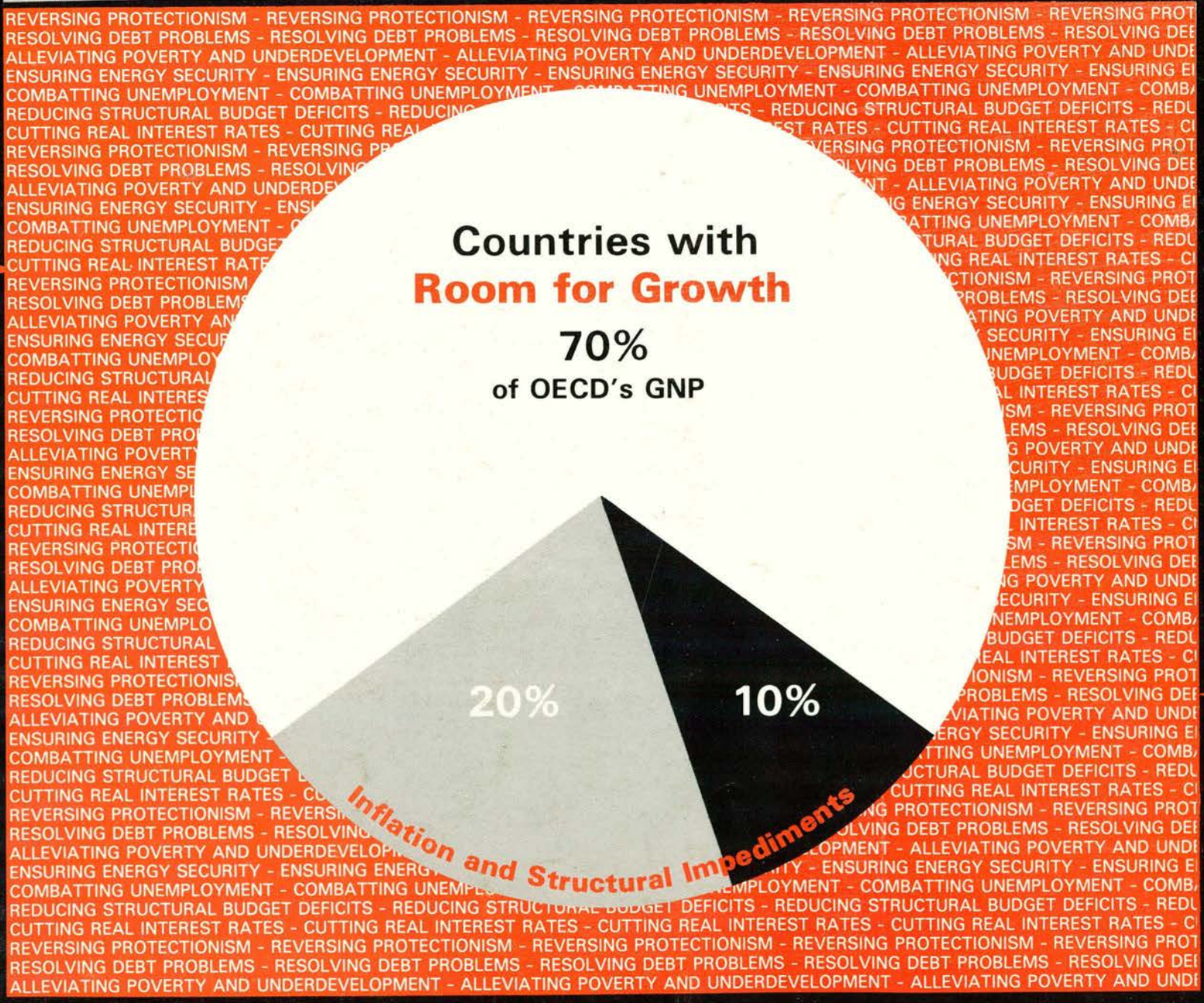
the OECD OBSERVER

OECD MINISTERS



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PHOTOS: pages 4-6: L. Jouan – OECD; page 8: Philippe Ledru-Sygma; page 9: Statoil, Norway; page 12: Almasy; page 15: James Pickerell – IDA; page 18: OPEC Fund for International Development; page 20: APN; page 24 (top): Marc Delemme – OECD; (bottom): UKAEA; page 25: Greg Davis-Sygma; page 26: R. Bossu-Sygma; pages 30-31: Institut Polski; page 33 (top): Het Nederlands Zuivelbureau; (bottom): Almasy; page 34: New Zealand Embassy, Paris.

CORRIGENDUM

In the article on "Science and Technology Indicators" published in the last issue of The OECD Observer *in Table 1,* Level of R&D, 1979, *there is an error: in the column "Total R&D Personnel (thousands)", the figure for the United States should read 1,334.0 (and not 133.4).*

Two Ministerial Meetings:

OECD Council

At its meeting on 9th-10th May, the Council of the Organisation for Economic Co-operation and Development at Ministerial level agreed on a medium-term approach to sustaining and broadening the economic recovery now under-way. They agreed that increased sustainable non-inflationary growth in the OECD countries now must be aimed at in order to reduce the present very high levels of unemployment.

Ministers recognised that the powerful economic linkages among countries and regions imply a collective responsibility to shape policies so as to strengthen the international trading, monetary and financial systems.

Accordingly, their governments intend to:

- take advantage of the room for growth, which is now emerging in an important part of the OECD area, to promote job creation and higher employment;
- continue to reduce inflation and overcome structural impediments to improved economic performance;
- make use, individually and collectively, of the favourable conditions provided by economic recovery to reverse protectionist trends;
- work to resolve international debt problems in a trade-expansionary way as recovery and adjustment by debtor countries proceed;
- provide more effective help to the poorer developing countries.

The meeting was chaired by Madame Colette Flesch, Vice-President of the Government of Luxembourg, Minister of Foreign Affairs, External Trade and Co-operation, Minister of Economy and Middle Classes. The Vice-Chairmen were Mr. Shintaro Abe, Minister for Foreign Affairs of Japan and Mr. Kurt Furgler, Federal Counsellor and Head of the Swiss Federal Department of Economic Affairs. In addition to reviewing their economic policies, and trade relations among Member countries, Ministers considered the difficult situation of the developing countries and the policies needed if they are to benefit from economic recovery. They discussed the dialogue with the developing countries, in particular preparations for UNCTAD VI. Ministers also reviewed East-West economic relations.

Finally, Ministers heard a report by Mr. William F. Birch, Minister of Energy of New Zealand, on the results of the Ministerial Meeting of the Governing Board of the International Energy Agency, held on 8th May, 1983, in Paris. They took note of the study, Energy Requirements and Security, prepared by the Secretariat, and of the discussions on it, and endorsed the conclusions set forth in the Annex to this Communiqué[1].

The Transition to Sustained Growth

Ministers welcomed the further achievements in reducing inflation. They are very concerned, however, about the high and rising levels of unemployment. It is therefore encouraging that signs of an up-turn have now emerged in several OECD economies. While uncertainties and risks remain, Ministers agreed that prospects for continuing recovery are better than they have been for several years, and that ensuring the transition to sustained non-inflationary growth and higher employment is the central task of policy.

Common policy principles

Ministers agreed on the following policy principles for all Member countries:

1. Policies need to be set firmly in a medium-term framework to make clear the steadiness of policy intent. This will, of necessity, call for flexibility in the implementation of policies when circumstances require.

2. Pervasive economic linkages mean that the ability of individual countries to achieve domestic policy objectives depends importantly on the policies and performance of others. It is important for the consistency of policies that each Member country take account of the international implications of Member countries' policies taken together.

3. The achievement of greater exchange rate stability, which does not imply rigidity, is a major objective and commitment to be pursued. In this context they noted and welcomed the principles set out in the agreement by finance ministers of seven Member countries, announced in Washington on April 29th, 1983.

4. Improved economic performance and higher employment require a balanced use of macro-economic and structural policies. Growing room emerges as inflation diminishes and supply-side responsiveness increases. To this end:

- Macro-economic policies should be consistent with medium-term objectives of inflation control and steadier real growth; some countries have found a nominal income framework helpful in this respect.
- Policies to increase the profitability of job-creating productive investment are required.
- Collective bargaining should take account of the need to promote investment and to maximise the scope for higher employment without inflation.
- Positive adjustment policies are necessary to enhance competition and the flexibility of markets, and to improve the allocation of resources.
- Labour market policies are important to alleviate the burden of unemployment, particularly on young people; targeted programmes, including training, can help to deal with the problem of structural unemployment.

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1. The conclusions are those reproduced on page 7 except for references to activities applying specifically to Member countries of the IEA only. These are printed in italics or marked with an asterisk.

• Facilitating stronger social consensus can in many countries play an important role in achieving the necessary balance of policies.

While these policy principles are common to all Member countries, Ministers recognised that countries are in diverse situations. Not all countries have been equally successful in establishing the preconditions for better economic performance. Appropriate policies therefore differ in emphasis from one country to another.

National policies

In a number of countries, accounting for about 70 per cent of OECD GNP, inflation is approaching the level of the 1960s. Confidence has strengthened; progress has been made in tackling structural imbalances; and activity, which has been weak, is now starting to recover. Further declines in real interest rates should be aimed at. For such countries, Ministers agreed on the importance of taking advantage of the room that has emerged for increased output and employment; in particular:

• As regards monetary policy, monetary aggregates should allow for output growth which is sustainable over the medium-term, with continued control of inflation, permitting a continued easing of interest rates. Current monetary policies are generally consistent with this approach. Targets for monetary aggregates should not be lowered in response to lower oil prices. Similarly, monetary policy should not accommodate any resurgence of inflationary wage and other income claims.

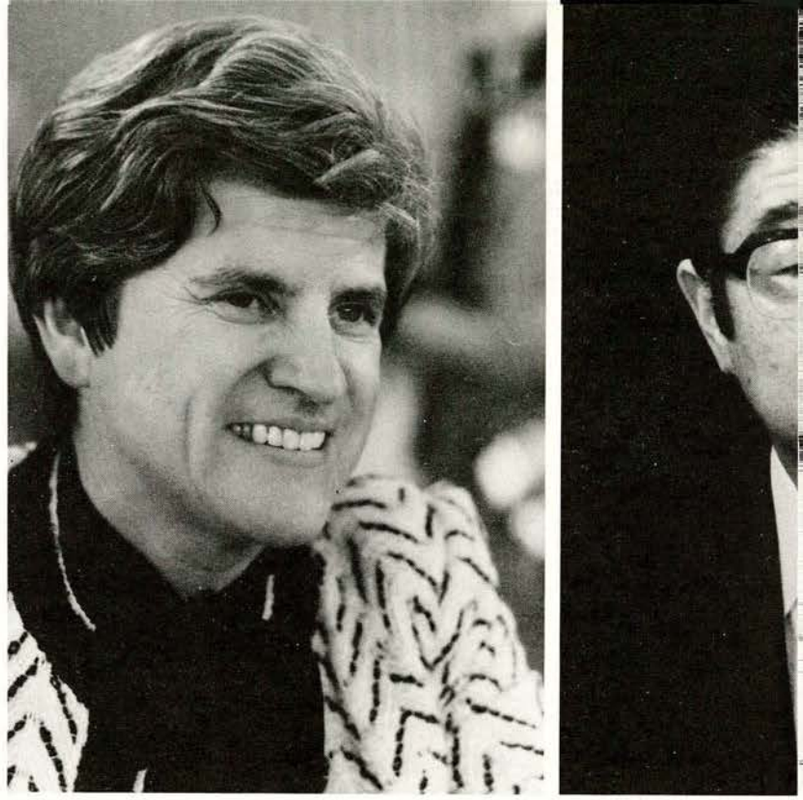
• Fiscal policy should be consistent with sustained non-inflationary growth, higher investment and higher employment. Structural budget deficits need to be reduced to make room for the investment needed to sustain growth and employment. Where future structural deficits loom large, it is important to act now to ensure that deficits on this scale will not materialise, thus permitting interest rates to ease. Given the strong international transmision of interest rates, such action would promote recovery in the world economy. The reduction of structural deficits should take care not to jeopardise economic recovery, and take account of the cumulative effects of simultaneous action in a large number of countries. Where measures to support activity are considered they should be designed to promote investment.

In some other countries, accounting for about 20 per cent of OECD GNP, further progress against inflation is required and structural impediments to better performance are more pronounced. As a result, growing room in the near-term is less. For such countries, Ministers agreed that perseverance with non-accommodating monetary policy is required, and structural budget deficits must be reduced further as part of a consistent medium-term approach. It is also particularly important that further efforts be made to reduce structural impediments.

In the remaining Member countries, despite serious efforts, inflation remains very high, while the international recession and chronic structural problems mean high rates of unemployment and underemployment. In such countries, Ministers agreed that limited flexibility of markets, structural imbalances, and difficulties in monetary and fiscal management are central problems, which must be addressed at their core. Improved economic performance remains primarily a task for domestic policies, although sustained recovery and lower interest rates in the OECD area, and an improving trade environment will make this easier.

Trade, Debt and Adjustment

Ministers discussed the powerful linkages between growth, trade and debt which are now at work between creditor and debtor countries. They agreed on the importance of taking these linkages into account as fully as possible in the formulation of their macro-economic, trade and financial policies, and welcomed the work being done in the Organisation to help clarify the issues



From left to right: *Chairman of OECD's Ministerial Meeting: Colette Flesch, for Economy, Finance and Budget, Jacques Delors; Sweden's Minister of*

involved. They also recognised that the world recession had exposed problems of a systemic nature which need to be addressed.

Ministers noted that, during a period of severe and persistent economic and social difficulties, the world trading system has essentially been preserved. They recognised, however, that there has been a continuation and even extension of protectionist trade and domestic support measures to shelter weak industries and companies from the full impact of the recession and structural change. Such measures have contributed to slowing down the movement of resources into activities with greater growth and job-creating potential. A return to sustained growth requires more positive adjustment policies, more reliance on market forces and more productive investment.

Ministers agreed that, within the framework of their overall economic co-operation, strengthening the open and multilateral trading system is essential to support the recovery and the transition to sustained growth. They therefore agreed that the economic recovery, as it proceeds, provides favourable conditions which Member countries should use, individually and collectively, to reverse protectionist trends and to relax and dismantle progressively trade restrictions and trade distorting domestic measures, particularly those introduced over the recent period of poor growth performance. They invited the Secretary-General to propose appropriate follow-up procedures. At the same time, they agreed that the work programmes now under way in the GATT and OECD to improve the trading system and its functioning should be actively pursued.

Ministers welcomed the co-operative efforts being made by the International Monetary Fund, the Bank for International Settlements, the governments of the debtor and creditor countries and the private banks to preserve the effective functioning of the international financial system. They also recognised the determined efforts now being made by many debtor countries to adjust to a less inflationary world.

The groundwork has thus been laid for evolving a medium-term approach to resolve debt problems in a trade-expansionary way as the recovery proceeds. The aim should be to maintain the basis for a continued flow of savings through world capital markets to countries where they can be productively used. A first element in such an approach is to maintain normal disciplines between

Luxembourg (see page 3), Japan's Minister for Foreign Affairs, Shintaro Abe; United States Secretary of State, George Shultz; France's Minister Finance, Kjell-Olof Feldt.

borrowers and lenders. A second is that international lending will best serve the interests of both borrowers and lenders if external finance is used to develop efficient economies capable of, and enabled to, compete in world markets.

To this end Ministers agreed on the need for further efforts by both creditor and debtor countries to:

- sustain a supply of finance to debtor countries, in support of determined domestic adjustment policies, that is sufficient to maintain or restore adequate levels of essential imports;
- work towards mutually reinforcing action, within the framework of existing international agreements, to establish more predictable and transparent trade regimes, to reduce trade barriers and to pursue more market-conforming domestic structural policies.

Development Co-operation, Dialogue and UNCTAD VI

Ministers welcomed and shared the importance attached to world economic interdependence, dialogue and consensus in declarations by developing countries, most recently at Buenos Aires. They reaffirmed their readiness to work, in a spirit of understanding and co-operation, with the developing countries and other participants at UNCTAD VI with the aim of reaching a common understanding of current world economic problems. In particular, they looked forward to discussing the contributions which developed and developing countries can make to further constructive dialogue and co-operation to:

- ensure that all countries benefit from the economic recovery now getting under way, and that economic and social progress can gain momentum in the developing world;
- continue to work together on development co-operation policies to tackle the fundamental problems of underdevelopment and poverty.

Ministers recognised that the world recession has created acute difficulties, in particular for most of the poorer developing countries. Meeting this challenge will call for difficult and courageous policies on their part. As recovery proceeds, these countries should benefit from increased export demand and higher commodity prices. But Ministers recognised that external support remains of crucial importance to facilitate the resumption of their longer-term development. They therefore agreed to:

- maintain and, as far as possible, to increase their aid with a view to realising their commitments to the international aid objectives particularly for the poorer developing countries;
- work together with the competent international institutions to assist poorer developing countries in implementing the difficult policy reforms required for adjustment and resumed development progress;
- ensure adequate funding from all contributors of the multilateral development institutions, in particular the International Development Association.

Ministers agreed on the desirability of diversifying the developing countries' sources of external finance, and in particular fuller use of the potential for direct investment.

Ministers stressed the commitment of their governments to pursue development co-operation policies beyond the immediate requirements of economic recovery. They recognised, in particular, the importance of working with developing countries to strengthen and achieve greater stability in their export earnings. They also recognised the importance of technical co-operation, and reaffirmed their commitment to a strong centrally-funded system of United Nations technical co-operation.

East-West Economic Relations

Following a decision taken by Ministers last year, the Organisation has carried out a thorough economic analysis of the evolution of trade and financial relations with the USSR and other Eastern European countries. Ministers noted that these relations have, with some exceptions, evolved in a less dynamic way than those with more market-oriented economies and not met earlier expectations.

This purely economic analysis demonstrates that East-West trade and credit flows should be guided by the indications of the market. In the light of these indications, Governments should exercise financial prudence without granting preferential treatment. Ministers recognised, moreover, that practices connected with the state-trading system of centrally planned economies can create problems which need to be kept under close examination within the Organisation. More generally, they agreed that, in the light of changing circumstances, the Organisation should continue to review East-West economic relations.

International Energy Agency Governing Board

The Governing Board of the International Energy Agency (IEA) met at Ministerial level on 8th May 1983 in Paris, under the chairmanship of the Honourable W.F. Birch, Minister of Energy, New Zealand.

The Current Energy Situation

Ministers assessed the current energy situation and particularly world oil markets. They welcomed the relief provided to the world economy by today's conditions, characterized by price adjustments which take account of reduced economic activity world-wide. They believe that these developments also reflect growing efficiency in energy use and production from a widening range of sources. However, they recognized that conditions could change in the future, as the world economy picks up and the current stock draw-down comes to an end. They expressed concern that sharply lower oil prices and uncertainty about future oil market developments could slow down investment in energy efficiency, hydrocarbon development and alternative energy sources thus creating over the longer term the possibility of renewed instability in energy and oil markets, with adverse effects on the world economy. They agreed that the easing of the oil market was no reason to change the agreed objectives of energy policies, given remaining uncertainties about short-term developments and the underlying trends pointing towards tighter market conditions in the longer term. They therefore reaffirmed their intention to fulfil the policies of oil substitution, energy conservation, and energy research and development. They instructed the Governing Board at official level to follow developments in the world oil market closely, particularly further movement of oil inventories.

