-1552
Les Éditions La Liberté Inc.,
3020 Chemin Sainte-Foy,
Sainte-Foy, P.Q. G1X 3V6,
Tel. (418)658-3763

DENMARK
Munksgaard Export and Subscription Service
35, Nørre Søgade, DK-1370 København K
Tel. +45.1.12.85.70

FINLAND
Akateeminen Kirjakauppa,
Keskuskatu 1, 00100 Helsinki 10 Tel. 0.12141

FRANCE
OECD
Mail Orders:
2, rue André-Pascal, 75775 Paris Cedex 16
Tel. (1) 45.24.82.00
Bookshop : 33, rue Octave-Feuillet, 75016 Paris
Tel. (1) 45.24.81.67 or (1) 45.24.81.81
Librairie de l'Université,
12*a*, rue Nazareth,
13602 Aix-en-Provence Tel. 42.26.18.08

GERMANY
OECD Publications and Information
Centre, 4 Simrockstrasse,
5300 Bonn Tel. (0228) 21.60.45

GREECE
Librairie Kauffmann,
28 rue du Stade,
105 64 Athens Tel. 322.21.60

HONG KONG
Government Information Services,
Publications (Sales) Office,
Information Services Department
No. 1 Battery Path, Central

ICELAND
Snæbjörn Jónsson & Co., h.f.,
Hafnarstræti 4 & 9,
P.O.B. 1131 – Reykjavik Tel. 13133/14281/11936

INDIA
Oxford Book and Stationery Co.,
Scindia House, New Delhi 110001 Tel. 331.5896/5308
17 Park St., Calcutta 700016 Tel. 240832

INDONESIA
Pdii-Lipi, P.O. Box 3065/JKT. Jakarta Tel. 583467

IRELAND
TDC Publishers - Library Suppliers,
12 North Frederick Street, Dublin 1
Tel. 744835-749677

ITALY
Libreria Commissionaria Sansoni,
Via Lamarmora 45, 50121 Firenze
Tel. 579751/584468
Via Bartolini 29, 20155 Milano Tel. 365083
La diffusione delle pubblicazioni OCSE viene assicurata dalle principali librerie ed anche da: Editrice e Libreria Herder,
Piazza Montecitorio 120, 00186 Roma Tel. 6794628
Libreria Hœpli, Via Hœpli 5, 20121 Milano Tel. 865446
Libreria Scientifica Dott. Lucio de Biasio "Aeiou"
Via Meravigli 16, 20123 Milano Tel. 807679

JAPAN
OECD Publications and Information Centre,
Landic Akasaka Bldg.,
2-3-4 Akasaka, Minato-ku,
Tokyo 107 Tel. 586.2016

KOREA
Kyobo Book Centre Co. Ltd.,
P.O.Box: Kwang Hwa Moon 1658,
Seoul Tel. (REP) 730.78.91

LEBANON
Documenta Scientifica/Redico,
Edison Building, Bliss St.,
P.O.B. 5641, Beirut Tel. 354429-344425

MALAYSIA/SINGAPORE
University of Malaya Co-operative Bookshop Ltd.,
7 Lrg 51A/227A, Petaling Jaya,
Malaysia Tel. 7565000/7565425
Information Publications Pte Ltd
Pei-Fu Industrial Building,
24 New Industrial Road No. 02-06
Singapore 1953 Tel. 2831786, 2831798

NETHERLANDS
SDU Uitgeverij
Christoffel Plantijnstraat 2
Postbus 20014
2500 EA's-Gravenhage Tel. 070-789911
Voor bestellingen: Tel. 070-789880

NEW ZEALAND
Government Printing Office Bookshops:
Auckland: Retail Bookshop,
25 Rutland Street,
Mail Orders, 85 Beach Road
Private Bag C.P.O.
Hamilton: Retail: Ward Street,
Mail Orders, P.O. Box 857
Wellington: Retail, Mulgrave Street, (Head Office)
Cubacade World Trade Centre,
Mail Orders, Private Bag
Christchurch: Retail, 159 Hereford Street,
Mail Orders, Private Bag
Dunedin: Retail, Princes Street,
Mail Orders, P.O. Box 1104

NORWAY
Narvesen Info Center – NIC,
Bertrand Narvesens vei 2, P.O.B. 6125 Etterstad,
0602 Oslo 6 Tel. (02) 67.83.10, (02) 68.40.20

PAKISTAN
Mirza Book Agency
65 Shahrah Quaid-E-Azam, Lahore 3 Tel. 66839

PHILIPPINES
I.J. Sagun Enterprises, Inc.
P.O. Box 4322 CPO Manila
tel. 695-1946, 922-9495

PORTUGAL
Livraria Portugal,
Rua do Carmo 70-74,
1117 Lisboa Codex. Tel. 360582/3

SINGAPORE/MALAYSIA
See "Malaysia/Singapore"

SPAIN
Mundi-Prensa Libros, S.A.,
Castelló 37, Apartado 1223, Madrid-28001
Tel. 431.33.99
Libreria Bosch, Ronda Universidad 11, Barcelona 7
Tel. 317.53.08/317.53.58