Energy Requirements and Security

Ministers assessed energy requirements and security for the next two decades, bearing in mind the importance of adequate and secure energy supplies to the prospects for sustained economic growth and considering the study Energy Requirements and Security prepared by the Secretariat. They recognised the continued likelihood of heavy reliance on imported energy, particularly oil, and for the first time addressed the question of natural gas in detail. They reached the conclusions set forth in Annex I (page 7) regarding the need for strong and cost-effective energy policies, re-confirming previous action taken within the IEA, and emphasizing the need for a balanced approach which puts each aspect of energy policy into its proper perspective, including:

- improved energy efficiency and appropriate pricing and fiscal regimes;
- further expansion of the production, use and trade of coal and other solid fuels;
- a major and increasing role for nuclear power in many countries;
- obtaining the advantages of increased use of gas on an acceptably secure basis;
- continuation of efforts to improve energy security in the case of oil, which will remain by far the most important factor in energy imports; and
- development of new and renewable sources of energy.

Coal Industry Advisory Board

Ministers considered a report from the Special Committee of the Coal Industry Advisory Board on the current status of developments in coal and its prospects for the future. They noted the Special Committee's concern that the present oil market situation could jeopardise the effectiveness of coal in meeting the objectives set forth in the IEA Principles for Action on Coal. Ministers requested the Governing Board at Official level and the CIAB to give prompt and active consideration to these matters, taking account of the conclusions reached at the meeting concerning coal.

Chairman of the IEA Ministerial Meeting, New Zealand's Minister of Energy, William F. Birch.

Ministers welcomed the publication of the report *Coal Use and the Environment* prepared by the CIAB and undertook to consider its recommendations carefully in formulating national policies.

Ministers also agreed on the desirability of promoting the development and increased use of other solid fuels, such as lignite and peat which have specific geographical importance.

International Energy Relations

Ministers emphasized that energy remains a decisive element for progress in the world economy, and is particularly important for developing countries. Ministers welcomed the contribution which the various contacts between oil producing and consuming countries are making to improved understanding by all parties of world oil and energy markets. They again stressed the importance of enhanced exchanges for greater stability in the world energy situation and an improved world economy.

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Ministers expressed their deep appreciation for the leadership and advice provided by Ambassador Hiromichi Miyazaki of Japan, Chairman of the Governing Board at Official level since October 1980.

They welcomed the willingness of the Government of Australia to make Mr. Alan J. Woods available to succeed Ambassador Miyazaki as Chairman of the Governing Board at Official level.

Conclusions on Energy Requirements and Security

Ministers assessed world energy requirements and security for the next two decades, bearing in mind the importance of adequate and secure energy supplies to the prospects for sustained economic growth. They noted with satisfaction the progress that had been made since 1973 in reducing dependence on imported oil by increasing energy efficiency and the use of alternative fuels, notably coal, gas and nuclear energy. This progress has contributed to the lowering of oil prices which is now bringing an important and welcome relief to the world economy. Ministers agreed, however, that such relief was likely to be temporary and that there is a risk of a renewed energy constraint on growth later in this decade unless the industrialised countries strengthen their policies to restructure their energy economies. Ministers noted, in this context, that dependence on imported oil, though reduced, remains high in many of their countries and that this remains the major risk to their energy security; that the contributions of coal and nuclear energy are running significantly below earlier expectations; that the prospect of growing imports of gas to help reduce dependence on imported oil could lead to heavy dependence by some countries on single sources of gas supply; and that the outlook for investment in the efficient use of energy and for the development of indigenous energy sources is less than satisfactory. They agreed that some of these problems could be accentuated by the uncertain outlook for oil prices.

Since industrialised countries as a whole will, in any event, continue to rely heavily on imported energy, smoothly functioning world energy markets over the long-term will be essential for their economic well-being. Industrialised countries must seek to reduce the risk of disruptions and be prepared to minimise the effects on their economies of any which occur. The balance between energy security and costs will have to be struck under the responsibility and in the circumstances of individual countries, having regard to their international commitments. Each country will, however, continue to develop strong and cost-effective energy policies based on that combination of market forces and government action which is best suited to its circumstances but including:

- implementing and as necessary strengthening present policies to promote the efficient use of energy and the continuing replacement of oil by other fuels;
- rapid and, where appropriate cooperative, development on an economic basis of indigenous energy resources – fossil fuels, nuclear energy, hydropower and other renewable energies – to the maximum possible extent consistent with environmental and social factors and the need to secure supplies beyond the turn of the century;
- seeking to remove impediments to its trade in energy;
- substantial programmes of research, development and demonstration;
- pricing and fiscal regimes which promote the rational use of energy and the development of indigenous energy resources;
- diversification of sources of energy imports;
- cooperation on a regional basis or as otherwise appropriate to improve the overall flexibility of energy systems and to overcome transit problems;
- effective cooperative measures for dealing with disruptions in energy supplies.

Ministers recognised that energy security and smoother functioning of world energy markets is not a matter for industrialised countries alone. More effective energy policies in the industrialised area should ease the world energy situation and thereby the energy situation of the non-oil developing countries. They emphasised the importance of mutual understanding with energy exporting and importing developing countries to the achievement of these aims. Development of the indigenous energy resources, including new and renewable energy, of the developing countries could in its turn make an important contribution to improving the world energy situation.

IEA Ministers reaffirmed the commitments of their Governments to:

- *the International Energy Programme, which remains the primary international protection of their countries against tighter oil markets in the longer term and, through the IEA oil emergency allocation system, in times of a major oil market disruption;*
- *the Principles for Energy Policy adopted by IEA Ministers in October 1977;*
- *the Principles for IEA Action on Coal agreed in May 1979, which continue to provide a valuable framework for expanding world coal production, use and trade;*
- *the Lines of Action for Energy Conservation and Fuel Switching agreed in December 1980;*
- *the Governing Board decision of December 1981 regarding minor oil supply disruptions.*

Energy Efficiency

Ministers recognised the important potential contribution of improved energy efficiency to overall energy security and agreed to give particular attention as appropriate to:

- financial or other measures to stimulate the efficient use of energy and conversion from oil including help to industry and others to overcome the high initial investment costs of certain energy-saving and fuel-switching measures;
- the development of energy conservation services capable of offering a comprehensive package which would include information on rational energy use and oil substitution, provision and installation of equipment, and financial advice tailored to the needs of customers;
- the publication of technical and financial information on the efficient use of energy and of any assessments which governments may make of long-term trends in energy demand, supply and prices;
- demonstration by governments within their own operations of the value of energy efficiency;
- inclusion of energy efficiency as an element in industrial policy;
- energy efficiency in transport and in the building sector through higher voluntary or mandatory standards;
- policies to overcome structural barriers which mute the impact of market signals. →

Pricing and Fiscal Regimes

Ministers agreed to pay particular attention to:

- removal of those price regulations which discourage the development of indigenous energy or the displacement of oil by other fuels or the efficient use of energy;
- the pricing policies and where it exists regulation of the tariffs of electricity utilities so as not to impede the provision of funds for investment in new generating capacity;
- reviewing energy pricing policy, with the aims that energy prices should be more transparent and more closely reflect market prices or the long-term costs of maintaining supplies, as appropriate;
- the structuring of fiscal regimes for oil and gas production so as to encourage timely development.

Coal and Other Solid Fuels

Ministers agreed that to promote on an economic basis further expansion of production, use and trade of coal and, where appropriate, of other solid fuels including lignite and peat:

- their countries should continue to reduce impediments to a major expansion of coal use in electrical power generation and in industry;
- their countries should take steps to provide the infrastructure needed for increased production, transport and marketing of coal;
- coal-exporting countries should facilitate reliable coal exports in times of supply difficulties;
- their countries should promote the development of a flexible and diversified coal trading system, paying particular attention to the need for long-term contracts.

Coal use must be environmentally acceptable. Ministers agreed to accelerate cooperative efforts to promote strategies for the clean use of coal, including research, development and demonstration regarding coal use technologies, and to establish effective regulatory frameworks which allow coal users to choose the most economic means to achieve environmental goals. They will assess available and new technologies and review regularly the pace and impact of their introduction.

Nuclear Power

To fulfil its important potential for contributing to overall long-term energy security which is the concern of all industrialized countries, nuclear power will have to play a major and increasing role in many countries. Ministers:

- stressed the importance of encouraging stable trade in nuclear equipment, fuel cycle services and nuclear fuel. Export and import regulations must be predictable, and based on the strict respect of current non-proliferation policies;
- agreed that Member countries would maintain reliable standards of nuclear reactor safety and continue to co-operate in various fora on these matters. Procedures for the approval of reactors and nuclear facilities should be as clear and expeditious as possible;
- stressed the importance of international co-operation on spent fuel storage and waste disposal. They appealed to the governments of those countries in a position to do so to stimulate further progress in developing and applying effective and timely methods for managing the back end of the fuel cycle in ways best suited to their national situations and compatible with international agreements. The IEA and NEA* were requested to work together on periodic consultations on the progress of Member governments in the waste disposal programme;
- requested the IEA and NEA* to identify for prompt examination new possibilities for research and development in advanced technologies that support these conclusions.

Action on these lines will provide the basis for both institutional impediments and public acceptance concerns on nuclear power to be vigorously addressed and allayed wherever possible.

IEA Ministers agreed that their countries "would seek to avoid undue dependence on any one source of gas imports". In the course of the meeting, the Spanish Energy Minister, Carlos Solchaga, proposed a pipeline to transport African gas to Europe. Above: Arzew in Algeria, port of departure for tankers carrying liquified natural gas.

Gas

Ministers agreed that gas has an important role to play in reducing dependence on imported oil. They also agreed, however, on the importance of avoiding the development of situations in which imports of gas could weaken rather than strengthen the energy supply security and thus the overall economic stability of Member countries. They noted the potential risks associated with high levels of dependence on single supplier countries. Ministers stressed the importance of expeditious development of indigenous OECD energy resources. They noted that existing contracts are currently insufficient to cover expected gas demand by the mid-1990s, and agreed that in filling this gap steps should be taken to ensure that no one producer is in a position to exercise monopoly power over OECD *and IEA* countries. To obtain the advantages of increased use of gas on an acceptably secure basis, they agreed that:

- their countries would seek to avoid undue dependence on any one source of gas imports and to obtain future gas supplies from secure sources, with

* *In the OECD Ministerial conclusions the phrase "the IEA and NEA" is changed to read "the competent bodies of OECD".*

emphasis on indigenous OECD sources. Additional supplies from other sources would be obtained from as diverse sources as possible, taking into account supply structures, the share of gas in energy balances, and the geographical situation of individual countries. In assessing the full costs of gas supply sources, gas companies and, as appropriate, governments will consider security factors;

- their Governments would either encourage gas companies and other undertakings concerned to take or take themselves the necessary and appropriate cost-effective measures suited to each country's situation to strengthen their ability to deal with supply disruptions; these measures could include increased gas storage facilities, contingency demand restraint programmes, improved fuel-switching capabilities accompanied by adequate stocks of oil or other alternative fuels, a more flexible grid structure, greater flexibility of contracts, more surge capacity, measures to accelerate intra-OECD trade on short notice through standby contracts for supplies in a disruption, and interruptible contracts with consumers;
- action should be taken to develop at economic cost indigenous gas resources, particularly in North America and the North Sea, which show promise of alleviating overall or particular pressures on energy imports;
- concerned Member governments noting the potential for further development of North American gas resources and noting that part of the Norwegian Troll field may be declared commercial by 1984, would encourage their companies to begin negotiations on deliveries from these sources as soon as possible, with a view to making supplies available at prices competitive with other fuels in the mid-1990s;
- trade barriers and other barriers which could delay development of indigenous gas resources should be avoided or reduced;
- their governments would encourage the companies concerned to undertake feasibility studies, if appropriate in cooperation with Member governments, to determine the economic, engineering, technical and financial factors, relevant to possible imports from a variety of non-OECD sources;
- governments within one region where there is scope for effective cooperation should invite gas companies operating in their jurisdictions to address and negotiate on a commercial basis cooperative arrangements to meet a disruption of supplies to any one country or to the region as a whole.
- Special attention should be given in the annual country review process in various international organisations to the future pattern of gas supplies, to the progress on the development and implementation of security measures, and to whether gas imports into the OECD from any single source constitute such a proportion of total supplies as to give rise to concern about the timely development of indigenous resources and the vulnerability of supplies, either for an individual Member country or collectively.
- In considering the degree of vulnerability, relevant factors include the share of imports in total gas consumption and in total primary energy requirements, the reliability of particular sources, the flexibility of other supplies, sectoral distribution, stocks and fuel-switching possibilities.
- An in-depth exchange of views about this question would take place within the normal review process whenever considered necessary. To allow a full assessment of its energy situation, the country concerned shall inform the other Member states if it plans major changes in its energy policy or gas supply pattern which are significant in the context of development of indigenous OECD resources and vulnerability of gas supplies.

Ministers expressed the view that special attention should be given in relevant international organisations to the gas import situation of individual countries and regions. *IEA Ministers instructed the Governing Board to keep this issue under continuing review.*

Since oil will still comprise more than 75 per cent of OECD energy imports in the year 2000, the progress already made in improving energy security must continue. Below: Norwegian North Sea oil rig.

Oil

Ministers noted that since 1974, considerable progress has been made in improving energy security as far as oil is concerned. A continuation of these efforts will be necessary, however, as oil will remain by far the most important factor in OECD energy imports. Thus, in the year 2000 oil will still constitute more than 75% of all OECD energy imports. Ministers therefore agreed on the importance of strong cooperative arrangements for handling a major oil supply disruption and, in the case of IEA Ministers, on the need for continued improvement of the existing emergency allocation system, and the need to continue to encourage oil companies to support the improvement and, if necessary, the operation of the system. To strengthen their overall emergency preparedness, Ministers also agreed to continue to pay particular attention to the continued adequacy of their countries' oil stocks in terms of amount, structure and flexibility.

Other Energy Resources

Ministers reaffirmed their readiness to pursue policies both at the national and international level, aiming at exploitation of other indigenous energy resources such as hitherto unharnessed hydropower.

Economic Recovery: The North/South Trade and Debt Nexus

The recent cooperative effort between the IMF, the BIS, debtor countries and the private banks prevented the international debt problem from jeopardising the international financial system. It is now possible to think in terms of a medium-term approach to the problem – one that will resolve it in a way that expands trade rather than contracting it. In the year or so immediately ahead, the most important need may be to ensure that debtor countries undertaking firm domestic adjustment policies have enough finance to maintain their imports or restore them to more appropriate levels. But if lending to developing countries is to serve the economic interests of both parties over the longer run, the major imperative is to ensure that debtors use external finance effectively so as to build up market-oriented economies capable of competing in developed country markets – and to ensure that they are allowed *to compete in them. If viable mutual benefits are to be obtained, finance has to support trade in the period immediately ahead, but there is also need for more trade to support continued financing.*

The external debt, medium and long term, of all developing countries quintupled in 9 years, rising from $125 billion in 1973 to $600 billion in 1982. Several OECD committees and the OECD Secretariat have made an analysis of what caused this situation and how advantage can be taken of the economic recovery now underway to remedy it[1].

1973-1982: A Retrospective

The first oil crisis

In 1974, the cost of the net oil imports of the non-OPEC developing countries increased by $11 billion at 1982 prices[2]. In 1975 their exports other than oil fell by 14 per cent, or some $14 billion. However, as a result of the large OPEC surpluses which found their way into the international financial markets, the non-OPEC developing countries were able to ease the pressures on them by sharply increasing their borrowing. The net inflow of financial resources rose from about $8 billion in 1972-3 to an average of $36 billion in the following two years. Nevertheless, these countries had to cut back their non-oil imports by 3½ per cent in 1975, and their growth slowed temporarily to 4 per cent.

The inter-crisis years

What followed was one of the few success stories of the 1970s, despite the remaining problems. Thanks to the resumption of growth in the OECD area and the recovery of commodity prices, the purchasing power of the non-OPEC developing countries rose by 20 per cent a year between 1975 and 1977. Equally important was the strong competitive performance of the more advanced countries in this group in both OPEC and OECD markets.

As a result, in 1977 the non-OPEC developing countries were able to reduce the net inflow of resources to $10 billion. The strength of their export earnings was such that they were able to finance a 7 per cent annual growth in imports and provide a basis for a new increase in borrowing.

In the entire period from 1974-1980 the net inflow of resources amounted to about $190 billion adding, on average, the equivalent of 2½ per cent of GNP to the resources available to the non-OPEC developing countries and financing about a third of the increase in their imports.

The macro-economic evidence suggests that, on the whole, these resources were well used despite the enormous differences between developing countries. They were used not to finance consumption, but rather to supplement a rise in domestic savings (2 per cent of GNP) during the 1970s. Thus, foreign and domestic savings together enabled the investment ratio to rise from 20 to over 24 per cent of GNP, more than the OECD level for the first time. This strong investment performance supported an average growth rate of 5 per cent from 1975 to 1980, two percentage points higher than in the OECD area (as against one percentage point prior to 1973).

Towards the end of this period, things began to go wrong. With continuing high inflation in the OECD area, accommodating monetary policies, and a weak dollar, conditions were created in which it seemed to both borrowers and lenders to be profitable and safe for banks to increase their lending to the non-OPEC developing countries very rapidly.

From 1978 onwards, there were signs that this rise was in fact too rapid. Substantial resources were being directed to non-productive uses (including arms purchases) or to projects which were only likely to be profitable under conditions of world excess demand and inflation. Capital-output ratios rose unduly fast, possibly

1. World Economic Interdependence and the Evolving North-South Relationship, *1983 and* External Debt of Developing Countries, *1982.*

2. *All figures in this article are expressed in terms of the developing countries' purchasing power over non-oil imports at 1982 prices. They are therefore deflated, as a proxy, by the unit value of OECD exports.*

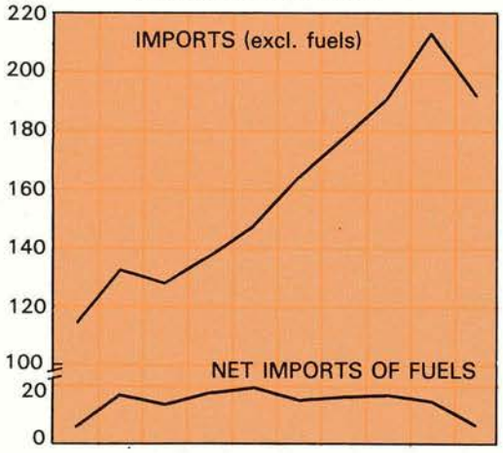
indicating a less efficient use of capital. Inflationary pressures within the debtor countries began to increase again.

Second oil crisis and disinflation

In this already deteriorating situation, the non-OECD developing countries were hit by the second oil crisis, the OECD recession and rising real interest rates.

The second rise in oil prices had a much smaller impact for this group as a whole because by this time quite a number of them were producing significant quantities of oil and a few, notably Mexico, had become sizeable oil exporters. Those who were still large net importers of oil (e.g. Brazil, Chile and South Korea) were, however, severely hit.

IMPORTS OF DEVELOPING COUNTRIES THAT ARE NOT MEMBERS OF OPEC
$ Billion at 1982 Prices



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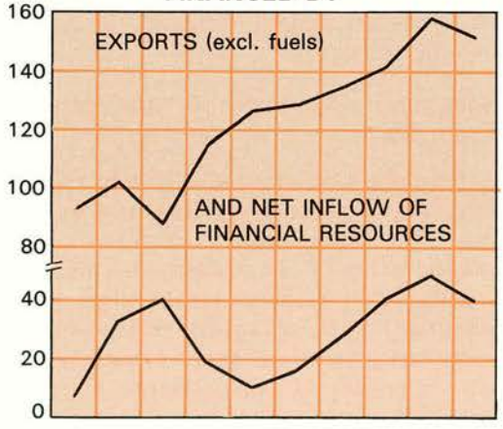
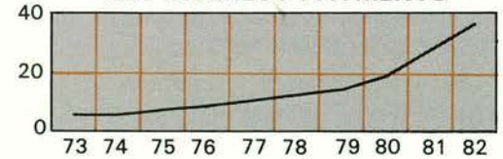


NET INTEREST PAYMENTS



Technical notes:

● The figures for imports and exports *exclude* trade *between* non-OPEC developing countries and trade in fuels, shown separately on a *net* basis.

● The "net inflow of financial resources" corresponds to the balance on merchandise trade and non-factor services. This item *plus* net interest payments equal the balance on current account, excluding official transfers.

SENSITIVITY ANALYSIS

Estimated impact of changes in "baseline" assumptions on **total exports** or **available resources** *of the debtor countries taking each of the relevant factors (measured at 1982 levels and prices) into account* separately:

- *If the OECD growth rate were 1 per cent higher or lower over the next five years, the* **increase** *in total exports of the debtor countries would be some $5 billion higher or lower in each successive year.*
- *The debtors would experience a gain in the* ***level*** *of total exports or available resources each year of:*
  - *$2½ billion for each 1 per cent drop in OECD interest rates,*
  - *$1-2 billion for each rise of 3 per cent in non-oil commodity prices,*
  - *$2 billion for a $1 a barrel rise in the price of oil,*
  - *$1 billion for a 5 per cent depreciation in the effective exchange rate of the dollar (due to the reduced cost of servicing the dollar-denominated debt).*

Until early 1981 real export earnings of the non-OPEC developing countries continued to rise. However, in common with many others, these countries were slow to appreciate how long the period of slow growth and high interest rates on international markets would last. Thus they responded initially by increasing their borrowing, boosting the inflow of net financial resources to $40 billion in 1980 and nearly $50 billion in 1981. Perhaps understandably, it was the oil producing and exporting countries which pushed ambitious development plans most, in anticipation of a continued rise in oil prices.

In 1982, the aggravation of the recession coincided with a weakening of the oil market while interest rates continued high. Interest payments had risen by $25 billion since 1979, and the banks showed less willingness to lend. As a result, provisional figures suggest a fall in the net inflow of resources to $40 billion, accompanied by a volume drop of non-oil imports of 9 per cent from their 1981 peak.

The sequence of events was particularly dramatic for those developing countries which had borrowed heavily in dollars at floating rates. Some of the most heavily indebted countries (e.g. Mexico, Argentina and Chile) had to cut back their imports by 30-45 per cent.

By the end of 1982, the net debt of non-OPEC developing countries totalled $386 billion (of which $80 billion for Mexico). The fall in oil prices has injected a new element into the situation, creating major debt-service and adjustment difficulties for a number of OPEC countries: Venezuela, Indonesia, Algeria, Nigeria, Gabon and Ecuador. These six OPEC countries added $84 billion to the total debt; their share in bank debt at floating interest rates was much smaller, $43 billion against $251 billion for non-OPEC developing countries, but was rising very quickly. For this reason, these six OPEC countries are included in the figures which follow.

Inevitably, the overall structure of developing country debt became increasingly precarious as the expected recovery in the OECD area was pushed back from 1981 to 1982 and then to 1983. By the end of 1982, more than twenty developing countries, including most of the largest debtors, were unable to fully meet their current debt obligations and had entered into negotiations to restructure their debt; since last autumn, the IMF has participated more and more.

The Recovery: Macro-Economic Interdependence

Many developing countries have good growth prospects and as present difficulties are overcome, there is no reason why they should not have a continuing net inflow of financial resources. But the inflow will have to be reduced to a lower level so as to bring their debt servicing obligations down to a realistic and sustainable level. Whether or not this will involve problems for debtors or creditors depends on three key factors: the macro-economic performance of OECD economies, the financial resources made available to debtor countries and the success of the adjustment efforts of these countries.

OECD performance

One can examine the outlook for the export earnings of the debtor countries over the next five years on various different assumptions about the strength and nature of the recovery in the OECD area: assuming that OECD gets onto a 3 per cent growth path by the end of this year, that there is a moderate decline in real interest rates, a moderate recovery in non-oil commodity prices, and some recovery in oil prices later on, it can be estimated that the purchasing power of the debtor countries' exports should rise by 5-6 per cent a year. This would be about half the growth rate they experienced in the five years following the first oil crisis. At 1982 trade levels and

The debtor countries must export to solve their finance problems... conversely finance is needed to support trade. Above, the port at Rio.

prices, it would be equivalent to an increase of $11-14 billion each year. A "sensitivity analysis" of this "baseline" scenario is described in the inset.

Between 1975 and 1980 the developing countries benefited from unusually favourable – and in certain respects unsustainable – circumstances. This is confirmed by the sensitivity analysis which suggests that it would take an unrealistically favourable set of assumptions to generate a growth rate in the purchasing power of their export earnings over the next five years similar to the one achieved in the five years after the first oil shock, that is to say 10 per cent. It can also be shown that, if real interest rates were to remain high in the OECD area, then with slower growth and depressed oil and non-oil commodity prices, the growth rate of the debtors' export earnings could be 3 per cent or even less.

This sensitivity to interest rates underlines the importance that OECD countries avoid structural budget deficits which, with non-accommodating monetary policy, would be of such a size as to create sustained pressures on credit markets when private activity strengthens. Budgets with "crowding out effects" would jeopardise both the continuity of OECD recovery *and* a durable resolution of international debt problems.

The interdependence between the economies of the OECD and the developing countries can also be illustrated in more macro-economic terms. If, as OECD Ministers envisage in their recent Communiqué (see page 3), Member countries take advantage of the room for growth now emerging without rekindling inflation, this will clearly help the debtors. But it will also limit the negative effects on OECD recovery coming from the depressed level of imports by the developing world. OECD exports to those countries amounted to $240 billion last year. Each $10 billion that these exports fell would, over time, reduce OECD's GNP by about one third of a percentage point.

Financial flows

The second factor that will determine the level of the developing countries' imports during the recovery phase is the size of the net financial flows to them. Somewhat less than half consists of non-bank capital which, in terms of its purchasing power over imports, has been rising fairly steadily at 2 to 3 per cent a year. This seems likely to continue. Exceptionally, in the period immediately ahead, debtor countries will be receiving more than the usual amount of financial assistance from the IMF and other official institutions, and this part of non-bank capital might reach 15 per cent of total financing this year.

The other half of the inflow, bank lending, has been far more volatile. The growth of bank claims on developing countries rose at an average rate of 24 per cent from 1975 to 1981, nearly doubling those countries' share in total bank claims (foreign and domestic) from 2½ to 4½ per cent. But in 1982 this growth slowed to 13 per cent and is expected to fall further this year.

It is clear that, for at least some time to come, the banks are going to be much more cautious. Even though they have a collective interest in continued lending, each individually may perceive a strong interest in reducing its own exposure. Indeed, in this sense, it seems that a not unimportant part of the increased exposure they will be incurring this year will be "unspontaneous". Looking further ahead, it seems likely that with a heightened perception of risk in relation to return, there will be fewer new entrants – and quite a few departures – on the international banking scene, and, with a recovery in the OECD area, a shift in operations to domestic lending.

Experience has shown that it is very difficult to predict how banks will behave. It has been suggested, however, that it would be prudent to assume that for quite some time they are unlikely to increase their exposure to developing countries any faster than the growth of their total portfolio.

If so, this might set an upper limit of around 8 per cent on the increase of bank lending to the developing countries for some years to come. Together with the assumptions in the baseline scenario about OECD interest rates, this would mean on balance that the net inflow of financial resources would drop further in 1983 and then flatten out.

Scope for adjustment by the debtor countries

The debtor countries will have to adjust to a lower level of foreign resource transfers. Their future growth prospects will depend on how much of the burden falls on productive investment rather than consumption. Their prospects for resuming sustained growth will depend crucially on the success of adjustment policies designed to replace foreign with national savings, make more efficient use of domestic resources, and re-allocate them to productive investment.

Such adjustments will, however, take several years to carry through. In the meantime, in addition to reduced use of foreign resources, there is likely to be a significant loss of real domestic resources because of the depressive impact on domestic output of stabilisation programmes needed to bring domestic inflation under control and because of weak foreign demand. Thus, the benefits of rapid external adjustment in terms of restoring creditworthiness have to be weighed against the economic and social costs of overly rapid domestic adjustment.

Strengthening the Export Capacity of Low-Income Countries: Commodities

While some developing countries – particularly the newly industrialising countries and those of the "second tier"[1] – achieved rapid export growth in the 1970s, the majority of low-income countries,[2] especially in Africa, have not shared in this growth. Their situation grew worse in the aftermath of the first oil shock. Real growth of exports slowed down and terms of trade worsened, resulting in a significant decline in their capacity to import. After 1980 and the second oil shock, the fall in commodity prices compounded this loss of purchasing power.

It is true that certain low-income countries have successfully diversified and increased their exports, especially of manufactured products (Egypt, Salvador, Haiti, Indonesia and Sri Lanka, for example[3]). But the more usual experience is that low-income countries have been unable to take off, and they share a common characteristic: their economies are highly dependent on a few commodities or, in the most extreme case, a single product. Nor can they increase the value added to these commodities through processing since they lack the facilities to do so.

OECD's Directorate for Development Co-operation, in its work on strengthening the export capacity of the low-income countries, has made a special analysis of the problems of those low-income countries which depend on commodities.

There are two main approaches to strengthening the export capacity of the commodity-based low-income countries: enlarging their capacity for processing raw materials (vertical integration or downstream linkage) and diversification of export products within the primary sector. While export potential can rarely be exploited without private-sector investment, there is clearly a role for bilateral and multilateral aid as well, since an expansion of trade works to the benefit of all trading partners.

Processing of Raw Materials

The trend towards processing is already underway in developing countries: capacity has expanded greatly during the past two decades, and commodities have constituted a springboard for some newly industrialising countries. Examples of the expansion of processing include the following: roughly a third of cocoa beans are now ground in supplying countries compared with 15 per cent some 20 years ago; developing countries' share of developed-country imports of cotton clothing has risen to 40 per cent from 28 per cent since the early Seventies and there has been a steady increase in minerals processed as a percentage of minerals mined in developing countries. At the same time, and despite the fact that many low-income countries are still dependent on raw materials, exports of primary commodities (excluding fuels and minerals) have fallen over the last two decades from 70 to 40 per cent of total exports of low-income countries.

The case of Malawi shows how exports based on processing can be increased: despite the extreme poverty of this country and the fact that it is land-locked and without significant mineral resources, real industrial value added grew at an annual average of 6.5 per cent between 1968 and 1977, generating a large amount of employment. This growth – based to a considerable extent on the processing of sugar, tea and tobacco for export – was greatly helped by a government strategy linking expansion of the manufacturing sector to agricultural growth: the production of commodities to be processed was encouraged and the availability of agricultural inputs increased. Sound domestic policies also helped: the protective tariff was kept low, there were no quantitative restrictions on imports, the exchange rate encouraged export growth, and an incomes policy restrained urban wages. The International Development Association (IDA), which provided some 50 per cent of Malawi's external aid, played an important role. According to a recent study, Malawi has excellent additional potential for developing exports of processed commodities – extracting oil from seeds, making fuel alcohol from molasses, and processing timber, coffee, rubber, flour and maize meal.

Many other low-income countries have export potential based on processing. Their comparative advantage may come from any one of several factors:

- Processing of raw materials results in loss of weight and therefore in potential savings on transport.
- Manpower may be relatively inexpensive.
- The low-cost energy which is to be found in a few countries means that the costs of mining mineral commodities are low.
- The producing country may be able to make several products out of the same raw material or make use of by-products of the processing operation.
- Environmental standards may be less severe and hence pollution-control costs may be lower. (The effect on general well-being is another matter).

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1. *See* OECD Observer *No.119, November 1982.*

2. *The 36 least developed countries (defined not only by income but by other factors such as literacy and infant mortality as well) plus 35 other countries with per-capita incomes of less than $600 a year in 1980. China is excluded.*

3. *The latter three low-income countries have increased their exports of manufactured products so much that they now belong to the "second tier".*

Constraints...

If this potential is to be realised, however, some major constraints at home and abroad must be overcome.

... at home

In many low-income countries with export potential for processed raw materials, major internal constraints persist:

- Physical infrastructure – especially internal transport and product handling and shipping facilities – is a widespread problem in many low-income countries. It constitutes a major constraint, for example, on the processing of jute in Bangladesh, on the manufacture of plywood in Indonesia and fertilizers and cottonseed oil in Malawi.
- Processing techniques, management skills, and dissemination of information are often inadequate.

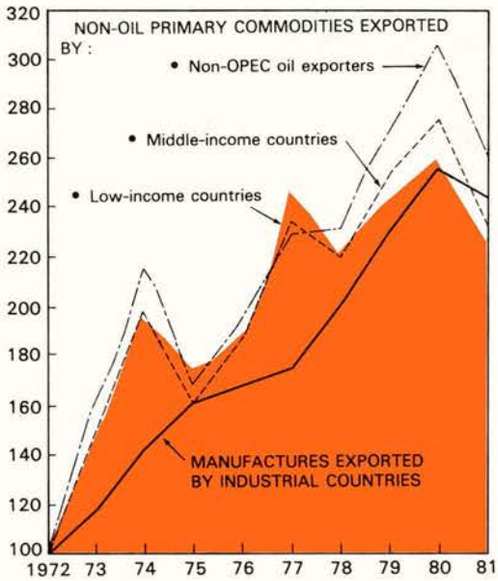
... and abroad

In many low-income countries, the ability to increase exports of processed raw materials is also held back by the international market situation.

- Countries with a limited home market may be vulnerable to the import tariffs of developed countries (and some newly industrialising ones) which increase progressively with the degree of processing. For some commodities, therefore, already established processing firms in the consumer countries may enjoy a high level of protection.
- In the present economic situation, there is stiffer competition for exports of processed products than for raw materials, and this creates difficulties for a number of countries. There is a risk that unwarranted processing may depress international prices, so that the balance-of-payments benefits go to consumer countries rather than to the producers.
- Finally, given the tendency towards oligopoly in a number of commodity markets, a raw material processor has no guarantee concerning its share of the value added by processing. How much it can keep depends in large measure on its bargaining power, its role in marketing and distribution and the stage of processing involved.

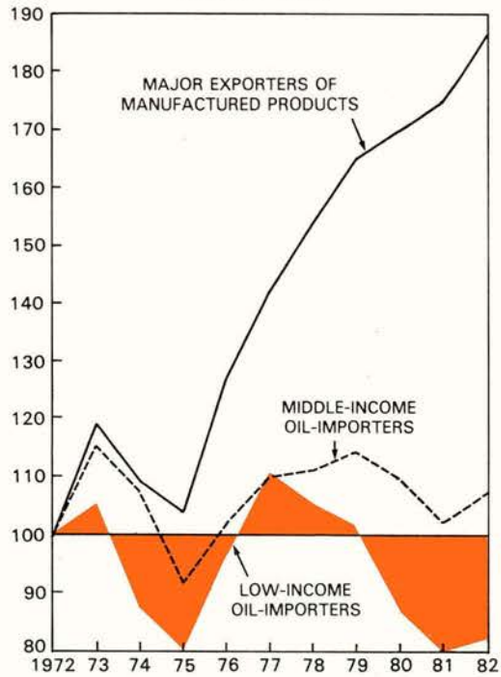
Thus while processing offers scope for export growth, it cannot form the basis of an overall export strategy for low-income countries or be considered as an objective at any price because of the internal and external constraints and the fact that vertical integration does not in itself necessarily decrease dependence on any commodity. Rather the desirability of processing – and any associated financial assistance – must be examined case by case and be accompanied by other measures aimed at export expansion.

A. MARKET PRICES OF PRIMARY COMMODITIES (other than oil) EXPORTED BY DEVELOPING COUNTRIES, 1972-1981
(1972 = 100)



Source : IMF.

B. PURCHASING POWER[1] OF EXPORTS, 1972-81
(1970 = 100)



1. Purchasing power defined as the value of total exports deflated by import prices. Data from IMF, World Economic Outlook, 1982 and OECD.

Diversification of the Primary Sector

In most low-income countries, a viable manufacturing sector requires prior exploitation of the comparative advantage enjoyed by these countries in primary production. However, low-income countries are generally dependent on one product, in some cases to an extreme degree: Botswana (beef, 77 per cent of exports in 1977-79), Burundi (coffee, 89 per cent), Chad (cotton, 78 per cent). Ethiopia (coffee, 72 per cent), Lesotho (wool, 96 per cent), Mauritania (iron ore, 82 per cent), Rwanda (coffee, 78 per cent), Uganda (coffee, 93 per cent) and Zambia (copper, 89 per cent). The need for diversification of the primary sector in such cases is evident.

World Bank studies suggest that the predominantly agricultural countries which have already experienced rapid growth are those which have deliberately tried to diversify their agriculture – particularly *Malaysia* (into oil palm and timber) and the *Ivory Coast* (timber, oil palm, rubber, coconut, pineapple and bananas). The key to success in both countries was massive public investment in irrigation and development of new cultivable land, remunerative producer prices, and well staffed, dynamic institutions for agricultural research, credit and distribution of farm inputs.

Another important argument in favour of diversification of agriculture for export: it need not entail producing less food for local consumption. On the contrary, countries which have been successful at producing cash crops are also those which have done best in expanding food production. This is because export crops become a nucleus for advisory services and the supply of inputs, marketing information and productivity-raising equipment. These benefits also help food producers.

The complementarity is well illustrated by two cotton-producing projects in *Mali* and neighbouring *Upper Volta*, which made it possible to increase production not only of cotton (by 22 and 40 per cent respectively over three years) but also of millet and sorghum. The projects are assisted by IDA credits ($15.5 million for Mali and $20.2 million for Upper Volta) and by the establishment of joint public-private companies in which the French fibre-development company (CFDT) holds a minority interest. Four factors contributed to the success of these projects: the agricultural potential of the area is relatively high; the local community is known to be industrious; farmers are assured of an outlet and prompt cash payments at fixed dates. Finally, the CFDT provided important technical help and managerial and marketing expertise. Apart from this specific example, it is noteworthy that the majority of African countries enjoy a distinct comparative advantage in export-crop production.

Constraints

However, in many countries the potential for increasing exports through diversification has not been exploited. The major constraint seems to be the rigidity of

A strategy linking manufacturing to the growth of agriculture helped increase Malawi's exports. Tobacco (above)*, one of the commodities processed.*

low-income countries' economies which, in a vicious circle, is due in turn to their dependence on basic commodities (often only one) and their inability to vary the supply of their products in accordance with shifts in global demand. It is this lack of flexibility which in part explains why prices for their commodity exports tend to decline more than those of exports from industrialised countries during downswings in global economic activity.

Three Priorities for Effective External Assistance

External assistance can help develop the export capacity of low-income countries in three specific areas.

Identifying the potential

To avoid global excess supply, it is necessary not only to determine the comparative advantage of particular countries but also to estimate the aggregate effects of expansion of production of a given commodity in several countries at once. The fact that one country's gain may be another's loss should be taken into account. Co-operative efforts could provide developing countries with improved information on the operation of commodity markets and on expected trends.

Operational support

Financial. Various proposals have been made for increasing financial support for low-income countries' export development, bearing in mind the limited access of these countries to private capital. While the objective underlying these proposals warrants serious examination and support, the right balance needs to be struck between better co-ordination and the introduction of new facilities. Priorities need to be set for the use of scarce resources in line with broader development needs. Could the greater stability of export earnings help reduce the rigidity of low-income countries' economies? Could stability of earnings help those with limited borrowing capacity maintain priority investment programmes (including those designed for export diversification) despite fluctuations in foreign exchange receipts?