SWEDEN
AB CE Fritzes Kungl. Hovbokhandel,
Box 16356, S 103 27 STH,
Regeringsgatan 12,
DS Stockholm Tel. (08) 23.89.00
Subscription Agency:
Wennergren-Williams AB,
Box 30004, S104 25 Stockholm Tel. (08)54.12.00

SWITZERLAND
OECD Publications and Information Centre
4 Simrockstrasse
5300 Bonn (Germany) Tel. (0228) 21.60.45
Librairie Payot,
6 rue Grenus, 1211 Genève 11 Tel. (022) 31.89.50
United Nations Bookshop
Palais des Nations
1211 – Genève 10 Tel. (022) 34.60.11 (ext. 48.72)

TAIWAN
Good Faith Worldwide Int'l Co., Ltd.
9th floor, No. 118, Sec.2 Chung Hsiao E. Road
Taipei Tel. 391.7396/391.7397

THAILAND
Suksit Siam Co., Ltd.,
1715 Rama IV Rd.,
Samyam Bangkok 5 Tel. 2511630
INDEX Book Promotion & Service Ltd.
59/6 Soi Lang Suan, Ploenchit Road
Pathumwan, Bangkok 10500
Tel. 250-1919, 252-1066

TURKEY
Kültur Yayinlari Is-Türk Ltd. Sti.
Atatürk Bulvari No: 191/Kat. 21
Kavaklidere/Ankara Tel. 25.07.60
Dolmabahce Cad. No: 29
Besiktas/Istanbul Tel. 160.71.88

UNITED KINGDOM
H.M. Stationery Office,
Postal orders only: (01)211-5656
P.O.B. 276, London SW8 5DT Tel. (01) 622.3316, or
personal callers:
49 High Holborn
London WC1V 6HB
Branches at: Belfast, Birmingham,
Bristol, Edinburgh, Manchester

UNITED STATES
OECD Publications and Information Centre,
2001 L Street, N.W., Suite 700,
Washington, D.C. 20036-4095 Tel. (202) 785-6323

VENEZUELA
Libreria del Este,
Avda F. Miranda 52, Aptdo. 60337,
Edificio Galipan, Caracas 106
Tel. 951.17.05/ 951.23.07/951.12.97

YUGOSLAVIA
Jugoslovenska Knjiga,
Knez Mihajlova 2, P.O.B. 36, Beograd Tel. 621.992

Orders and inquiries from countries where Distributors have not yet been appointed should be sent to OECD Publications Service, 2, rue André-Pascal, F 75775 Paris Cedex 16.

44659

Director : Lucien Dantin

Printed in France

OECD

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

MEMBER COUNTRIES:
AUSTRALIA / AUSTRIA / BELGIUM / CANADA / DENMARK / FINLAND / FRANCE / GERMANY / GREECE / ICELAND / IRELAND / ITALY / JAPAN / LUXEMBOURG / NETHERLANDS / NEW ZEALAND / NORWAY / PORTUGAL / SPAIN / SWEDEN / SWITZERLAND / TURKEY / UNITED KINGDOM / UNITED STATES

SPECIAL STATUS COUNTRY: YUGOSLAVIA

ISSN 0029-7054

Sustaining the Improved Economic Climate

Economic conditions in the OECD area currently appear more buoyant than at any time since the early 1970s.[1] Output has been growing at an annual rate of more than 4% since mid-1987. The expansion of activity has been widely spread across the area and private non-residential investment has been growing especially fast. Growth has been accompanied by some edging-up of inflation, now running at an average rate of around 4%. Activity may slow moderately, and if so, OECD inflation may be stabilised at its current rate.

This unusually favourable position provides national authorities with the opportunity to push ahead with policies to underpin and sustain the improvement in the economic climate, in part by reducing the main risks and uncertainties in the present outlook. One risk, which would be bigger if demand failed to slow as projected, is that inflationary tensions could build up in some countries. There is also continuing uncertainty about the extent of further adjustment in the large external imbalances of the United States, Japan and Germany. More forceful fiscal restraint in some countries, combined with careful co-ordination of monetary policies, would increase the likelihood of continuing on a path of stable expansion in the OECD area. But even such a path is unlikely to involve a significant fall in unemployment over the medium term unless structural conditions in OECD economies continue to improve. There is little scope for demand-oriented policies alone to reduce unemployment without pushing up inflation. To improve medium-term prospects for economic growth and strengthen employment, the opportunities for further micro-economic reforms therefore must be taken.

The buoyancy of activity in 1988 has been associated with a distinct improvement in private-sector confidence, in part a reflection of the further development of economic co-operation. One aspect of this was the more stable financial and exchange market conditions experienced over much of 1988. The US dollar nevertheless remains vulnerable to pressures in exchange markets, and a sharp cumulative decline of the dollar would threaten the improved economic situation. It is therefore important to continue and intensify co-operation across the full range of policies in order to reduce this risk and more generally to maintain conditions for sustained growth of the world economy. Within this process, measures are required to strengthen multilateralism in trade policy. The continuing, and possibly increasing, recourse to discriminatory restrictive measures underlines the importance of steady progress towards a successful outcome from the Uruguay Round negotiations.