Technical assistance. The scale of the assistance required to modernise processing techniques, set up transport and handling facilities and improve managerial skills clearly depends on the circumstances in each country and the commodity in question. It has been suggested, for example, that technical constraints are not a significant barrier in manganese processing (the technology is well known and relatively cheap) but that in the production of cocoa, scope exists for increased technical assistance. The same may be true for copper (advice on the purchase of inputs for mining and processing) and sugar (research into new markets and uses).

Encouragement of domestic measures

In all low-income countries which have succeeded in developing their exports, economic policy has played a major role. Conversely, inappropriate trade and exchange-rate policies explain the poor performance of agricultural production and exports in much of Africa. In seven African countries examined by the World Bank[4] (Ghana, Kenya, Nigeria, Senegal, Sudan, Tanzania and Zambia), agricultural producers have received less than half the real value of their crops, and in many other countries production destined for export has been curbed because of the high cost of local inputs protected by import restrictions, high export taxes and overvalued exchange rates.

As a result, there is a growing appreciation among donor countries that a discerning attitude towards the economic policy of the receiving country is an essential complement to external aid for development of exports.

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With these orientations, external assistance can play an effective role in strengthening the capacity of low-income countries to export commodities. However, their full potential can only be realised if market access, the operation of international markets and international trade prospects improve and if world economic activity recovers.

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4. Accelerated Development in Sub-Saharan Africa, 1981.

The Other Aid Donors

In addition to aid provided by the countries belonging to OECD's Development Assistance Committee (DAC), important aid contributions to the developing world are being made by OPEC countries. Although DAC countries provide by far the largest absolute volume of aid (see table 1), OPEC aid is higher in relation to GNP, though less widely distributed geographically. To a lesser extent contributions are being made by the CMEA countries[1].

OPEC countries do not themselves collect information on their aid programmes in any centralised fashion. Data are available from the annual (and other) reports of the OPEC aid institutions. Major OPEC donors have provided additional information directly to the OECD Secretariat which attempts insofar as possible to compile figures which are in accordance with DAC definitions: official development assistance (ODA) is distinguished from other official flows, and military assistance is excluded as are certain other transactions.

CMEA aid, concentrated on a few recipients, is estimated by the OECD Secretariat.

1. AID DONORS – OPEC, CMEA AND DAC

COMPARATIVE VOLUME PERFORMANCE (Net ODA disbursements)

		OPEC	*CMEA*	*DAC*	*Total*
$ billion	1970	0.4	1.0	6.9	8.3
	1975	6.2	1.2	13.8	21.2
	1980	9.1	2.2	27.3	38.6
	1981	7.7	2.1	25.6	35.4
% of GNP	1970	1.18	0.14	0.34	–
	1975	2.92	0.07	0.36	–
	1980	1.70	0.14	0.38	–
	1981	1.40	0.13	0.35	–
% of total ODA	1970	5	12	83	100
	1975	30	3	67	100
	1980	23	6	71	100
	1981	22	6	72	100

COMPARATIVE TERMS PERFORMANCE

	Share of grants			*Grant element of loans*			*Overall grant element*		
	1975	*1980*	*1981*	*1975*	*1980*	*1981*	*1975*	*1980*	*1981*
OPEC	48	60	58	47	49	52	72	80	80
CMEA	20	28	31	50	52	57	52	65	70
DAC	69	76	75	63	59	58	89	90	89

OPEC

Ten of the thirteen OPEC Members started to provide substantial amounts of financial resources to other developing countries soon after the major increase in oil prices in 1973/74. As early as 1973, OPEC countries had replaced the CMEA donors as the second largest donor group, with a share of 16 per cent of world ODA. Some OPEC donors had provided financial assistance to a few developing countries well before that year, but the absolute amounts were modest compared to present aid levels. The share of OPEC donors in total aid disbursed by the three main groups of donors increased continuously from 5 per cent in 1970 to 30 per cent in 1975 (table 1) but fell in the following years to 22 per cent in 1981. Likewise, as a share of their GNP, OPEC aid rose from 1.18 per cent in 1970 to almost 3 per cent in 1975 but declined afterwards to 1.4 per cent in 1981. The aid/GNP share of the Arab Gulf countries however, was substantially higher (3.85 per cent in 1981).

The reasons for the declining trend are fairly clear: the Iranian aid programme collapsed as a result of the revolution in Iran (aid fell sharply as early as 1977), and the war between Iran and Iraq; Iraq's aid fell sharply in 1981. With the stagnation or decline in oil revenues, several other OPEC countries have reviewed their programmes and reduced their aid (table 2).

As aid programmes have been curtailed, *the four Arab Gulf states* – Kuwait, Qatar, Saudi Arabia and the United Arab Emirates (UAE) – have become more dominant in OPEC aid. Saudi Arabia alone accounts for three quarters of OPEC aid, while Kuwait[2] and the United Arab Emirates have alternated in the role of second and third largest donors.

Aid from the *other Arab donors* (Algeria, Iraq and Libya) has fluctuated sharply from year to year, both in relation to GNP and, even more, in absolute terms. Even in peak years, the aid ratios of these three coun-

1. The Council for Mutual Economic Assistance (CMEA) includes as donor countries Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania and the USSR.

2. Kuwaiti aid figures for 1979, 1980 and 1981 exclude general support assistance of $487 million a year to Confrontation States. Recently, however, Kuwait has decided to include this assistance in its aid figures once again. If they are included, the figures for concessional aid from Kuwait would increase to $964 million (3.62 per cent of GNP) in 1979, $1,132 million (3.58 per cent of GNP) in 1980 and $1,172 million (3.39 per cent of GNP) in 1981. Total OPEC aid consequently increases to $8,183 million in 1981 or 1.49 per cent of GNP.

2. OPEC CONCESSIONAL ASSISTANCE, 1970-1981

Bilateral and multilateral; net disbursements – A : $ million B : % of GNP

	1970		1973		1975		1979		1980		1981	
	A	B	A	B	A	B	A	B	A	B	A	B
Gulf States												
Kuwait	148	6.21	356	8.62	946	7.40	477	1.79	645	2.04	685	1.98
Qatar	–	–	94	15.62	338	15.59	280	6.03	284	4.25	175	2.64
Saudi Arabia	173	5.60	1,118	14.80	2,756	7.76	4,238	5.55	5,942	5.09	5,658	4.66
UAE*	–	–	289	12.67	1,046	11.69	967	5.09	906	3.38	799	2.88
Total	321	5.86	1,857	12.76	5,086	8.56	5,962	4.71	7,777	4.27	7,317	3.85
Other Arab Donors												
Algeria	–	–	25	0.28	41	0.27	270	0.89	65	0.17	65	0.16
Iraq	4	0.13	11	0.21	215	1.63	847	2.53	829	2.13	143	(0.37)
Libya	68	2.01	215	3.33	259	2.29	105	0.45	282	0.92	105	0.37
Total	72	1.10	251	1.21	515	1.31	1,222	1.40	1,176	1.08	313	0.29
Non-Arab Donors												
Iran	4	0.03	2	0.01	593	1.13	21	(0.02)	7	(0.01)	–150	–
Nigeria	–	–	5	0.03	14	0.04	29	0.04	42	0.05	149	0.17
Venezuela	1	0.01	18	0.11	31	0.11	107	0.22	125	0.21	67	0.10
Total	5	0.02	25	0.04	638	0.55	157	0.07	174	0.07	66	0.03
OVERALL TOTAL	**398**	**1.18**	**2,133**	**2.25**	**6,239**	**2.92**	**7,341**	**1.73**	**9,127**	**(1.70)**	**7,696**	**(1.40)**

Note : *GNP figures were supplied by the World Bank and refer to current market prices at single year exchange rate conversion.*
( ) OECD estimates.
** United Arab Emirates.*

tries have been well below that of the Arab Gulf countries, and in absolute terms only Iraq has provided more aid than the smallest Gulf donor, Qatar, since 1974.

Non-Arab donors have accounted for less than 10 per cent of OPEC aid, except from 1974 to 1976 when Iran had an ambitious aid policy. Venezuela's programme has always been fairly modest as has that of Nigeria.

What Form of Aid?

With the exception of Algeria, Nigeria and Venezuela, OPEC countries from the very beginning have extended the major part of their aid *bilaterally* – from 80 to 90 per cent since 1973 (except for one year). In all but two years, grants have been larger than loans but have been heavily concentrated on only two or three recipient countries (Jordan, Syria and, until 1978, Egypt).

The bulk of the grants from Arab OPEC donors has been general support assistance, largely for the "Confrontation States"[3] under resolutions adopted at successive Arab Summit Meetings. The largest amount of general support assistance, in principle $3.5 billion annually, was pledged at the meeting in Baghdad in 1978 "to enhance the steadfastness" of Jordan, Syria, the PLO and the Palestinians in Gaza and the West Bank. Of the total aid package, only the relatively small amount of $100 million for the Palestinians in Gaza and the West Bank seems to be ODA. Since the $300 million sum for the PLO is not likely to be used primarily for development, it was excluded from the figures. More important, it is impossible to determine how much of the large amounts pledged for Jordan ($1.3 billion) and Syria ($1.8 billion) qualifies as ODA.

Grants have also been extended to a number of countries for purposes such as the financing of imports, including oil, relief assistance for refugees and victims of natural calamities, road construction, hospitals, education and other project assistance. In most cases, loans have been extended for project assistance, but several loans including some large ones have been either for general balance-of-payments support or specifically to finance oil imports.

Financial Terms

The terms of those OPEC aid commitments for which information is available have been on average harder than those of DAC aid, sometimes by a considerable margin, except in the years prior to 1973 when the volume of commitments was still relatively small. Most of OPEC aid is provided untied, and the recipient and other developing countries sometimes benefit from a margin of preference in bidding for contracts under OPEC aid agencies' rules of procurement.

Geographic Distribution

Roughly a third of OPEC bilateral aid is not allocated geographically (chart page 18), primarily because no such information is available for about half of the aid of the leading donor, Saudi Arabia. Bilateral aid that *can* be allocated geographically is strongly concentrated on a very few Arab states. Egypt[4], Syria and Jordan – along with Gaza and the West Bank received over one-half of net disbursements from 1971 to 1981 (a substantial decline from the 90 per cent recorded in the early 1970s). Nevertheless, in recent years the number of recipients has increased significantly, to over 90 countries by the end of 1981. Furthermore, within each major group of recipients – Arab, non-Arab Africa and non-Arab Asia – funds have tended to be distributed more equitably.

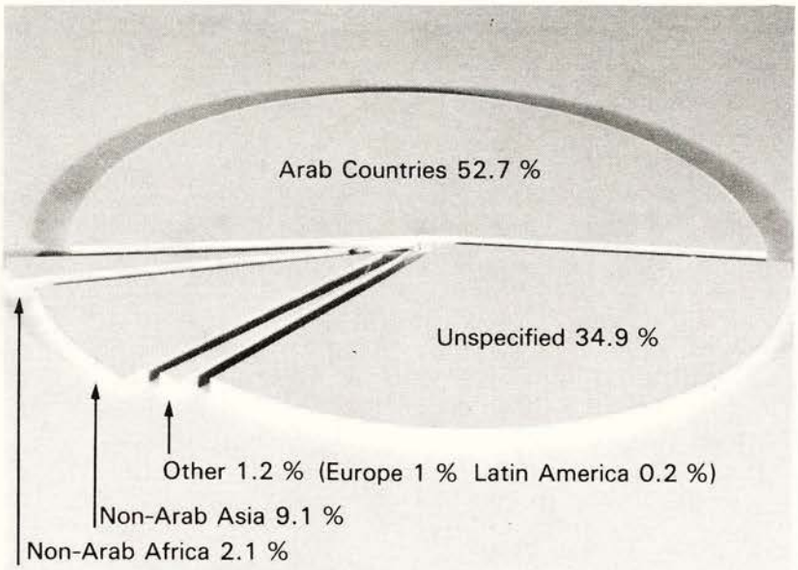
In spite of this, *Arab states* received approximately four fifths of all bilateral OPEC aid in recent years. The role of

3. A problem in determining the size of offical development assistance is the large general support assistance payments of the "Confrontation States" which may in part serve non-developmental purposes. The Secretariat is not able to determine how much qualifies as ODA according to DAC definitions and concepts. Consequently, the figures for Arab donors contain an unkown amount that may not qualify as ODA.

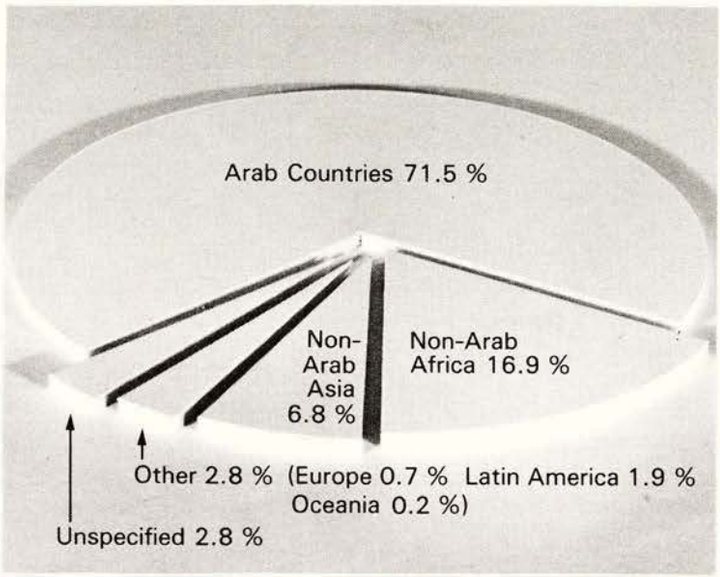
4. Although aid to this country was severely cut in 1979.

GEOGRAPHIC DISTRIBUTION OF OPEC AID

Bilateral,
Concessional, net disbursements 1971-81



Multilateral (ARAB/OPEC Organisations)
Concessional, net disbursements 1974-81



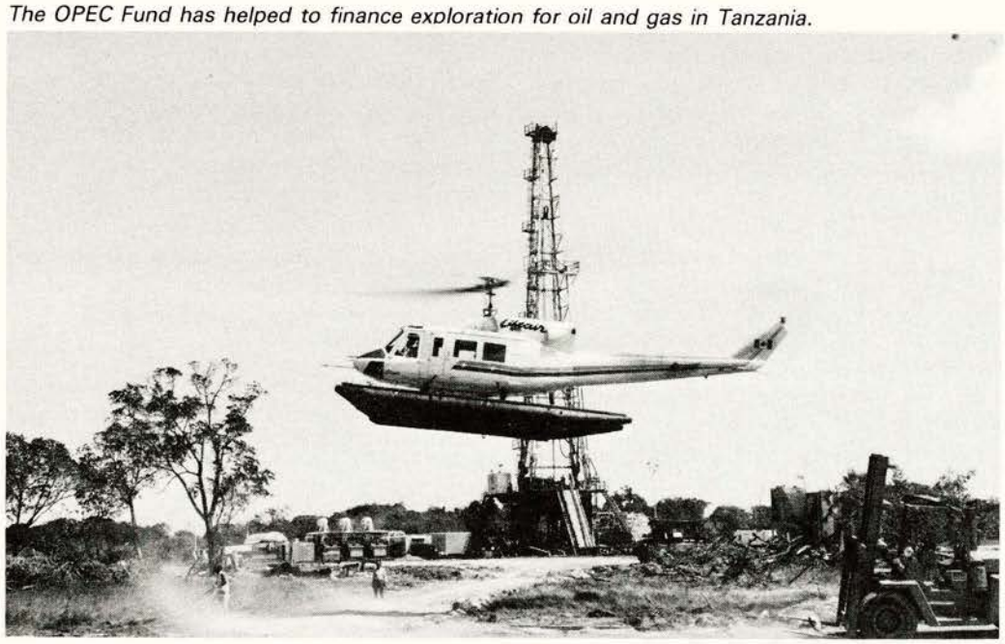
historical and cultural affinities is reflected in the large share of aid directed to *Islamic countries:* from 1971 to 1981 well over nine tenths of OPEC aid disbursed went to Members of the Organisation of the Islamic Conference.

Outside the Arab world, most OPEC bilateral aid has gone to *Asia,* more precisely to Pakistan and India which, together, have received nearly three-quarters of total aid disbursements to Asia since 1973. The cessation of the Iranian aid programme, which was an important source for India and Pakistan, has been the crucial factor behind the generally declining share of Asia in OPEC aid in recent years. In addition to India and Pakistan, Bangladesh, Sri Lanka and Thailand have received significant amounts of OPEC aid.

Aid to *non-Arab Africa* has been small, although it has risen slowly from year to year, reaching its peak in 1981 when it exceeded 6 per cent of geographically allocated OPEC aid. However, the number of recipients has also increased over the years; consequently, disbursements to individual countries have remained quite small.

Since 1973, the share of OPEC bilateral aid devoted to the least-developed countries has fluctuated between 10 and 25 per cent; in recent years it has approached the DAC share of aid to this group (around 20 per cent). Aid to the other low-income countries, which composed the greater portion of total aid in the mid-1970s, dropped sharply in 1979 and has remained quite low thereafter (4 per cent in 1981 as compared to DAC's 37 per cent). This pattern largely reflects the record of aid to Egypt, which was high in the mid-1970s before being severely cut in 1979.

The OPEC Fund has helped to finance exploration for oil and gas in Tanzania.



Co-ordination

The Arab/OPEC aid agencies have made efforts to co-ordinate their aid policies, not only among themselves but with other donors as well. Since 1978, Arab/OPEC agencies have met annually with DAC Member countries for an informal exchange of information and to discuss matters of mutual concern as well as possibilities for improved co-operation. They have also started to hold meetings with the Commission of the European Economic Communities, and some multilateral OPEC aid agencies participate in co-ordination meetings with the traditional multilateral aid agencies. Finally, a growing number of Arab aid agencies have taken part in the High-Level Conferences of the Club du Sahel, which attempts to harmonise the aid policies of donor countries towards the Sahel countries.

Co-financing

An important and interesting feature of OPEC project aid is the high proportion of co-financed projects, the funds committed to such projects ranging between 25 and 60 per cent of a given agency's annual commitments. OPEC agencies co-finance projects not only with one another but also with traditional bilateral and multilateral donors, in particular with the World Bank. This practice permitted the newly established Arab/OPEC aid agencies to increase commitments and disbursements rapidly and to broaden their geographic coverage significantly during the initial years of operations.

Multilateral Aid

Multilateral OPEC aid, which was negligible in the early 1970s, rose until 1977

when it reached almost a third of OPEC aid. It then declined to about an eighth of disbursements in 1981.

The major part of multilateral ODA contributions by OPEC Members has been extended to their own multilateral institutions which, with one exception, were established after 1973. Most of these institutions are Arab aid agencies, receiving contributions only from Arab states, primarily the seven Arab Members of OPEC. The OPEC Fund is the sole institution that receives contributions from all OPEC Members. By far the largest contributions have been from Saudi Arabia and Kuwait.

In terms of commitments the largest amounts have been allocated to the Arab Fund for Economic and Social Development, followed by the OPEC Fund, the Islamic Development Bank and the Gulf Organisation for the Development of Egypt. However, this latter institution ceased operations in late 1978.

Support for broadly based multilateral institutions has been fairly small, generally less than 5 per cent of annual OPEC aid and 0.10 per cent of OPEC GNP.