The Economic Background

Real GNP in the OECD area has been growing at an annual rate of over 4% since mid-1987, an expansion spread across most OECD countries (Table 1). In Europe, where slow growth and high unemployment seemed to have become endemic in a number of countries, activity appears to have expanded by over 3½% in 1988, the highest rate in over a decade, and surveys now indicate a general improvement in confidence of both households and enterprises. Productive investment has grown dynamically in most OECD countries; private non-residential investment in the OECD area increased by over 10% in 1988. In some countries, financial deregulation and innovation have contributed to a marked expansion of consumer credit, and thereby to the rapid growth of demand.

The vigour of activity reflects a number of underlying forces that have been present for several years:

- the terms-of-trade gains arising from the 1986 decline in oil prices
- increasing confidence that the marked reductions in inflation achieved over the first part of the 1980s would not be reversed
- continuing moderate increases in nominal wages in most countries
- the restoration of previously eroded profits and financial positions of enterprises in many.

These forces have been supported by the cumulative effects of several years of broadly accommodating monetary policy, by continuing structural reform, and by closer international economic co-operation over the past

1. **OECD Economic Outlook**, No.44, OECD Publications, Paris, 1988.

Table 1
GROWTH OF REAL GDP/GNP IN THE OECD AREA[1]
seasonally adjusted at annual rates (%)

	Share in total OECD 1982	change from previous year				change from previous half-year				
		1987	1988	1989	1990	1988 II	1989 I	1989 II	1990 I	1990 II
United States	40.6	3.4	3¾	3	2½	2½	3½	2½	2½	2½
Japan	13.9	4.3	5¾	4½	3¾	4½	4½	4	3½	4
Germany	8.4	1.8	3¾	2½	2¾	2¾	2¼	2¾	2¾	3
France	7.1	2.3	3½	3	2½	3¾	2¾	2½	2½	2½
United Kingdom	6.2	4.3	4¼	3	2	5	2½	1¾	2	2
Italy	5.2	3.1	3¾	3½	2¾	4½	3	3	2½	2½
Canada	3.9	4.0	4¼	3	3	2¾	3¼	3	3	2¾
Total of above countries	85.2	3.4	4¼	3¼	2¾	3¼	3½	2¾	2¾	2¾
Other OECD Countries	14.8	2.9	3¼	2¾	2¾	3	2¾	2¾	2¾	2¾
Total OECD	100.0	3.3	4	3¼	2¾	3¼	3¼	2¾	2¾	2¾
Four major European countries	26.9	2.8	3¾	3	2½	4	2½	2½	2½	2½
OECD Europe	39.3	2.8	3½	3	2½	3¾	2¾	2½	2½	2½
EEC	33.8	2.8	3¾	3	2½	3¾	2¾	2½	2½	2½
Total OECD *less* the United States	59.4	3.3	4	3¼	3	3¾	3¼	3	2¾	3
Industrial Production:										
Major seven countries	–	3.5	5¾	4¼	3¾	4¾	4¼	3¾	3½	3¾
Total OECD	–	3.4	5½	4	3½	4¾	4	3¾	3½	3¾

Goldberg/Sygma

'Output has been growing at an annual rate of more than

Other OECD Countries

	Share in total OECD 1982	% change from previous year			
		1987	1988	1989	1990
Austria	0.9	1.5	3½	2½	2¼
Belgium	1.1	2.1	3¼	2¾	2¼
Denmark	0.7	–1.0	0	¾	1¾
Finland	0.7	3.8	4	2½	2¼
Greece	0.5	–0.4	3¼	2¾	2½
Iceland	0	6.5	–1½	–1½	..
Ireland	0.2	4.8	1¾	2½	2¼
Luxembourg	0	2.0	3	2¾	2¼
Netherlands	1.8	1.3	2¾	2½	2½
Norway	0.7	0.5	¾	2½	2½
Portugal	0.3	4.6	4¼	3¾	3½
Spain	2.3	5.5	5	4½	4
Sweden	1.3	2.4	2½	1¾	1½
Switzerland	1.2	2.3	2¾	2	2¼
Turkey	0.7	7.4	6½	5¼	5
Total of above countries	12.4	2.8	3¼	3	2¾
Australia	2.1	3.9	3	3	2¼
New Zealand	0.3	0.7	–¼	1½	2
Total of above 17 countries	14.8	2.9	3¼	2¾	2¾

1. *Aggregates computed on the basis of 1982 exchange rates.*

year. Until recently the impact of these forces on the behaviour of private agents was uncertain—as was its timing. It is now clear that they are having considerable effect: the strong pick-up of investment is an indication that 'animal spirits' have been raised in most OECD countries.

Over the next year or so, the dynamism of these forces may subside to some extent. In countries that have been growing particularly rapidly in recent years, margins of unused capacity have shrunk and labour markets are tightening, so that future growth will be limited to the rate at which productive potential expands. The tightening of monetary policy since last spring should contribute to some damping of activity. Private investment, while remaining a higher share of GNP than observed for a number of years, may grow more slowly—at rates more in line with the medium-term expansion of GNP. Consumer expendi-

A. Dejean/Sygma

'Average OECD inflation appears to have been held to 4%

4% since mid-1987.'

at an annual rate in the second half of 1988.'