Three quarters of all OPEC contributions to these agencies since 1973 has been furnished by three donors – Kuwait, Saudi Arabia and Venezuela. Only a few institutions – notably IDA, the International Fund for Agricultural Development (IFAD) and to a lesser extent the African Development Bank and Fund have received significant sums from OPEC donors.

In 1981 the Arab Gulf Fund for United Nations Development was created. Through this fund relatively large contributions are to be made to UN aid agencies among which UNICEF is to receive priority.

USSR AND EAST EUROPE

Following recent statements by the USSR and the German Democratic Republic in the United Nations Economic and Social Council about the volume of their aid, OECD's Development Cooperation Directorate has carefully analysed available information and made a new estimate of aid disbursed by the CMEA countries. This is not easy, since the data available are by no means as reliable as those concerning aid from the DAC or the OPEC countries. This article highlights some of the main features of economic assistance from this third group of donors.

Volume

CMEA countries' net aid disbursements as estimated by the OECD Secretariat[5] are very small compared to other donor groups, accounting for about 6 per cent of total ODA received by the developing countries and multilateral institutions in 1980 and 1981. (See Table 1 page 16.)

On the basis of available information, the OECD Secretariat estimates that the ratio of ODA to GNP for the USSR was probably 0.13 per cent in 1981 and 0.12 per cent for the East-European countries (see Table 3). The figures on aid do not include the preferential trade prices offered to Cuba and Viet Nam by the USSR since price subsidies are not considered to be a part of ODA by OECD's Development Assistance Committee. However, such subsidies are included in statements made by the USSR on the size of its aid programmes in various United Nations fora. Nevertheless, major differences remain between the aid figures announced by the USSR and the publicly available estimates and are as yet unaccounted for.

The increases recorded in 1979 and 1980 (Table 4) are due to stepped-up contributions to the Cuban and Vietnamese five-year development plans and growing Soviet expenditure in Afghanistan, Kampuchea and Laos. However, the information on aid disbursements to these five recipients must be considered as rough estimates.

Aid to the other developing countries on which there is more solid information has always been far smaller and has declined since 1979 due to smaller gross disbursements and an increasing volume of repayments on previous loans. In 1981 total repayments by these countries to the USSR exceeded new disbursements by it.

The USSR is by far the largest donor in

5. *Applying DAC definitions as far as possible.*

Problems of Assessment

The problem of the reliability of the data on CMEA countries' economic assistance is complex. In addition to the considerations briefly mentioned in the present article, there is considerable uncertainty about how to evaluate GNP figures used for the ODA/GNP comparison, since the GNP concept does not exist in the national accounts of centrally planned economies.

The exchange rates *used for the conversion of Soviet ODA and GNP figures are the official rates as published by the USSR. These official rates do not reflect the real purchasing power of the ruble and distort the figures expressed in dollars. For the East-European countries the situation is rendered even more difficult by the existence of several parallel exchange rates. A further factor of distortion for the calculation of the ODA/GNP ratio is the tendency of many East-European countries to denominate their loans in US dollars.*

3. NET ECONOMIC ASSISTANCE OF CMEA

as percentage of GNP of donor

	Developing countries without special relationship with CMEA		*All developing countries*	
	USSR	*Eastern Europe*	*USSR*	*Eastern Europe*
1976	0.01	0.03	0.13	0.09
1979	0.01	0.05	0.13	0.10
1980	*	0.03	0.14	0.12
1981	n.	0.02	0.13	0.12

** Negligeable n. negative*
Source: OECD.

4. DONORS–ESTIMATED NET AID DISBURSEMENTS

A: $ million B: per cent of total

	1970		*1975*		*1979*		*1980*		*1981*	
	A	*B*	*A*	*B*	*A*	*B*	*A*	*B*	*A*	*B*
Eastern Europe:										
Bulgaria	38	4	33	3	40	2	84	4	95	4
Czechoslovakia	53	5	33	3	34	2	83	4	101	5
German Democratic Republic	33	3	35	3	192	11	179	8	193	9
Hungary	40	4	36	3	46	2	53	2	54	3
Poland	35	4	28	2	33	2	42	2	18	1
Romania	16	2	62	5	52	3	36	2	2	*
Total above	**215**	**22**	**227**	**18**	**397**	**22**	**477**	**22**	**463**	**22**
USSR	767	78	1,008	82	1,421	78	1,706	78	1,652	78
TOTAL	**982**	**100**	**1,235**	**100**	**1,818**	**100**	**2,183**	**100**	**2,115**	**100**

** Negligeable.*
Source: OECD.

the CMEA, accounting for almost 80 per cent of the total. Next largest donor is the German Democratic Republic – with almost a tenth of the total – while the other countries have markedly lower contributions.

Multilateral contributions represent one per cent of total CMEA countries' development assistance and are limited to payments in non-convertible currency to UNDP, UNICEF and UNIDO.

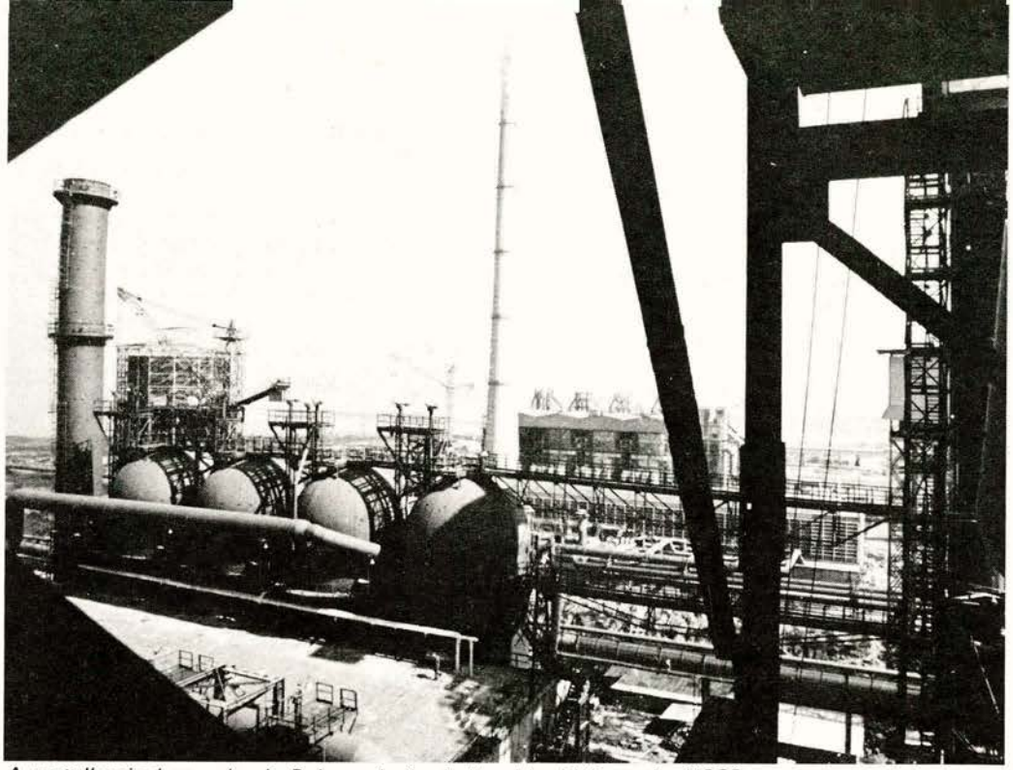
Geographic Distribution

Aid of CMEA countries – particularly the USSR – is more and more concentrated on the five major recipient countries mentioned above (Table 5). In gross terms, it rose from 59 per cent in 1975 to 80 per cent in 1981, a year in which Cuba and Viet Nam alone accounted for over 60 per cent of total CMEA gross aid. This trend is still more marked if one looks at net aid: the share of major recipients rose from 83 per cent in 1975 to 96 per cent in 1981.

Financial Terms

While until a few years ago the quasi totality of Soviet and many East-European loan agreements carried standard terms (2.5 per cent interest, repayment over 12 years), there is now a tendency to tailor the financial terms to the recipient country or the kind of project concerned. Terms granted to those developing countries which have no special relationship with CMEA countries remain rather hard, while aid to the major recipients is usually provided on more flexible terms: a significant part is in the form of grants, while loans carry softer terms, and debt has been rescheduled on several occasions.

It is not surprising therefore that the grant element in ODA loans made by the USSR now varies widely – from 25 to 80 per cent[6]. Over the period 1979-81, interest rates of USSR aid loans ranged from nil (Cape Verde) to 5 per cent (Turkey) and the repayment period from 10 years (Turkey) to 20 years (India) or 25 years (Viet Nam), starting one to five years after the completion of the project. In the case of Czechoslovakia, interest rates ranging from 2.5 to 5 per cent were recorded, and for the German Democratic Republic between 2 and 4.5 per cent, while Bulgaria appears to have maintained standard terms of 2.5 per cent interest and repayments over 12 years. By contrast, Hungarian, Polish and Romanian loans are usually on much harder terms.



A metallurgical complex in Bokaro, India, built with aid from the USSR.

CMEA aid is entirely tied to procurement in the donor country. The negative effects of this practice are increased by the absence of price competition among potential suppliers in donor countries. Local cost financing has been granted on a few occasions but remains exceptional. Repayments are frequently made in the form of goods, mainly essential raw materials and – more rarely – semi-finished products. Whereas, in the past, recipients of Soviet aid had to repay in convertible currency only that part of their debt that had not been repaid in goods within a predetermined period of time, a growing number of aid agreements now provide for partial or full repayment in convertible currency, the exchange rate being determined by the donor country. There is evidence that often the price of goods delivered as repayment of loans has been unfavourable for the developing countries. As to the major recipients, most of them have not been able to repay all their debt in the form of goods, and the USSR has been forced to reschedule the debt or even write it off.

Sectoral Distribution

The five major recipients have often received substantial amounts of aid in the form of commodities in recent years, but the bulk of CMEA countries' economic aid

5. ...AND RECIPIENTS
CMEA GROSS DISBURSEMENTS

	USSR		*Eastern Europe*		*total CMEA*			
	$ million						*% of total*	
	1975	*1981*	*1975*	*1981*	*1975*	*1981*	*1975*	*1981*
Vietnam	250	750	120	150	370	900	22	35
Cuba	536	500	5	170	541	670	33	26
Afghanistan	28	235	1	17	29	252	2	10
Kampuchea	–	95	–	24	–	119	–	5
Laos	40	70	–	30	40	100	2	4
Syria	26	30	35	35	61	65	4	3
Turkey	20	42	–	9	20	51	1	2
Iraq	47	18	27	23	74	41	5	2
Nicaragua	–	21	–	17	–	38	–	1
India	30	25	11	10	41	35	2	1
Pakistan	30	30	11	3	41	33	2	1
Algeria	26	15	12	14	38	29	2	1
Egypt	62	17	18	12	80	29	5	1
Yemen PDR	3	18	1	2	4	20	–	1
Other countries	232	129	84	78	316	207	19	8
TOTAL	**1,330**	**1,995**	**325**	**594**	**1,655**	**2,589**	**100**	**100**

Note : On a net disbursements basis the picture would be quite different. Most of the major recipients (e.g. Egypt, India, Syria, Turkey) repay more than they receive in new aid in any one year.
Source: OECD.

to the other recipient countries consists of project assistance. Among the latter, only Ethiopia and, more recently, Nicaragua seem to have received any commodity grants. The main emphasis of CMEA countries' aid programmes continues to be on large-scale industrial and energy projects in the public sector, but increasing attention is being paid to the prospecting and exploitation of mineral resources, natural gas and oil, in view of the growing needs for these products in the USSR and Eastern Europe.

Among the East-European donors, the German Democratic Republic seems to have a unique role in that the bulk of its aid is provided in the form of "solidarity grants"[7].

Technical Assistance

Estimates differ on the number of technical assistance personnel from CMEA countries. In 1981 the most conservative estimates put them at about 52,300 of whom slightly over half are thought to be Soviet nationals. About half of these experts are working under commercial contracts and the other half are thought to be almost entirely financed under project loans rather than under technical assistance programmes as such. The number of Soviet specialists provided without cost to the developing countries is believed to be rather small. It is not known how many CMEA experts are working in Cuba and Viet Nam, but their cost is believed to be covered by project assistance. Nor is reliable information available on the precise number of students trained in the CMEA countries in recent years, or on the financial outlay involved. Scholarships are thought to be less than $100 million a year.

Trade Credits

Trade credits are mainly extended to the more advanced developing countries. For some East-European donors (i.e. Hungary, Poland and Romania) the volume of trade credits substantially exceeds that of aid loans.

6. The grant element of loans by the CMEA countries cannot be established exactly since the CMEA loan agreements do not indicate the date of the first and last repayments but stipulate that repayments are to be made over a given number of years (frequently 12) starting one or two years after the completion of the project or the delivery of the equipment. Thus the grant element of project implementation depends on the speed of execution of the project.

7. "Solidarity grants" are provided by the Solidarity Committee, which draws most of its funds from contributions collected through the trade unions and various women's and youths' associations. The bulk of these grants is provided to major recipients or sympathising developing countries in Africa, Asia and Latin America, usually for relief assistance but also for development-oriented activities.

How Will Coal Be Affected by Oil-Price Reductions?

by Dr. Ulf Lantzke,
Executive Director, International Energy Agency

Despite numerous actions on the part of IEA Member countries to encourage the increased substitution of coal for oil and gas, the growth trajectory of the international coal market has been recently and suddenly flattened. This pause in the healthy expansion of coal trade and coal use is of great concern. There appear to be a number of interrelated factors at work.

A few items from a potentially long list:

- complex and insensitive environmental quality standards
- high interest rates for new capital investment
- labour-relations problems
- transportation bottlenecks
- the effects of the recession on coal consuming industries, particularly steel
- lower-than-predicted growth in electricity demand.

These obstacles proved very difficult at a time when oil prices were rising. Now oil prices have fallen and may fall further, at least in real terms. What is likely to be the effect on coal?

The problem anyone has in addressing this question is how to isolate the impact of oil-price reductions from the other factors which have affected coal.

The degree to which oil-price changes can *directly* affect coal markets largely depends on the degree to which the two fuels directly compete. There is some oil-to-coal or coal-to-oil fuel switching capability in existing equipment, and thus some room for head-to-head competition. But right now, there is no incentive to switch to oil even if it is possible. Oil prices have dropped, but not to the point where oil can beat coal in the same markets in Europe and Japan, and particularly not in North America. Users who have the option of using coal or oil still enjoy a price advantage in coal. And coal prices are falling now too. Thus declines in actual use of coal in the industrial sector are not due to increased industrial oil use.

But there are also *indirect* effects, the most important of which is the economic recession. The latest oil-price shock was a primary *cause* of the recession, and the drop in demand for industrial output, and consequent drop in demand for industrial fuel including coal, was a *product* of the recession. In addition new investments became all but impossible for industries which were laying off employees and shutting down productive capacity. Included were planned investments in coal-burning equipment. The recession hit the steel industry, which has always been coal's biggest industrial customer, particularly hard. But the circle has now been closed because the recession caused by oil-price increases is one of the two basic forces now driving oil prices down, the other being increased energy efficiency.

What this implies is that the industrial recovery we now hope is beginning will be likely to stimulate the demand for coal, even if oil prices stay at their current levels. To the extent that lower oil prices are stimulating recovery – a considerable extent in the eyes of many economists – they are helping coal rather than hurting. In addition, electricity demand, which has traditionally followed economic growth closely, represents derived demand for coal in large part.

Other indirect effects of falling oil prices on coal have been psychological. For example, the turnaround in oil prices destroyed the myth that they could only go up and not come down. While energy forecasters were reworking their assumptions, many industrial planners were also taking a second look. The new uncertainty about oil-price

trends added a further unknown to their investment decisions, particularly for projects to convert from oil to other fuels, and for commitments to long-term contracts.

When one weighs the direct effects of the oil price reductions on the role of coal (the actual interfuel competition) against the indirect effects (from the recession and the new uncertainty about future trends), one has to recognize that the indirect effects have had the most impact. These indirect effects, however, can be overcome without the price of oil going back up.

But neither the direct nor the indirect effects of the oil-price changes can be assigned all the responsibility for the recent doldrums in the international coal market. To some extent, other factors have been involved which have coincided with the oil price changes but are hard to relate to them. For example, although the last few months have been bad, the preceding period was exceptionally good. In reaction to the Polish coal problems and port problems there was a great flurry in international coal markets, including massive stockbuilding programmes and many new international transactions which were destined to be temporary. Now the inevitable retrenchment has followed, but it too should prove temporary.

Adding up these considerations, the coal industry has no reason to despair in light of oil price trends. I think that the stimulative effect on economic recovery will be more helpful to coal demand than the reduced price edge is harmful. On the other hand, the coal industry should not simply wait for the recovery to come calling. Instead, the industry should, as IEA Member governments are committed to do, continue to try to reduce the barriers and extra cost factors that impede the progress of coal trade and use.

The relationship of coal use and the environment deserves special mention. We know how to use coal without polluting the environment, and without destroying the cost advantage that leads users to coal in the first place. What we do not seem to know yet is how to keep the necessary environmental regulations to the minimum required to accomplish both these purposes.

And there are other important needs: if further economies can be realized in infrastructure, particularly in deeper ports to accommodate larger vessels; if further progress can be made in stabilizing and providing assurance of transportation cost factors, particularly in the railroad leg from the mine to the port; if serious disruptions in labour relations can be avoided; if investments by both producers and exporters in expanded capacity can continue; if coal marketers can be innovative and flexible, then buyers will respond as well.

The Breeder Reactor in an Energy Supply Strategy

Nuclear energy is at the crossroads. Although there is general agreement that it is bound to play a major role in the future, a number of obstacles and uncertainties cloud the outlook. Despite — or because of — this, research and development work is underway in the OECD area designed to improve the technology, safety and economics of nuclear power plants. New reactor designs are being studied or developed, including breeder reactors. At a time when short-term energy considerations often tend to dominate policies, the need to evaluate the long term role of advanced reactors is evident. The OECD Nuclear Energy Agency therefore held a special session to discuss the subject in connection with its 25th anniversary. The meeting took place in Lyons, France, near the site of the first French breeder reactor, the Super Phœnix, now being completed. The following article is based on the key-note speech given by Michel Pecqueur, General Administrator of the Atomic Energy Commission of France.

Requirements for energy will increase substantially over the rest of the decade not only in the industrialised world but even more so in the developing countries which must increase per capita energy consumption if they are to grow and must do this within a context of population increase. Apart from some very specific types of renewable energy, most of the increase in the less-industrialised countries' supplies will have to come from fossil fuels: coal, oil and gas. For countries with an adequate power network, nuclear energy will constitute a major asset since it stabilizes energy costs and guarantees security of supply while avoiding the need for foreign exchange.

The operating experience of the 295 nuclear power plants now onstream in 25 countries throughout the world should make it possible to reduce the obstacles which hinder nuclear development in many countries. The waste management and safety licensing measures recently adopted or planned in the United States reinforce this view.

Thus it seems that the NEA forecasts for OECD countries — 450 GWe installed capacity by the year 2000 (see chart and table) — will prove accurate. This increase over the present figure of 147 GWe could strain the uranium market unless efforts were made at the same time to reduce uranium consumption. This is where the breeder reactor comes in.

The Role of Breeder Reactors

Breeder reactors can ease the constraint on supplies of natural uranium and complement existing thermal neutron reactors. They need the plutonium produced in first-generation reactors; they also consume depleted uranium, an inevitable by-product of the fuel cycle in first-generation reactors. Of the various projects likely to have an impact on world energy supplies in the 21st century, the breeder option seems particularly promising in terms of what stands to be gained and the chances of success. It is true that industrial development costs are high but they are not unreasonable from an international point of view.