Table 2

PRIVATE CONSUMPTION DEFLATORS IN THE OECD AREA[1]

percentage changes; seasonally adjusted at annual rates

	1987	1988	1989	1990	1988 II	1989 I	1989 II	1990 I	1990 II
United States	4.5	4¼	4½	4¾	4½	4½	4¾	4¾	4¾
Japan	–0.1	0	1	1¼	1	1	1¼	1¼	1½
Germany	0.5	1¼	2¼	2	1½	2½	2¼	2	2
France	3.2	2½	2½	2¼	3	2½	2½	2¼	2¼
United Kingdom	3.8	4½	5¼	4¾	5½	5¼	5	4¾	4½
Italy	4.8	5	4¼	4	4½	4¼	4	4	3¾
Canada	3.7	3½	3¾	4¼	3½	3¾	4	4¼	4½
Total of above countries	3.2	3¼	3½	3¾	3½	3½	3¾	3¾	3¾
Other OECD Countries[2]	6.2	7¾	6¾	6	7½	6¾	6½	6	5½
Total OECD	3.6	3¾	4	4	4¼	4	4	4	4
Four major European countries	2.8	3¼	3½	3¼	3½	3½	3¼	3	3
OECD Europe	3.7	4¾	4½	4¼	4¾	4½	4½	4¼	4
EEC	3.1	3¼	3½	3¼	3½	3½	3½	3¼	3¼
Total OECD *less* the United States	3.0	3½	3¾	3½	3¾	3¾	3¾	3½	3½

Other OECD Countries

	1988	1989	1990
Austria	2	2¼	2½
Belgium	1¼	1¾	2
Denmark	4¾	4	3½
Finland	5¼	5	5¼
Greece	13½	13½	13
Iceland	25	15	..
Ireland	2¼	3	3½
Luxembourg	1½	1¾	1¾
Netherlands	¾	1	1½
Norway	5¾	4¼	4
Portugal	9	8	7¼
Spain	4¾	4½	4
Sweden	6	6	5
Switzerland	2	2¾	3
Turkey	74¾	61	48
Total of above countries	8	7¼	6¼
Australia	6¾	4¾	4¼
New Zealand	6½	4¼	3½
Total of above 17 countries	7¾	6¾	6

1. Aggregates computed on the basis of 1982 GNP/GDP weights expressed in 1982 US dollars.

2. Half-yearly data must be interpreted with care.

ture may also decelerate somewhat, in part because of a slowing of the expansion of consumer credit in countries where it has recently been growing very rapidly. In all, OECD real GNP may grow at 3–3½% in 1989 and 2½–3% during 1990.

The acceleration of activity over the past year has been supported by a notable improvement in productivity performance, related in part to rapid growth in manufacturing. In the year to mid-1988, output per person employed in the OECD area increased by some 2½%—significantly above the trends observed since the early 1970s. This productivity performance has allowed real wages to rise without eroding the profit share, thereby sustaining consumption and investment demand without adding to inflationary pressures in labour and product markets.

In consequence, inflation picked up only marginally, despite the rapid expansion of activity and sharp increases in the prices of many non-oil primary commodities in the first half of 1988 (Table 2). Average OECD inflation appears to have been held to 4% at an annual rate in the second half of 1988—only marginally faster than the average for 1987. If real growth slows as projected, good productivity performance continues, and the relative prices of oil and other commodities remain broadly unchanged, average OECD inflation could remain at around 4% in 1989 and 1990. The inflation risk has nevertheless increased in some

countries; in North America and the United Kingdom inflation has crept up and is relatively high.

The average rate of unemployment in the OECD area fell from a peak of almost 9% in 1983 to below 7½% in the second half of 1988 (Table 3), reflecting both strong employment growth outside Europe and, for the last three years, the most sustained expansion of employment in Europe since the early 1970s. Yet as the growth of output eases, the OECD unemployment rate could stop falling, with the number of persons unemployed starting to edge up again during 1989. In a number of countries where unemployment remains high and productivity prospects have improved, inflation is nonetheless not expected to decelerate further, largely because of structural rigidities in labour and product markets. These rigidities will continue to limit employment prospects, especially for the large number of people who have been out of work for long periods and who have few marketable skills.

Accompanying the better-than-expected evolution of activity, the 'news' on external adjustment has been somewhat better than in 1987, though not across the board. The trade and current-account deficits of the United States fell significantly in a short period (Table 4): the trade deficit, in particular, from annual rates of some $170 billion in the second half of 1987 to around $130 billion in the six months to September 1988. In Japan, the trade surplus has recently fluctuated considerably around a trend that is declining slightly, and with substantial increases in expenditures on tourism and foreign transport services, the current-account surplus has narrowed. But the German trade and current surpluses have widened a bit, while the United Kingdom has moved rapidly into a large current-account deficit. Adjustment of trade volumes in the three largest countries, which had been apparent through 1987, seems to have continued at a good pace in the first half of 1988.