But if the introduction of breeder reactors clearly presents overall long-term advantages, it is of particular interest for certain countries. Since one of the chief objectives of an energy policy is to reduce

vulnerability, the introduction of breeders for a country with a big first-generation nuclear power programme, especially one whose requirements exceed national uranium supply capacity, should have three major advantages:

- The need for uranium would stabilize then fall and fewer isotopic separation facilities would be required.
- By the year 2020, much more energy could be obtained from the plutonium by-products than is now obtained from the natural uranium consumed in thermal neutron reactors.
- The environmental impact and exposure of workers to radiation are less than in the existing nuclear power plants and the latter are already very low.

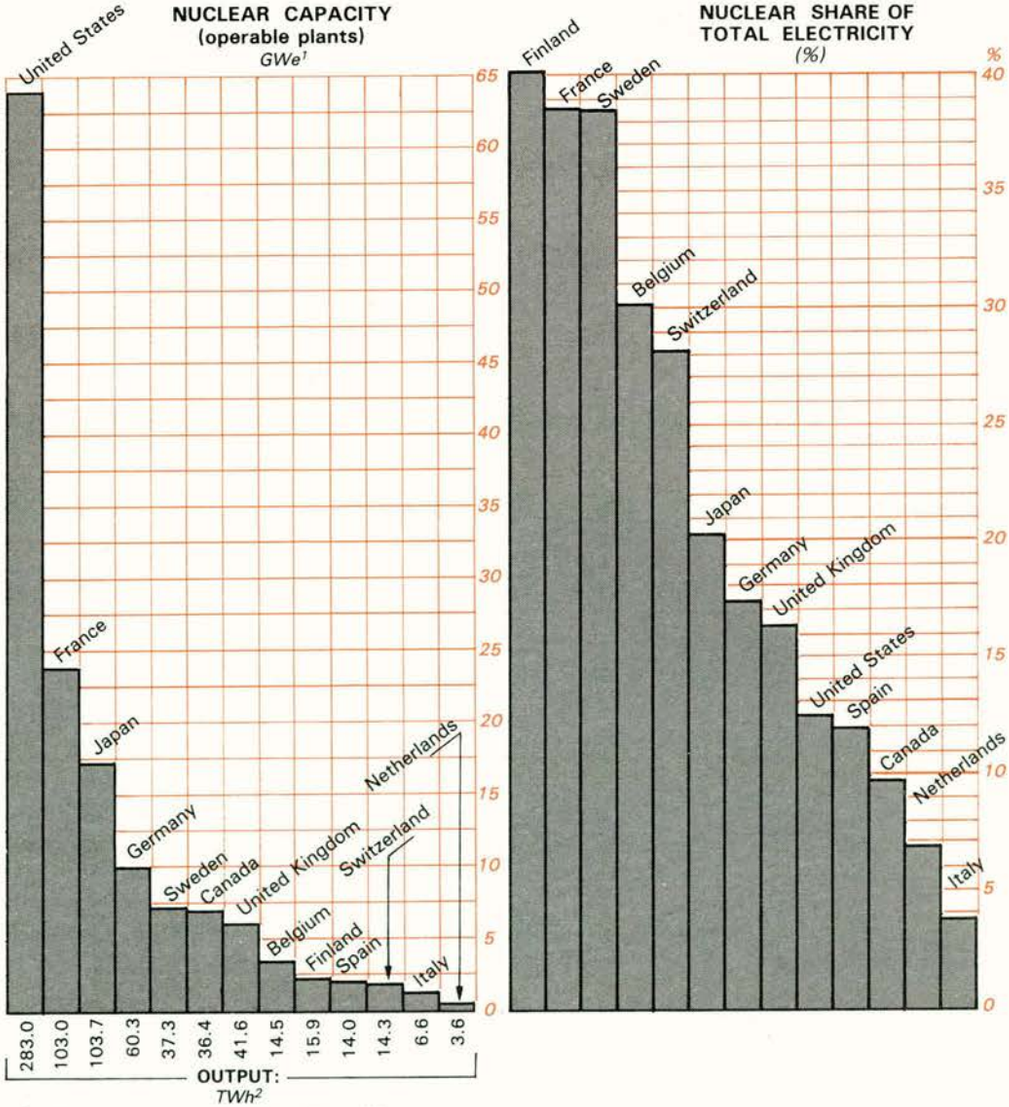
By making better use of the energy potential of recycled plutonium and depleted uranium on a worldwide scale, the development of breeder reactors should have a decisive effect on long-term trends in uranium prices and make industrialised countries more energy-independent, thus contributing to stability in East-West and North-South relations. It is, therefore, hardly surprising that, in spite of the worldwide nuclear energy crisis, the main industrialised countries, the United States, the USSR, the Federal Republic of Germany, Japan and the United Kingdom, are involved in large-scale R&D on this type of reactor, their annual expenditure being as high or higher than in France.

A last point is that the introduction of breeder reactors, which will have to be gradual, will help to stabilise the uranium market and will, therefore, not adversely affect countries which are already or potentially major uranium producers.

NUCLEAR POWER GROWTH ESTIMATES FOR THE OECD AREA

Year	*Nuclear capacity (GWe)*	*Nuclear electricity generation (TWh)*	*Percent of total electricity*
1982	147	734	14.8
1985	209	1,102	19.5
1990	303	1,626	24.2
1995	377	2,131	27.4
2000	450	2,491	28.8

NUCLEAR POWER IN OECD COUNTRIES (at 31st December 1982)



1) *GWe = gigawatt = 1 million kilowatt.*
2) *TWh = terawatt per hour = 1 billion kilowatt per hour.*

Transition to the Industrial Stage

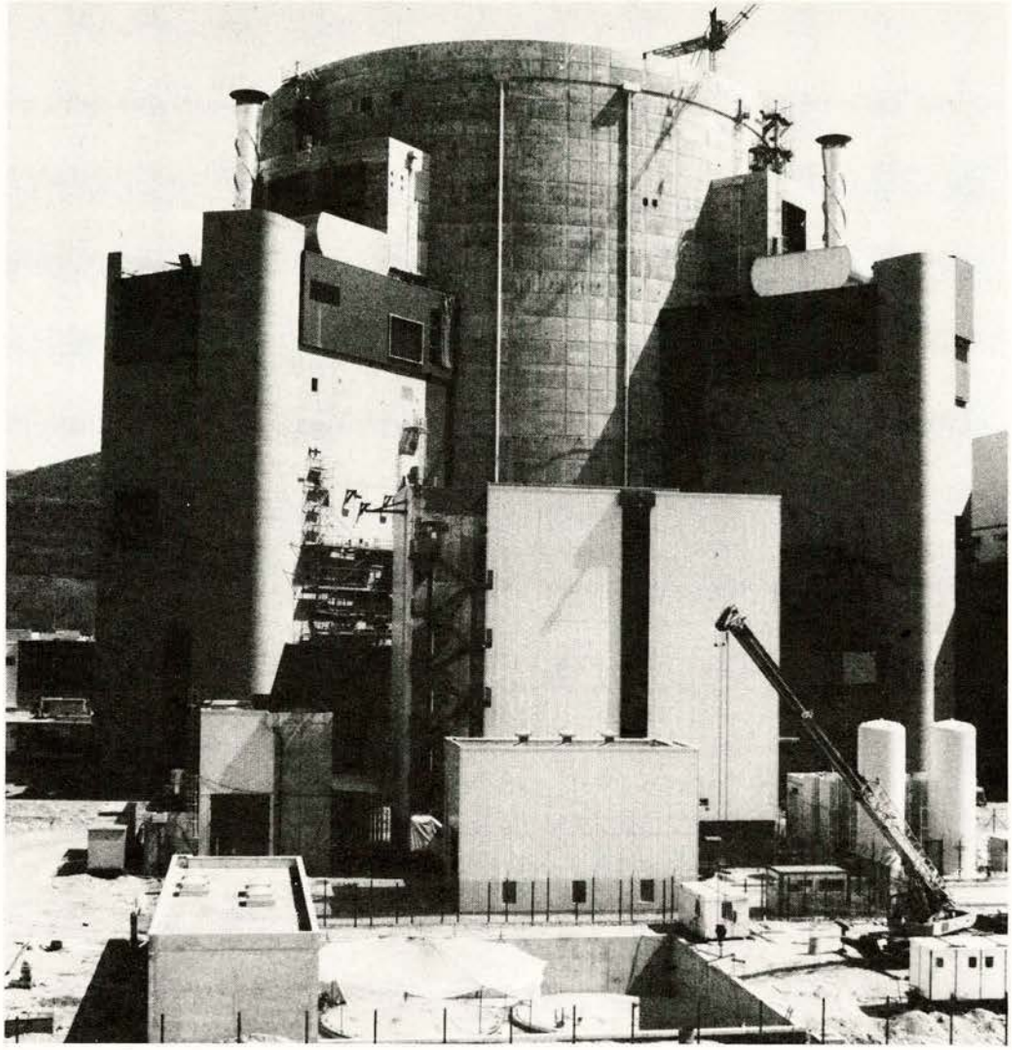
While major R&D work is certainly warranted by the benefits that breeder reactors can bring, the transition to the industrial level will require that they be acceptable from the scientific, technical, industrial, economic and social points of view. The first three have undoubtedly been obtained. The specific difficulties of breeder reactors have been overcome, especially safety problems connected with the fighting of sodium fires and those of sodium-water reactions. The advantages of the process are confirmed: good neutron behaviour, no pressurised circuits and industrial reliability. The safety standard of breeder reactors can be at least as high as thermal neutron reactors if the precautions specific to this reactor are taken, and this is feasible both technically and economically.

Economic acceptability...

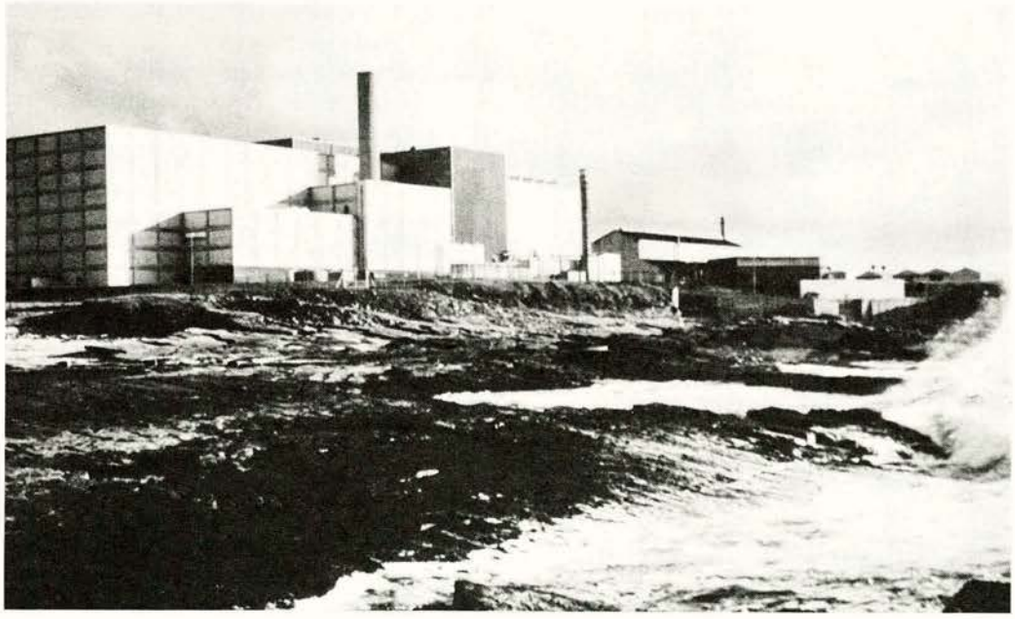
Economic acceptability cannot yet be regarded as attained but the progress already made suggests that it is not far off. Less than 20 years ago the ability of the first nuclear power plants to compete with oil-fired plants had to be demonstrated, but breeder reactor power stations will have to generate electricity at a cost comparable not to that of oil-fired plants, which has already been established, nor even coal-fired ones (this will become a reality with Super-Phœnix), but first generation nuclear power plants. The comparison will have to be made between a nuclear programme, with the breeder reactor, and one without it taking into account price trends for uranium which will, of course, be influenced by whether or not breeders are introduced. If it is shown that the breeder can become competitive in the near future, an effective energy planning strategy would require that breeder reactors be introduced even before they become strictly competitive. In this way, the benefits of diversity, reduced dependence and less vulnerability in the event of a crisis could also be brought forward. The effect of such an anticipation would also bring forward the date breeder reactors became competitive.

... and social acceptability

Whether or not breeder reactors will acquire social acceptability depends largely



Above: *the Super Phœnix prototype breeder reactor near Lyons built on an industrial scale with a capacity of 1,200 MWe.*
Below: *Dounreay, prototype fast reactor in Scotland with a 250 MWe capacity; in operation since 1974.*



on what solutions are found to the problems of safety and proliferation. The safety outlook is promising. The same applies to proliferation which is a sensitive matter since plutonium is in any case produced by thermal reactors. It is therefore not an issue specific to breeders. The INFCE[1] has concluded that, provided suitable precautions are taken in the international stock management of plutonium, the risks of proliferation involved in breeder reactors are no greater than with other fuel cycles. Use of breeder reactors as regulators of the volume of plutonium stocks may even constitute an advantage.

The Next Step

The rate at which breeder reactors are introduced will necessarily vary from one country to another. In France, for example, which has no fossil fuel reserves but a major first-generation reactor programme, breeder reactors should be introduced as soon as technical and financial constraints permit. Thus, while Super-Phœnix is being commissioned, France is doing the necessary research so that the government can launch the next stage when Super-Phœnix has been in operation for a year – around 1986.

Although the next stages will be the most costly in financial and industrial terms, they are vital. The development of first generation reactors shows that it is at this stage that processes succeed or fail. Those in which promoters can find the necessary financial resources and are backed by the political will of governments have been successful; others that seemed promising at the prototype stage but have not had such support have slowed down or disappeared.

The following conclusions may be drawn:

- Many countries are convinced of the value of actively pursuing the breeder option: some national programmes aim at advancing this technology to the industrial and marketing stage either in the near future or later on.
- The phased introduction of breeders into power generation will require further major industrial development, consolidation of technological progress and the lowering of costs throughout the fuel cycle.

These considerations lead to the conclusion that it would be desirable to undertake or enlarge international co-operation to meet these objectives.

If this co-operation is to be truly effective, participants need to have common needs and common aims:

- The partners must be a homogenous group, they must have the same motivations and be equally interested in the development of breeder reactors.
- It would be desirable for them to have comparable energy and industrial situations. This happens to be the case for the leading industrial countries within a given geographical area.
- A preliminary requirement is that rules be agreed on in advance for both R&D and the subsequent industrial application.

Given these arguments and the fact that links were created within Europe in connection with the Super Phœnix, a study group has been proposed which would harmonise reactor designs and examine how to bring the breeder on line. At first, the group would consist of those already linked by industrial co-operation agreements but it would be open to similar organisms elsewhere in the world.

1. INFCE is the acronym for the International Nuclear Fuel Cycle Evaluation Programme carried out by the International Atomic Energy Agency (AIEA).

Environmental Effects of Energy Systems: The OECD COMPASS Project

by Ian M. Torrens[1]

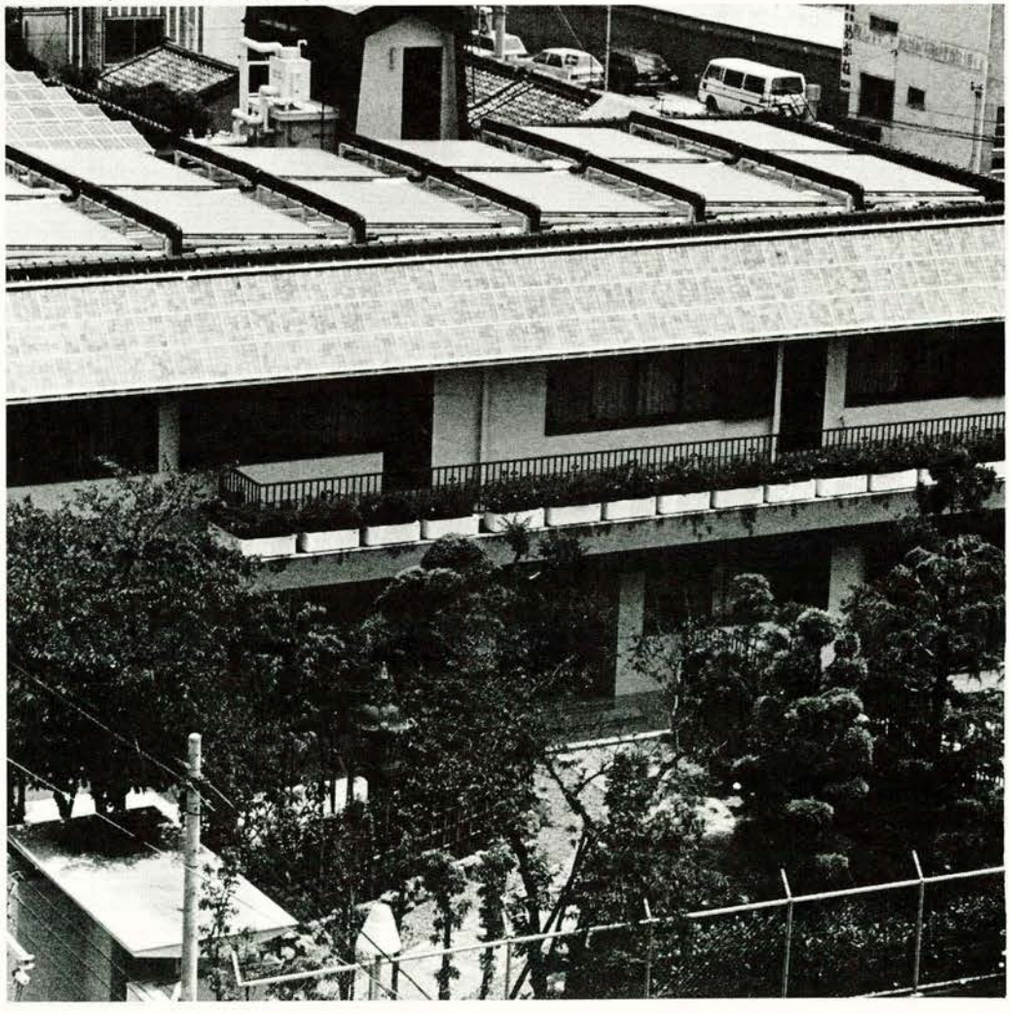
The idea that the production and consumption of energy and protection of the environment are complementary not competing goals is increasingly accepted in industrialised countries. If pursued with a combination of rational thinking and imagination, the two goals can be achieved simultaneously. This has been the experience of industrial companies who set engineers and planners to work adapting production processes so as to minimise the amount of pollution generated. It has also been the experience of local and national governments who realised that rules need to be set to protect or improve the human environment if it is to remain a healthy and enjoyable place to live. A consensus among all parties affected by these rules is sometimes difficult to achieve, but in most OECD countries the regulations have led to an improvement in environmental quality over the past decade.

Environmental policies have evolved in their basic orientation over the past two decades. With the realisation that inadequate attention to the environment was causing significant damage – polluted air in cities, dying lakes and rivers, uncontrolled waste dumps, etc. – it became clear early on that prevention is better than cure. More recently a new concept has taken hold: the environment as a resource to be exploited in a careful manner taking full advantage of its great resilience and potential for renewal. Thus the notion of "protection" is embraced in the wider concept of "environmental resource management". This means integrating environmental considerations into economic activities and decision/making at an early stage. Prevention is less costly than clean-up, and integrated environmental control can often be more effective and less costly than "add-on" controls.