Table 3
UNEMPLOYMENT IN THE OECD AREA
national definitions

	1987	1988	1989	1990	1988 II	1989 I	1989 II	1990 I	1990 II
Unemployment Rates (%)[1]									
United States	6.2	5½	5½	5½	5½	5½	5½	5½	5½
Japan	2.8	2½	2½	2½	2½	2½	2½	2½	2½
Germany	7.9	7¾	7¾	7¾	7¾	7¾	7¾	7¾	7¾
France	10.5	10¼	10½	10¾	10¼	10½	10½	10¾	10¾
United Kingdom	10.3	8½	7¾	8	8¼	7¾	7¾	8	8
Italy	11.0	11¼	11¼	11½	11¼	11¼	11¼	11½	11¾
Canada	8.9	7¾	7¾	7½	7¾	7¾	7¾	7¾	7½
Total of above countries	6.9	6¼	6¼	6½	6¼	6¼	6¼	6¼	6½
Other OECD Countries	11.3	11	11¼	11¼	11	11	11¼	11¼	11¼
Total OECD	7.9	7¼	7¼	7½	7¼	7¼	7¼	7½	7½
Four major European countries	9.9	9½	9¼	9½	9¼	9¼	9¼	9½	9½
OECD Europe	10.7	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10½
EEC	11.0	10½	10¼	10¼	10¼	10¼	10¼	10¼	10¼
Total OECD *less* the United States	8.6	8¼	8¼	8¼	8¼	8¼	8¼	8¼	8¼
Unemployment (millions)									
North America	8.6	7¾	7¾	8	7¾	7¾	7¾	8	8
OECD Europe	18.9	18½	18½	18¾	18¼	18¼	18½	18¾	19
Total OECD	29.9	28½	28½	29¼	28¼	28¼	28¾	29	29¼

Other OECD Countries
%

	1987	1988	1989	1990
Austria	3.8	3¾	3½	3¾
Belgium	11.2	10½	10¼	9¾
Denmark	7.8	8½	9¼	9½
Finland	5.1	4¾	4¾	4¾
Greece	7.4	7½	7¾	8
Iceland	0.5	½	¾	..
Ireland	17.7	16½	16¼	16
Luxembourg	1.6	1½	1½	1½
Netherlands	12.6	12½	12½	12½
Norway	2.0	3	3¾	3¾
Portugal	7.1	6½	6¼	6¼
Spain	20.5	19½	18¾	18
Sweden	1.9	1¾	1¾	2
Switzerland	0.7	¾	¾	¾
Turkey	15.2	15½	16¼	17
Total of above countries	11.8	11¾	11¾	11¾
Australia	8.1	7¼	7	7
New Zealand	4.1	5¼	6	6¼
Total of above 17 countries	11.3	11	11¼	11¼

1. *As percentage of labour force.*

OECD projections to 1990 envisage that this volume adjustment will slow, and that there may be only limited further progress in reducing current-account imbalances. These projections incorporate a narrowing of differences in the growth of domestic demand among the major countries, and they embody the view that the effects on trade flows of changes in the competitive positions of countries are largely played out after two or three years. Only a small allowance has been made for the possibility that adjustment to competitiveness changes may continue for a longer period—a critical uncertainty for prospects for a sustained narrowing of external imbalances.

Present Risks and Problems

Inflation

Shortly before last summer, at the time of the publication of the previous *Economic Outlook* (No. 43), many observers were becoming increasingly concerned about the risk of a resurgence of inflation generated by excess pressure of demand in some countries, coupled with sharp increases in the

prices of many primary commodities. These concerns have subsided somewhat in the face of the improved productivity performance, softer non-oil commodity prices since early summer, lower oil prices, and—most fundamentally—actions by monetary authorities aimed at heading off any resurgence of inflation. The projections here imply that, in general, inflation will be contained: in most countries it is projected either to decelerate in 1989 and 1990 or to remain low. Only in North America, where inflation is projected to continue to creep up, and in a few small countries does a serious risk emerge from these figures.

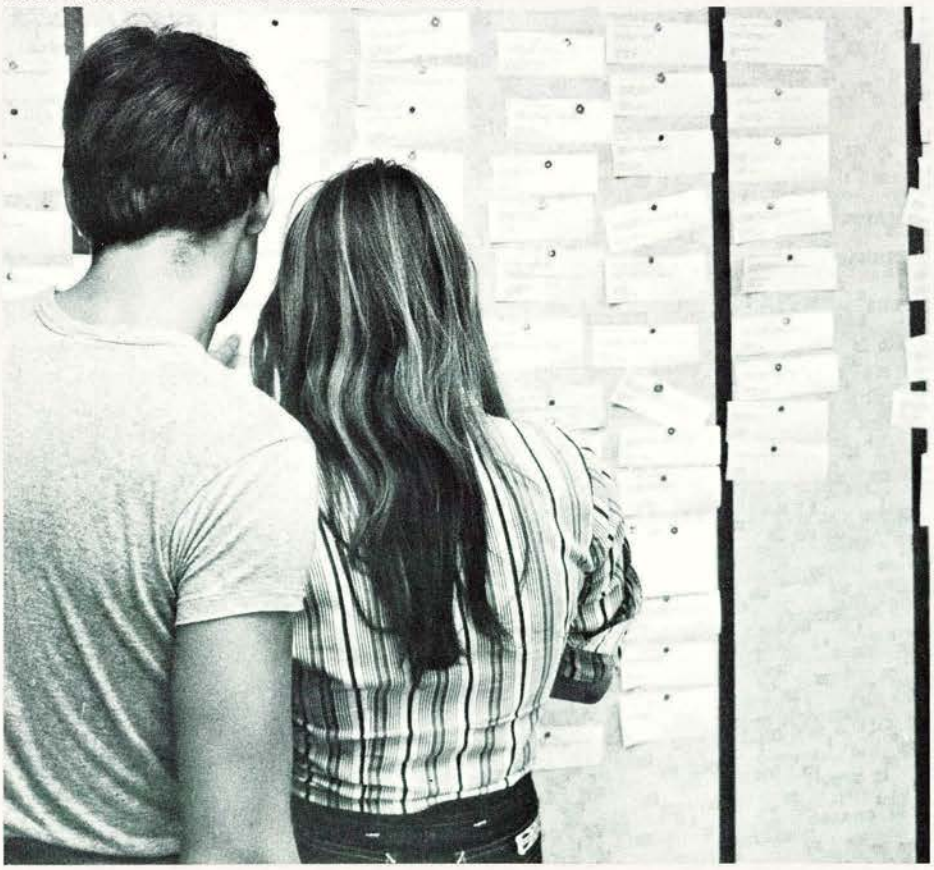
Within this apparently comforting picture there are a number of other countries—notably the United Kingdom and some others in Europe—where potential inflationary tensions in labour and/or product markets remain close to the surface. If the growth of demand does not slow, inflation is likely to be higher than projected. The risk here is not so much one of a spectacular resurgence of inflation but rather of a more insidious development: forces getting a grip on the system which will make for a slow but cumulative acceleration of prices (similar to the 'creeping inflation' of the late 1960s and the early '70s). In view of the difficulty and cost of wringing such forces out of the system, particular vigilance is required to prevent their taking hold in the first place—all the more since any acceleration of inflation would add to an average OECD rate already of 4%.

Persistent External Imbalances

During the course of the summer of 1988, concern temporarily abated about the potentially adverse consequences for financial markets, monetary conditions and activity in the OECD area if private capital flows failed to come forth on a scale corresponding to the current-account imbalances of the major OECD countries. Indeed, at prevailing interest rates the dollar appreciated, despite some intervention to dampen exchange markets by monetary authorities. Market sentiment in favour of the dollar emerged against the background of a string of favourable US monthly trade figures coupled with the expectation that inflationary pressures would be countered as necessary by the Federal Reserve. This expectation implied that, if US short-term interest rates did move, they were likely to increase. There may also have been some unwinding of the positions associated with bearish views on the dollar in late 1987 and early 1988. The market did not appear to focus closely on fiscal policy during the period before the Presidential election, but it has since shown signs of doing so. Continued uncertainty in this area could damage market confidence and stability—especially if, as is possible, the trend in monthly trade figures becomes less favourable.

Apart from this short-term risk, the question persists of the strength of private capital flows to the United States over the medium term. This is a concern because the US current deficit seems set to remain at $100 billion or more in the absence of strongly reinforced adjustment. Financing of US deficits on this scale over the medium term would probably entail some further rise in the share of world wealth placed in the United States. Smooth financing of a continued build-up of US external debt denominated in dollars cannot be taken for granted. It depends crucially on market confidence that inflation will be kept in check, that US trade performance will continue to improve, and that policies generally will be consistent with a progressive narrowing of the US current-account deficit.

'The average rate of unemployment in the OECD area fell from a peak of almost 9% in 1983 to below 7½% in the second half of 1988.'



J. Pavlovsky/Sygma

The question of likely flows of private capital over the medium term arises also in connection with prospective external surpluses and deficits among European countries. A widening of these does not *per se* suggest exchange-rate realignments or differential demand growth within Europe aimed at reducing them. Current-account positions may reflect structural differences across countries, which could induce corresponding private capital flows—if, for example, they channelled saving in excess of profitable investment opportunities in one country to another country where economically sound investment opportunities were larger. Liberalisation and integration of financial markets within Europe through market unification should facilitate such capital flows—but whether they materialise will depend on policies. In particular, macro- and micro-economic policies in countries in deficit would have to ensure that capital inflows were not diverted into the financing of public-sector deficits, economically unsound investment or excessive private consumption. Thus, while current-account deficits which are larger than would have been regarded as sustainable in the past may not, on their own, inevitably give rise to exchange-market pressures, this will depend on the situations and policies of the countries in which these deficits arise, and on progress towards a unified European market.