This concept of integrated control is the basic philosophy underlying the COMPASS project. COMPASS is shorthand for "a *comp*arative *ass*essment of the environmental effects of energy systems". The word "systems" is important here. Much work has been addressed in the past to comparing the environmental impacts of different *sources* of energy – coal, oil, nuclear and renewables. While such studies are obviously useful and valid, they address only a part of the energy-environment problem. The quantities of coal, oil, gas or other primary energy sources which are required to run a national energy economy do not mean very much to the energy consumer who is much more conscious of the services that energy can provide – heating, lighting, transportation etc. – and what these services cost. This provides the motive for adopting an end-use perspective in COMPASS. The energy services can be provided in various alternative ways. They can also be provided more efficiently with less energy input. The

1. *Head of OECD's Division of Resources and Energy in the Environment Directorate. The Compass Phase I report will be published in late Summer.*

An entirely solar house in Japan.



COMPASS project looks at what these alternatives mean for the environment.

The end-use perspective has been first applied to a major sector of energy use – space heating and cooling in the residential/commercial sector with the aid of case studies in three OECD countries. These studies have demonstrated that there is great potential for simultaneously achieving energy and environmental objectives and for saving large sums of money on energy costs, provided that these twin goals are integrated into the planning process as the building stock is developed and renewed.

Space Heating and Cooling

Space heating and cooling in homes, industry and commerce need large amounts of energy in most OECD countries, particularly those at higher latitudes or with extreme climates. Apart from climate, the amount of energy required for this purpose depends on the building stock, the type and efficiency of energy conversion equipment, and the habits of the population.

The environmental effects of this energy end-use are of three broad types:

- *direct* external emissions of pollutants and other environmental impacts from combustion of fuels in buildings
- *indirect* external emissions and impacts from earlier stages in the fuel cycle of energy used in space heating/cooling (e.g. generation of electricity)
- internal air pollution from energy conversion devices (like kerosene stoves or gas ovens) when there is inadequate ventilation.

There is a high potential for increasing the efficiency of energy use in space heating/cooling. One recent estimate from a conference sponsored by the OECD's International Energy Agency[2] puts potential energy savings, relative to a pre-1973 energy consumption baseline, at 70-90 per cent in new residences, and 50 per cent through retrofitting existing houses with better insulation, energy conversion equipment and thermal control.

The environmental implications of strategies to alter the pattern of energy use in this sector depend on a number of factors: efficiency of energy use; change, if any, in energy form and energy conversion equipment with different specific pollutant emissions; and pollution control technology applied to the equipment.

Three Case Studies

Three environment-energy analyses involving different OECD Member countries[3] were chosen to illustrate the end-use perspective of COMPASS:

Making use of waste heat from a power plant in greenhouses, Tricastin, France.

- a local environment-energy analysis of the town of Fredericton, New Brunswick in Canada
- a regional environment energy analysis using a computer optimisation model for the Rijnmond region of the Netherlands
- a national environment-energy analysis using an economic energy model applied to the United States.

Fredericton, New Brunswick, Canada

Fredericton, the capital of the province of New Brunswick (population 48,000), has a broad range of potential energy technologies and sources with which to meet future space heating needs – coal, oil, nuclear, natural gas, and wood. Where possible, environmental risks involved in providing energy from each of these fuels were taken into account, not only for city residents, but for the environment as a whole.

The environmental and health implications of energy options for space heating in Fredericton were compared, using four selected energy scenarios for 1990 and 2000:

1. high levels of electricity use
2. medium use of electricity and natural gas
3. high levels of use of gas and wood
4. intensive energy conservation,

The table shows a sample set of results for 1990 energy consumption and air pollutant emissions. The environmental analysis also covered water pollution, solid waste, and health risks.

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2. *International Energy Agency Conference on* New Energy Conversion Technologies and their Commercialisation, Berlin *(Springer, Verlag, 1981).*

3. *Washburn and Gillis Associates Ltd.* A Study of Environmental Factors Associated with Different Energy Alternatives for Meeting the City of Fredericton's Space Heating Needs, *Report to Environment Canada and Energy, Mines and Resources Canada, October 1981.*

Metra Consulting Group Ltd. An Integrated Approach to the Assessment of Environmentally Favourable Energy Systems, *Report prepared for Ministry of Public Health and Environmental Protection of the Netherlands, 1981.*

The Least Cost Energy Strategy, *Report and Technical Appendix, by the Energy Productivity Center of the Mellon Institute (now Applied Energy Services Inc.), published by Carnegie Mellon, University Press, 1979.*

FREDERICTON CASE STUDY

a) ENERGY CONSUMPTION (Terajoules)

	Oil	Electricity	Wood	Natural Gas
1980	2,541	387	311	0
1990 Scenario 1	243	1,332[1]	360	439
2	121	950[1]	355	917
3	266	396[1]	525	1,398
4	–	477[2]	17	477

b) EMISSIONS OF AIR POLLUTANTS (10^3 tonnes/year)

	CO	Particulates	NO_x	SO_x	HC
1980	12,050	735	635	1,300	730
1990 Scenario 1	11,600	670	480	2,200	255
2	11,250	635	420	1,550	210
3	16,600	895	390	810	290
4	605	56	185	720	30

1. Made up of hydropower (40 per cent), coal-fired thermal (10 per cent), nuclear (50 per cent).
2. Made up of hydropower (50 per cent), oil-fired thermal (15 per cent), coal-fired thermal (10 per cent), nuclear (25 per cent).

The study concluded that on an *overall* basis the different supply options had broadly similar environmental and health impacts, and only the scenario of intensive energy conservation lowered these impacts substantially. However, the desirability of different supply options could differ from the environmental viewpoint, depending on how remote the source of energy was from the population centre.

Environmental emissions of different fuels compensated for each other: for example, in Scenario 3, the benefits of using more gas were offset, particularly for carbon monoxide and particulates, by the increase in wood-burning which is also a feature of this scenario. This shows how carefully the full ramifications of a switch to a cleaner fuel in a specific local or regional case need to be thought through.

Rijnmond Region, The Netherlands

A computer-optimisation model of energy-environment systems was used to determine how regional energy demand could be met in the year 2000 in this densely populated and highly industrialised region. It takes into account economic and other policy constraints (e.g. least total cost, minimum SO_2 and NO_x emissions, different assumptions as to coal price and availability).

According to the model, environmental emissions were kept under control by changes in fuel mix, in energy-conversion processes, and in end-use technology as well as by use of add-on environmental control equipment. Some of the scenarios accord a large role to cogeneration of electricity and useful heat and to gas-fired heat-pumps for space heating.

Although the fundamental changes in the energy picture depicted in some of the scenarios might be improbable in reality, the study provides useful insights for policy-making in the fields of energy and the environment in the Rijnmond region or beyond. It shows how energy that would otherwise be wasted can be used in a highly industrialised and densely populated region like the Rijnmond. For example, waste heat produced by industry could be used for horticultural purposes. Also, widespread cogeneration of heat and electricity, both in the industrial and the residential/commercial sectors (district heating systems) could reduce the need for new large electricity-generating plants. These examples illustrate the importance of considering regional energy supply and demand as a system whose optimisation, from both energy and environmental points of view, may require new approaches. A matter which policymakers need to consider is whether these are feasible from an institutional point of view.

Least-Cost Energy Model (United States)

This model minimises total energy costs (including capital investment, fuel and other running costs). It selects the least-cost mix of technologies of energy supply and energy-efficient end-use options given some basic data on fuel and energy-technology prices. The case study investigated the energy and environmental implications of the model's predictions of energy use for space heating and cooling in the residential/commercial sector in the United States (with regional breakdowns) in the years 1990 and 2000.

The chart on page 28 summarises some interesting consequences of applying this model. Despite the substantial growth in residential and commercial building stock (up 40 and 95 per cent respectively) assumed over the next two decades, the minimisation of total energy costs could lead to a considerable (35 per cent for both) decline in aggregate energy demand in these sectors. This would mean very substantial energy-cost savings to the consumer, even when the capital expenditure on new energy conversion equipment in the home or office is taken into account. The model predicts cost savings of some 7-30 per cent on energy (including amortisation of these capital expenditures) in individual residential or commercial buildings. For the United States as a whole, these savings could amount to billions of dollars annually by 1990.

The model does imply some very substantial changes in the way energy is used for space heating or cooling in the United States over the rest of this century. To realise the predicted economic benefits, consumers would have to invest in building improvements (e.g. insulation) and in more efficient energy conversion equipment, and energy producers too would need to make investments in the ways they transform and deliver energy. Inevitably, some of this investment might be delayed or not made at all for various reasons: the availability and cost of capital, institutional structures, the consumer's personal economic situation, or the condition of his existing stock of energy-using equipment. Still, even if only a part of the estimated savings were realised, the cost reductions to consumers would be impressive.

Pollutant emissions associated with the energy trends predicted by the model, including those associated with electricity used in the sectors, show mixed trends. Carbon monoxide, carbon dioxide and nitrogen oxides are lower in 2000 than in 1978, while sulphur oxides and particulate emissions increase (by 22 per cent and 45 per cent respectively). This occurs because electricity demand, unlike total energy demand, is assumed to be higher in 2000 than in 1978 in the Least-Cost Model.

However, most if not all of the increase in sulphur oxides and particulates may be accounted for by the conservative assumptions about emission control built into the model – namely, 1978 emission levels, control technologies, and environmental regulations. In fact, new and replacement power plants in the United States have to meet much stricter standards now. Consequently, the emissions of sulphur oxides

and particulates associated with the energy supply and demand figures for 2000 projected by the model would almost certainly be lower even without further changes in regulatory requirements over the period.

The Least-Cost Model predicts weak growth in demand for electricity, and this assumption has an impact on the need for new generating capacity. Thus the replacement and retrofit of existing power plants could be important in determining aggregate emission levels in 1990 and 2000. This might be an appropriate use for productive investment of part of the potential savings made on energy expenditure as a result of more efficient energy use.

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This comparative assessment of energy use in space heating and cooling confirms that energy systems which make significant use of improvements in energy efficiency usually offer clear environmental benefits. Furthermore, they can be extremely cost-effective, providing potentially large savings on energy expenditure.

More efficient energy use could have a dual beneficial environmental effect. First, pollutant emissions could be reduced directly through lower energy consumption. Second, society could choose to invest a part of the savings it makes on energy expenditures in improved environmental quality.

The analysis carried out in COMPASS indicates that it would be desirable for OECD governments to view energy and environment policy issues to a greater extent from the perspective of end use. More attention to the type of energy service required at the point of end use, and the ways in which this service might be supplied in a more efficient manner than hitherto, go hand-in-hand with increased environmental acceptability since energy waste shows up in increased pollution as well as in a need for more energy.

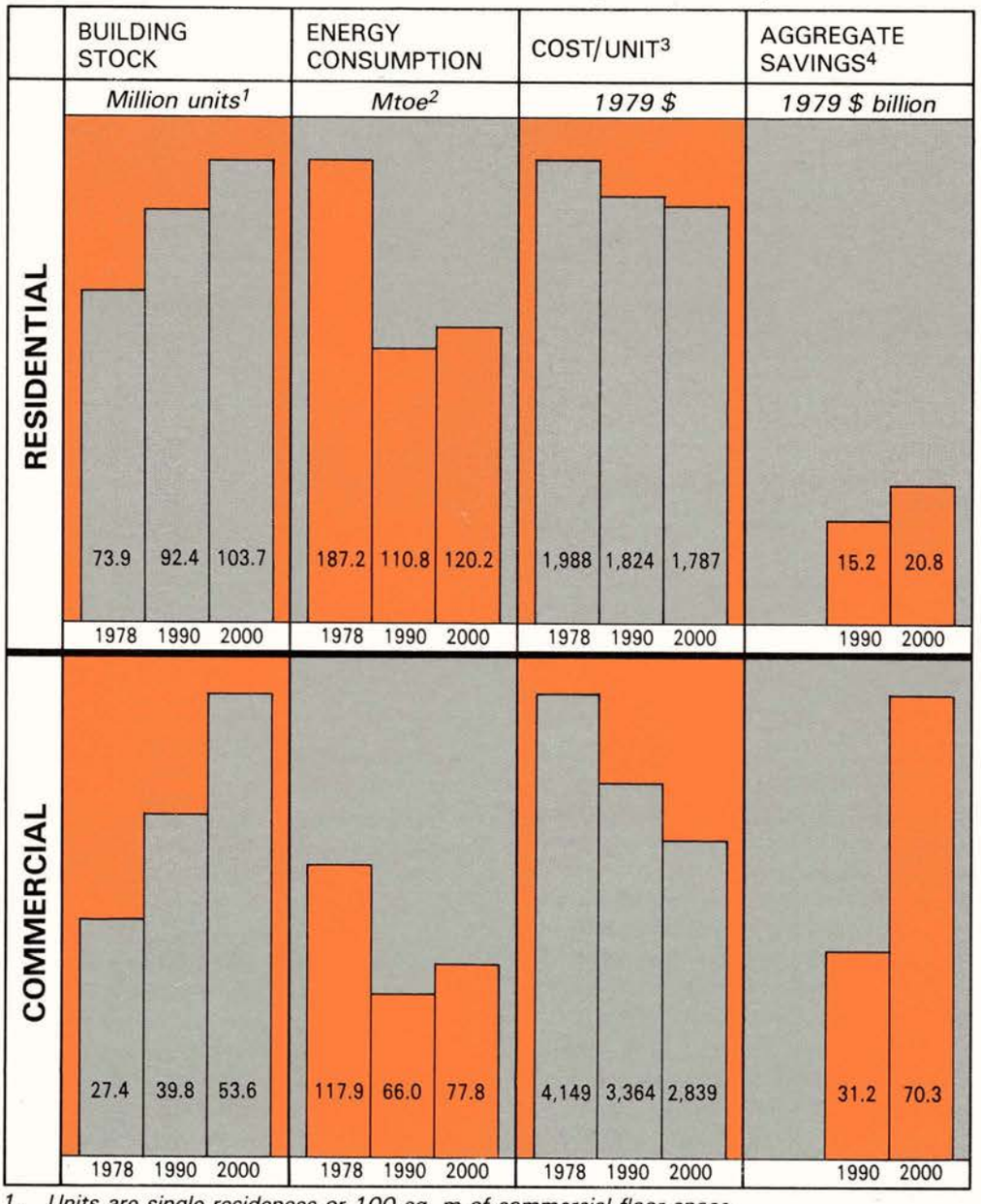
Looking further ahead – after Phase II of COMPASS, which will focus on the transport and industrial end-uses of energy – one of the ultimate objectives of the COMPASS project is to help define some *environmentally favourable energy strategies* for OECD countries. The insight gleaned from the sectoral work should point the way to a number of strategies which, of course, need not be restricted to one particular sector. Waste heat from industry or electricity generation, for example, can be used to heat buildings as well as greenhouses, or for fish farming.

The cogeneration of heat and electricity can also reduce industry's demand for electricity from the grid (as in the Rijnmond case study). If widely developed, it can reduce the need for new central generating capacity which normally releases waste heat into the environment rather than making fruitful use of it.

Environmentally favourable energy strategies can of course involve supply. The most obvious is the use of clean fuels like natural gas in installations where pollution control is difficult. But also, perhaps surprisingly, a new well-controlled coal-fired power plant can be less damaging to the environment than many oil-fired power plants now producing electricity. Furthermore, many experts would look on nuclear power as environmentally favourable, though difficult questions like the risk of serious accident and how to dispose safely of highly radioactive wastes continue to cause public concern about the future role of nuclear.

Some environmentally favourable strategies are already being implemented in various countries; others face economic barriers which might be eliminated if the less obvious benefits of environmental protection were translated into dollars and cents; and some face institutional barriers which could be eliminated by governments if they were convinced of its necessity. The COMPASS project should help reduce these barriers and encourage the implementation of environmentally favourable energy strategies in OECD countries. In this way the environment could become an active participant in elaborating energy policies rather than a passive onlooker or, even worse, a victim.

LEAST-COST ENERGY MODEL (United States)



1. *Units are single residences or 100 sq. m of commercial floor space.*
2. *Million tonnes of oil equivalent.*
3. *Total energy service expenditure, including amortisation of capital investments in energy conversion and utilisation.*
4. *Compared to level with 1978 energy intensity.*

East-West Technology Transfer - The Case of Poland

The "new development strategy" adopted in 1972 by the Polish authorities sought to hasten the industrialisation of the economy through a vast programme of technology transfer from the West, using credits extended by the West's financial system. It represented a complete reversal of the strategy, in effect for over twenty years, designed to mobilise and adapt local resources and skills. An OECD report analyses the impact of this massive inflow of Western technology on the Polish economy[1].

The priority given in Poland's post-war economic strategy to developing capital goods industries had generated imbalances – notably shortages and high prices for consumer goods – that were reflected in periodic crises of popular discontent. In 1968, the government modified its policy slightly by adopting the so-called "selective development" strategy which widened the emphasis to include several other sectors – including consumer goods.

The "new development strategy" launched a few years later was designed to take advantage of the credits that Western banks had started to make available to Eastern European countries and was to lay the basis for healthy growth: Western technology was to provide Poland with the means of becoming an efficient producer of more sophisticated and hence more exportable products.

The new strategy resulted in a rapid increase in trade with non-socialist countries, but it soon foundered on the familiar reefs of Polands's economic rigidities, exacerbated by the downturn in the world economy and by bad weather with its adverse effects on agricultural production. Bottlenecks and inflationary pressures appeared, many investment projects were delayed, and capital goods embodying technology were imported more rapidly than they could be absorbed.

The massive growth in the balance-of-trade deficit due to the failure of exports to keep pace with soaring imports led the government to abandon its new development strategy in 1975 and to introduce a "new economic manœuvre", including draconian cuts in imports from the West.

Imports of capital goods (or embodied technology) had another adverse effect on Poland's balance of payments. Investments in foreign plant and machinery created a need for imports of other manufacturing inputs – raw materials, components, etc. which in turn required additional credits. Thus, between 1976-1980, 60 per cent of foreign credits were used for this purpose and only 27 per cent to finance investment. This points to the main weakness in Poland's industrial and economic strategy – a vicious circle: the large-scale import of foreign technology increased the import intensity of domestic production more rapidly than the economy's capacity to earn foreign exchange, which was needed in larger and larger quantities, both to repay outstanding loans and to finance the transfer of new technology and increased imports needed in the production process.

The Impact

The failure of the "new development strategy" was signalled by the downturn in the rate of economic growth in 1974, after reaching an impressive 10.8 per cent in 1973. Thereafter this decline coincided with rising investment, and was thus indicative of the falling productivity of capital, the growth rate of which became negative in 1976 and 1977. The fall in capital productivity, which had occurred in the midst of a great investment drive, became catastrophic when Poland reduced investment substantially in a vain bid to counteract the alarming rise in the balance-of-payments deficit and the level of external indebtedness.

The impact of imported Western technology is difficult to evaluate, but it seems that the sectors with a relatively high content of this technology did better than the others, and it was probably over-investment in the economy as a whole that caused productivity of capital to fall. This implies that, far from being excessive, technology transfers were insufficient: a more moderate investment policy combined with a higher proportion of imported technology would have been more effective in terms of capital productivity. Hence, the decline in productivity must be attributed in the main to the combination of poor investment planning and the frequent changes of policy designed to combat the adverse economic impact of the "new development strategy". It would seem too that Western embodied technology was imported primarily to modernise plants that continued to produce the same goods rather than new products. Its volume had little impact on the quality or technical sophistication of the products manufactured in the various sectors.