Pressure on Interest Rates

Over the summer the fear of overheating led authorities in several countries to tighten monetary policy. If inflationary tendencies do not subside, there could be further pressure on interest rates, as a result either of further policy tightening or of heightened inflationary expectations in markets. Such developments would damp the present strength of investment, thus slowing the expansion of productive potential.

Higher interest rates would also carry other risks, in particular to the vulnerable sectors of financial markets. These would seem especially worrying to the extent that US interest rates rose. US domestic financial problems are already acute in the savings and loan and farm credit sectors, and leveraged buy-outs have created heavy debt burdens for the corporations involved. Higher dollar interest rates would complicate the debt situation of developing countries, which remains precarious despite the progress that has been made. While these problems require attention, the basic role of monetary policy is to contain inflation. Holding back on monetary tightening in the face of gathering inflationary momentum could lead in the end to even larger increases in interest rates, with the accompanying risk of a marked weakening of demand.

Both medium-term investment and more immediate financial considerations highlight the importance of alleviating potential interest-rate pressures by accelerating fiscal adjustment in a number of countries, including the United States. This would reduce the burden on monetary policy to contain inflation.

Trade Barriers

Protectionism remains a chronic problem. Although OECD countries have made significant progress in freeing up both domestic markets and international capital flows, this process of liberalisation has not as yet been matched in recent years by further liberalisation of international trade in goods or in services. On the contrary, the trade regimes of many member countries are, on balance, less liberal than they were ten years ago, and there are signs that a slow drift towards more protectionism and further trade discrimination is continuing. Two tendencies which have increasingly become matters for concern are, first, the search for bilateral solutions to trade issues and, second, the initiation of numerous and sometimes economically questionable countervailing and anti-dumping procedures. The failure to make progress on trade liberalisation remains a limiting factor on economic performance. This underlines how important it is that OECD member countries make a determined effort to ensure the full and complete success of the Uruguay Round negotiations.

One focus of protectionist pressures and actions has been on exports from the developing countries that have increased their share of OECD markets, notably the newly industrialising economies (NIEs) in Asia. Further discriminatory measures targetted at these countries are sometimes advocated. But such measures would raise prices, restrict choice and increase the vulnerability to bottlenecks in supply in OECD countries. They would also affect economic development in the NIEs, which has been based on increasing participation in world markets and has led to extremely fast growth in their imports. For some of these economies, closer integration into the world economy and the international financial system will involve further reductions in barriers to imports, direct investment and capital flows, together with a continuation or intensification of macro-economic policies that would help to achieve more balanced trade. A fuller international process of consultation could contribute to this evolution. Such a process would be more helpful, and more in the interests of all parties, than further resort by OECD countries to measures of the kind which they are asking the NIEs to abandon or eschew.

Policy Requirements

The current favourable economic climate in the OECD area may not at first sight suggest that policies should be changed. Yet some rebalancing of macro-economic policy in many countries, together with an increase in the pace of structural reform in all of them, would contribute significantly to reducing the risks in the current situation. Such actions would increase the likelihood that the present economic cli-

Table 4
CURRENT BALANCES OF OECD COUNTRIES
$ billion, seasonally adjusted at annual rates

	1987	1988	1989	1990	1988 II	1989 I	1989 II	1990 I	1990 II
United States	–154.0	–132	–116	–108	–124	–118	–114	–110	–106
Japan	87.0	79	77	72	77	79	76	74	71
Germany	44.9	45	51	52	42	49	52	52	53
France	–5.3	–6	–6	–5	–8	–6	–6	–6	–5
United Kingdom	–4.1	–23	–26	–29	–26	–25	–28	–28	–30
Italy	–1.0	–4	–6	–6	–5	–6	–5	–6	–6
Canada	–8.0	–8	–10	–11	–10	–10	–10	–11	–11
Total of above countries	–40.3	–50	–36	–35	–53	–36	–36	–35	–35
Other OECD Countries	–8.8	–11	–14	–16	–9	–13	–14	–16	–16
Total OECD	–49.1	–61	–50	–51	–61	–49	–51	–51	–50
Four major European countries	34.6	12	13	12	3	13	12	12	12
OECD Europe	36.0	11	9	7	4	10	8	7	6
EEC	37.4	14	13	11	7	14	13	11	11
Total OECD *less* the United States	104.8	72	66	58	62	69	63	59	56

Other OECD Countries

	1987	1988	1989	1990
Austria	–0.2	–¼	0	0
Belgium-Luxembourg	2.9	3½	4¾	5¾
Denmark	–2.9	–2½	–2¼	–2½
Finland	–2.1	–2¾	–3¾	–4¼
Greece	–1.3	–1¼	–1¾	–2
Iceland	–0.2	–¼	–¼	–¼
Ireland	0.4	1¼	1¼	1¼
Netherlands	3.1	4¼	5	6
Norway	–4.1	–4	–3¼	–2½
Portugal	0.7	0	–¾	–1½
Spain	0	–2¾	–5½	–7¾
Sweden	–0.9	–1¾	–2½	–3
Switzerland	7.0	6¼	6¼	6½
Turkey	–1.0	–¾	–¾	–¾
Total of above countries	1.4	–1¼	–3¼	–5¼
Australia	–8.5	–9	–9¼	–9½
New Zealand	–1.7	–¾	–¾	–1
Total of above countries	–8.8	–11	–13½	–15¾

mate—and related high degrees of confidence—will persist.

Macro-economic Policies

The possibility that further policy action to contain inflation might be necessary—at least in some countries—raises the question of the specific form such action might take. This issue must, in turn, be assessed in the more general context of the complementary roles of monetary and fiscal policies and of the most appropriate combination of them. Monetary policy must be used to prevent a re-acceleration of inflation. But reliance on monetary policy alone would not be the best approach: the interest-rate increases which might be necessary to moderate activity could have the adverse effects already noted. An acceleration of budgetary adjustment, on the other hand, would not only contribute to containing inflation while alleviating pressure on interest rates; it would also free additional resources for the private investment necessary to underpin better economic performance over the medium term.

In many countries further changes to the present orientation of fiscal policy appear necessary to achieve a medium-term evolution of domestic saving and investment that would be consistent with sustained growth. Such a rebalancing of policies would also provide monetary policy with more room for manœuvre, including the possibility of some relaxation if demand softened and price performance permitted. Over time, such action, together with continuing monetary co-operation, would lay the basis for lower interest rates in national and international markets. As those countries where inflation risks seem highest also have current-account deficits, a movement toward stronger public-sector financial balances would likewise contribute to external adjustment.

Fiscal restraint consistent with medium-term requirements is especially pertinent in countries where inflation looks set to remain high or inflationary tensions may be close to the surface (the United States, the United Kingdom, Italy, Canada, Sweden, Finland, Iceland, Spain, Portugal, Greece and Turkey). Progressive fiscal consolidation is also called for in some of these countries either because budget deficits are high in relation to domestic saving or because ratios of public debt to GNP are high—and possibly rising—with resulting heavy debt-service payments. These latter considerations also apply in a number of other countries where inflation is currently under control (Austria, Belgium, Ireland, and the Netherlands). In some of the countries already mentioned, as also in others such as Australia, New Zealand, Denmark and Norway, a persistent current-account deficit and a build-up of external indebtedness at rates which may be unsustainable over the medium term point to the importance of adjusting the domestic balance between saving and investment. Here, too, fiscal adjustment may therefore be required.

Many of these countries have medium-term programmes of fiscal consolidation. It is important that they be implemented without slipping, and that countries without such plans set measures of restriction in train promptly. The fact that buoyant activity has generated higher-than-expected tax revenues should not lead to any diminution in the priority accorded to fiscal restraint. On the contrary, the present position provides a number of countries with favourable conditions for accelerating the process—and even for pursuing more ambitious objectives. Where private saving is weak, planning for a budgetary surplus may be appropriate.

A. Keler/Sygma

'Adjustment of trade volumes...will slow, and...there may be only limited further progress in reducing current-account imbalances.'

Structural Reform

The recent strong growth in the OECD area and reasonably favourable prospects make this a propitious time to progress with structural reform. The argument that reforms cannot be pressed in periods of demand weakness is now less relevant. At the same time, neither the current situation nor future prospects suggest that structural problems can be played down. Unemployment remains high in many countries, and prospects are poor for bringing it down substantially through stronger demand alone, without higher inflation. In a number of countries, regional disparities in prosperity remain large. Almost everywhere the costs to consumers and taxpayers of protection and subsidies remain high. In some countries low private saving rates appear to reflect, at least in part, tax distortions.

Another reason for perseverance is the evidence that reforms are having beneficial effects. Improved business confidence and stronger investment appear to owe something to reforms in micro-economic policies, to the expectation of further widening of markets and strengthening of competitive forces—through, for example, the 1992 programme of the European Communities and the Canada-United States Free Trade Agreement—and to reforms of tax systems underway in most countries. There are clear possibilities for improving economic performance over the medium term through further structural reforms.

All member countries have important structural problems to address. Some are common, such as the necessity of reducing distortions in agriculture and of rolling back trade protection. These warrant priority—in each member country, in the European Communities, and internationally. In other areas, the most pressing challenges differ according to country. In a number of countries, rigidities in labour markets continue to limit prospects for reducing unemployment. In spite of substantial tax reform in many countries, much more could be done—especially where tax distortions inhibit saving or distort the allocation of investment. Industrial subsidies, although reduced, are still retarding adjustment. More generally, impediments to competition and flexibility in markets and inefficiency in public sectors continue to limit the growth of output and employment. These supply-side deficiencies are all the more constraining now that demand is more buoyant. The governments of member countries have intensified their actions to implement required reforms internationally and domestically. This is an essential element of a strategy to sustain non-inflationary growth.

Co-operation and Confidence

The necessary adjustment of macroeconomic policies and the implementation of structural reform will be more productive and less difficult to achieve if undertaken in the context of internationally co-operative action. One reason for the current buoyancy of activity is the improvement in private-sector confidence, which in part reflects improved co-operation in both macro- and micro-policies. Effective international economic co-operation, across the full range of policies and involving all member countries, is required to nurture this confidence.

1 December 1988