As regards Poland's foreign trade, the main consequence of the investment drive appears to have been an increase in exports to socialist countries. There was no direct relationship between the proportion of Western technology imported by the various sectors and their exports to Western countries: the four sectors which earned most foreign exchange per unit of output in trade with non-socialist countries, were all producers of raw materials or intermediate goods – power and fuel,

1. Technology Transfer in East-West Economic Relations: The Case Study of Poland, 1971-1980, by Zbigniew Fallenbuchl, to be published later in the year.

metals, the food industry and wood–working industries; and their performance was as much related to other international economic phenomena (the energy crisis, soaring prices of raw materials) as to the proportion of Western embodied technology in the production process.

*
* *

It is clear that the sudden acceleration in the transfer of technology in the early 1970s was excessive only in relation to the limited short-run capacity of the Polish economy to absorb it. The actual volume of technology transfer was probably below the longer-term optimum. It is essential for the successful transfer of technology that the economy should not overheat and should be as free from rigidities as possible. In a centrally planned economy, however, policy mistakes take longer to show up, since prices are insulated from world trends, and there is no market to provide the telltale signals that effective economic management relies on. The new development strategy failed because it put the emphasis on rapid rather than balanced growth, and the system was too rigid to respond to the government's aims.

To that extent the system itself is partly to blame for the failure of the strategy. But Poland also lacked the necessary economic infrastructure to produce and export sophisticated capital and consumer goods: distribution networks, experience in applying modern marketing techniques and adequate after-sales service.

The only lasting contribution of this short-lived inflow of Western technology into Poland was the conclusion of a few long-term co-operation agreements with foreign companies, which remain in force and offer Poland some basis for expanding its exports and emerging from its present crisis.

WHAT TECHNOLOGY?

Western technology imported up to 1979 included both the acquisition of complete plants and processes (embodied technology transfer) and the purchase of licences and the signing of industrial co-operation agreements (unembodied technology transfer), not to mention the less tangible communication of know-how (information gleaned from Western publications, use of foreign experts, training of local personnel in foreign universities and enterprises, etc.).

The share of Western embodied technology in total investment outlays increased between 1972 and 1975, remained unchanged in 1976 and declined sharply in 1977. The chemical industry relied most on such technology, followed by the printing, metallurgy and light industries. In the food and mineral industries and in mechanical and electrical engineering, Western technology was only moderately important.

Turnkey Plants

Imports of turnkey plants – over 90 per cent from Western sources – increased sharply in the mid-Seventies, although a relatively small item in embodied technology transfers. Whereas they accounted for 0.9 per cent of the value of total imports in 1971, their share rose to 5.4 per cent in 1976, before falling to 3.4 per cent in 1979. The chemical and engineering industries were by far the biggest importers.

Import Licences

Under the strategy of "selective growth" in the second half of the Sixties, there was a sudden increase in the acquisition of licences; purchases rose from 21 in the 1948-1965 period to 121 between 1966 and 1970. The new development strategy adopted in 1972 brought even greater emphasis on foreign licences; they were attractive to Poland's economic planners because they gave Polish industry immediate access to a higher level of technology at a lower cost and a smaller risk than would be entailed in the domestic development of technology, and they did not imply acceptance of foreign control. Licences were thus considered wholly compatible with the institutional framework of the socialist system, whereas direct investment by foreign firms was basically unacceptable.

The new development strategy envisaged a major increase in licence purchases to start with, to be followed by a period of steady growth, as domestic technological development accelerated and Polish industry moved into a strong export phase on the strength of the production technology it had acquired. Thereafter, growing exports to the West would finance a continuing stream of technology transfer through various channels, including licences. But the sudden cut in imports put a stop to this process, and the exports were never forthcoming to pay for the original investment in imported technology, let alone finance a continued inflow of foreign know-how.

The share of Polish production based on foreign licences is probably still below the optimum level, although it rose from 1.3 per cent in 1966 to 6 per cent in 1978. Today it is estimated that 90 per cent of new product and process development in

To left: *Unitra in Warsaw entered into an industrial Polski.* To right: *The Tewa semi-conductor plant*

Poland is generated by domestic research and development work, whereas in advanced countries up to a third of innovation in industry is the product of foreign licences. In addition, Poland's capacity to absorb and utilise technology acquired through foreign licences was impaired by the inadequacies of its domestic R&D facilities. From this standpoint it would have been more sensible for Poland to have used foreign loans to expand and modernise its own R&D establishments than to acquire foreign licences which it could not utilise properly.

Overall the trade and balance-of-payments impact of foreign licence acquisition was negative. Exports rose little as a result: the value of exports manufactured under licence increased from 4.4 per cent to only 6 per cent of total exports between 1971 and 1978. Moreover, most of the licence-based exports went to other socialist countries during the 1971-78 period, although overall Poland's direct exports to non-socialist countries increased to 60.5 per cent in 1976 before falling to less than 50 per cent in 1978.

The biggest problem was not, however, the failure of products manufactured under licence to generate hard currency earnings. It was the total cost of importing the technology and all the parts and components it required that proved the biggest mistake in the planners' arithmetic. At its highest level, in 1977, licence-based production was three times more import-intensive than the average for Polish industry as a whole.



cooperation agreement with Grundig in 1974 to manufacture tape recorders as a subcontractor. Production ceased in 1981. (1975 photo). Middle: *The Fiat in Warsaw, a cooperative research effort with France. Thomson supplied the license and equipment.*

Three industries accounted for almost all of the licence-induced imports – engineering, chemicals and heavy machinery.

To sum up, it is clear that by selling licences, Western enterprises create additional outlets – one might say a captive market for their products – both in the short term for the investment goods necessary to implement the licences and in the long term for parts and materials. In the absence of a commensurate increase in the export of products manufactured under licence, especially to the West, both the import and the implementation of foreign technology became an unacceptable burden on Poland's balance of payments.

Although foreign licences helped Poland to achieve a balance-of-trade surplus in manufactured goods with its CMEA neighbours, they did not help it to earn the hard currency needed to convert its balance-of-payments deficit with the West into a surplus large enough to repay the massive loans it had contracted with the Western banking system.

Less Tangible Co-operation

One positive element in the strategy was the desire to open up Poland to Western scientific and technological thought and developments by authorising imports of technical publications. But the inflow of published material was inadequate and came too late for Polish engineers and technicians to be able to take full advantage of the embodied technology and production licences that were being purchased pell-mell. When the strategy finally collapsed, the government cut back on this form of technology transfer as severely as on the others, and this could seriously impair long-term technological progress in Poland.

The strategy also provided for some relaxation of controls over foreign travel to enable Polish businessmen and industrialists to have more direct contact with their opposite numbers in the West, as well as to facilitate the task of sales and marketing personnel in their attempts to market Polish goods in Western countries. The international exchange of research staff and academic experts was also encouraged. On the other hand, the number of Polish students allowed to go to Western universities continued to be tightly controlled. Between 1950 and 1978, only 21 Polish students graduated from foreign universities (all in France).

On the other hand, industrial co-operation agreements with foreign companies did provide for many Polish specialists to be trained abroad, especially in highly capital-intensive sectors, such as the oil and computer industries.

Co-operation Agreements

Another item of the new strategy was the expansion of industrial co-operation agreements with Western firms. Among the few significant agreements which contributed to the development and expansion of Polish industry was the 1965 agreement with Fiat, providing for the Fiat 125 Polski model to be assembled in Poland, which led to further cooperation agreements with Western motor manufacturers for the production of parts and components. (41 between 1964 and 1968, and a further 200 or so in the next three years.)

Industrial cooperation with Western companies came under criticism subsequently in Poland. In the absence of preferential trading arrangements, Polish exports to Western countries were impeded by tariffs and quota restrictions, especially in the EEC area. It was also alleged that Western firms asked their Polish partners to pay unrealistically high prices for products supplied under cooperation agreements and that in some cases the original prices quoted were reduced by 50 or 60 per cent in the course of negotiations.

At the same time, difficulties arose because of internal Polish practices including:

- insufficient incentives for companies to conclude industrial cooperation agreements;
- the short planning horizon of many companies;
- the distortion of domestic prices in the planning system which makes it hard to calculate the profitability of cooperation and leaves companies with too little autonomy;
- the lack of direct contact between Polish companies and their Western partners;
- difficulties in calculating costs, profits and losses as a result of the distorted rates of exchange.

Income Support for Farmers

What are the effects of the various OECD schemes of support for farm incomes on trade, on macro-economic policy and on agriculture itself? A report by OECD's Agriculture Committee, which is to be published later in the year, examines the experience of eight OECD countries[1] and the European Economic Community. The report is part of OECD's work on positive adjustment.

Why Support Farmers' Incomes?

One commonly held view is that, if they meet certain standards of efficiency, farmers should be able to earn incomes that are comparable with those of other workers. Usually public intervention is required to achieve governments' income objectives, which are being pursued in different ways in different countries.

Agricultural resources are slow in adjusting to changed market conditions because of structural, biological, climatic and other constraints. This implies instability of prices, a low return on resources and claims for support on the part of farmers.

Current Farm Incomes

It is more difficult to maintain farm incomes in the current economic situation than it would be if economic growth were satisfactory. After reaching a peak in 1974, farmers' incomes in the OECD area have levelled off in real terms or even declined. In many European countries, however, farm incomes improved markedly in 1982 because of higher support prices combined with good harvests.

Prices of fuel and fertilizers have increased more rapidly than other prices, interest charges have risen and so has depreciation. Product prices on the other hand have increased less rapidly, and value added per person in agriculture has remained below the average for other occupations in most countries. Many farmers, however, are helped by incomes from other activities.

Moreover, income distribution within the farming sector is very unequal in almost all countries. For example, arable farming tends to be more profitable than cattle raising. There are also regional differences in income, farmers in lowland areas generally having higher incomes than those in remote or mountainous areas for example.

Three Basic Approaches

Support programmes range in scale from efforts to stabilise prices of a few commodities with modest government involvement to comprehensive income-support systems requiring large-scale intervention. A distinction can be made between three types of approach:

- Commodity-oriented measures which provide income support mainly through action on product prices. Most measures now in effect are of this type which has several varieties.
- Cost-reducing measures. These have become more important with the cost inflation of the Seventies.
- Direct income support which is less prevalent and usually used along with price and other supports.

What is the Impact?

Commodity-oriented mechanisms

- *Support of market prices*

Market prices of farm products are supported at pre-determined levels which entail protective measures at the border. Price support does not exclude fluctuations of income since the volume of production can vary. Nor does it exclude income inequalities. Low-income farmers do benefit to some extent from price supports even though their production is small, but large-scale farmers benefit the most from any system of general price support.

Market-price supports may draw into agriculture resources which, from a purely economic point of view, might be more efficiently deployed elsewhere (this argument may apply to other types of price support as well) and cause output to rise. If the additional output cannot be sold domestically, price maintenance becomes more difficult: the surplus may be exported with full support for unlimited quantities through subsidies, or levies may be imposed so that the producer pays part of the cost of surplus disposal. In the former case, the budgetary cost may act as a constraint on price support. In the latter case, the average price for the producer is diluted. But experience shows that only a significant price cut will slow down production. If quotas are imposed upon individual farmers and penalties are enforced, farmers are assured of receiving the support price for the amount produced under the quota, yet production is held within certain bounds.

If support prices are kept high, consumers have to shoulder the costs unless the budget provides for consumer subsidies. In assessing costs to consumers, one must bear in mind that consumer prices do not necessarily follow producer prices and that world market prices are not usually representative of what prices would be if the markets were completely free. From the point of view of positive adjustment, a system of general market-price support is neither very transparent, nor target-specific nor welfare-efficient.

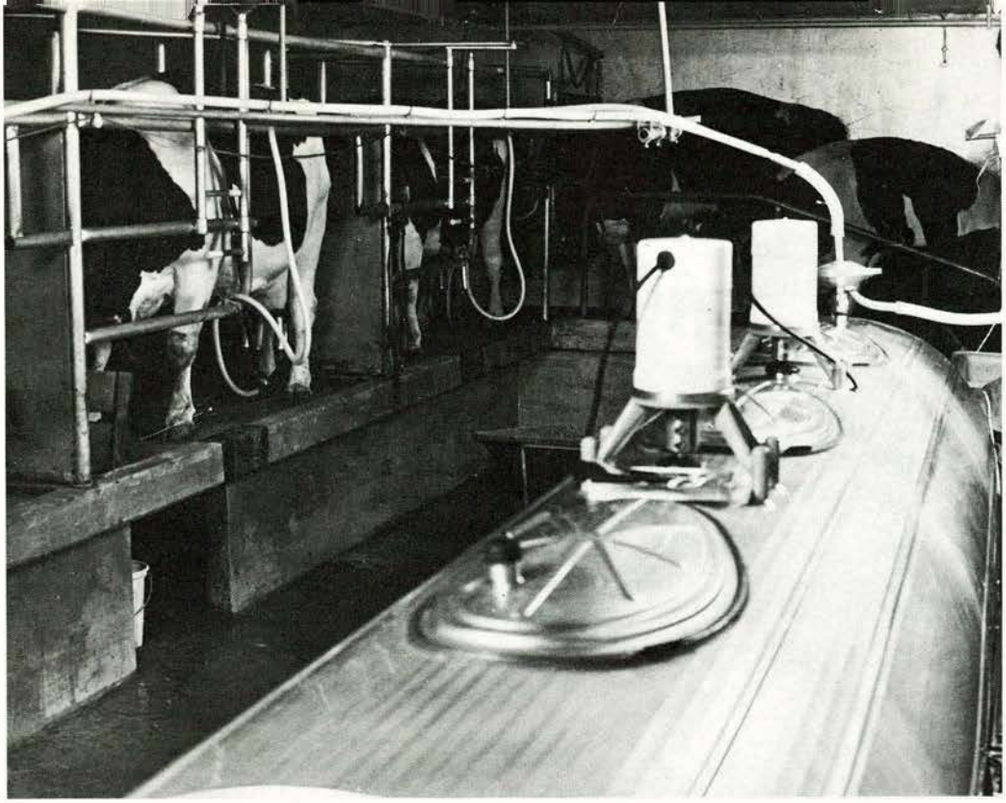
It is obvious that costs to consumers and taxpayers could be reduced by lowering the level of support, but this is not always politically feasible. Only if market-price supports are maintained at reasonable levels will they stabilise prices on the domestic market and benefit both consumers and taxpayers.

- *Deficiency payments*

Under this system, it is producer prices that are guaranteed while market prices are free to fluctuate. If the market price is less than the producer price, the difference is made up through budgetary payments to the farmer. This scheme has some of the same disadvantages as market-price support, first, as to income distribution, since less efficient farmers receive the same unit prices as bigger, more efficient farmers. Moreover farmers' incomes fluctuate with output.

Under both systems, a high level of support tends to increase output. However

1. Austria, Australia, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States.



Price support: dairy products in the European Community (above).
Extra support for farmers in remote regions: Norway (below).

in the case of deficiency payments, the farmer faces the actual market situation before receiving payment and may therefore be more realistic in his expectations. If the producer's guarantee is not too high, and the market price rises above it, deficiency payments will not be necessary. Thus with deficiency payments the market price does play some role in resource allocation. Obviously costs can be reduced by limiting the volume of production eligible for such payments.

As to the effect on trade, foreign suppliers can compete on the importing country's market. However, if the producer's guarantee is high enough relative to market prices, output will increase and there will be less need for imports unless there are market-sharing agreements with foreign suppliers. If the world market price falls to very low levels, because of oversupply, the cost of deficiency payments may be very high, and governments may be led to regulate domestic markets, e.g. by imposing minimum import prices. If deficiency payments are made for exported produce, they amount to a kind of export subsidy.

A deficiency payments system, however, is rather transparent since the costs can be identified. Furthermore, with such payments food prices are usually low, and this will benefit the low-income consumer. It also contributes to combatting inflation.

• *Two-price schemes and stabilisation schemes*

These schemes are often used in exporting countries to shield producers or consumers from strong price fluctuations originating in the international market. In some cases, the home market is separated from the export market, producers receiving a guaranteed price for domestic sales (this price may be allowed to move within a given price band). In others, producers are protected from low prices for their *exports* through price stabilisation schemes that are frequently underwritten by governments. The two methods may also be used in combination.

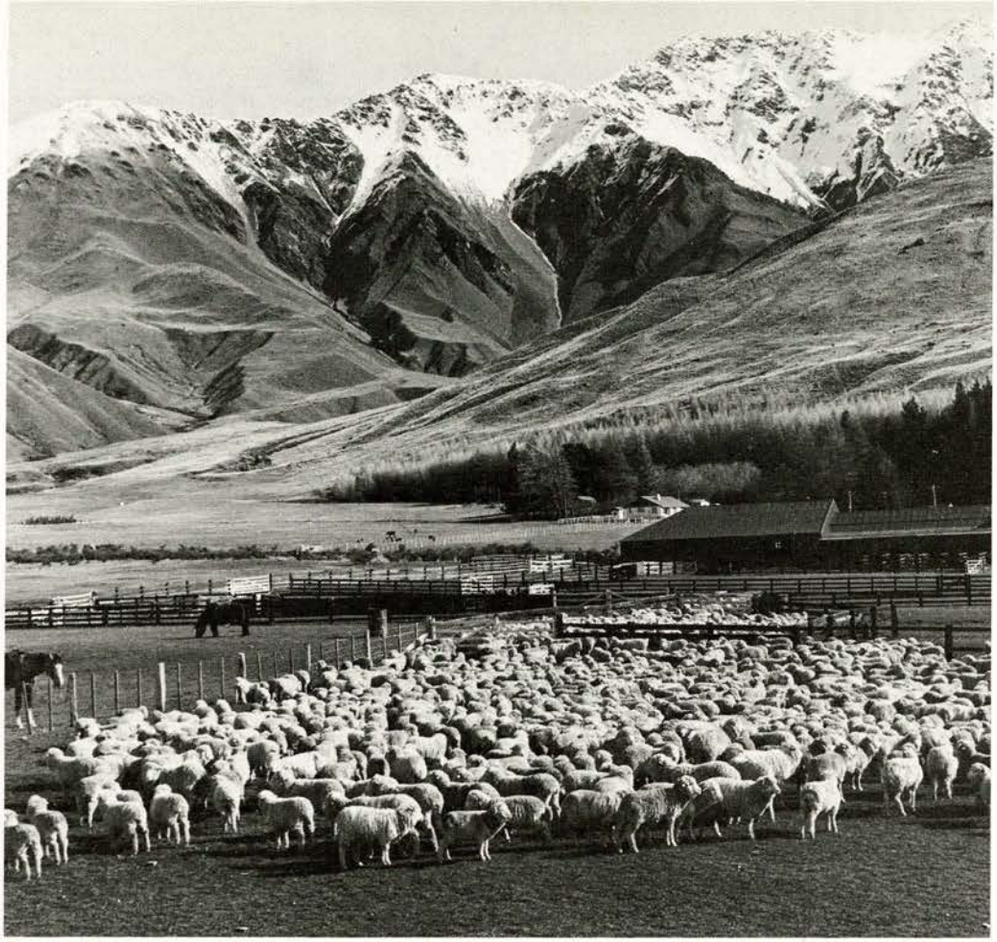
These schemes, which are principally aimed at price stabilisation rather than income support, may, nevertheless, provide some income support, especially for sales at home, and in periods of low international market prices. If international prices are higher, the domestic consumer may benefit.

The schemes as currently applied provide little incentive for increasing output but help to maintain the farmers' production and export potential in periods when international market prices are low.

Cost-reducing measures

The original purpose of the various cost-reducing measures used in OECD countries was to raise farm productivity by encouraging the use of modern inputs like fertilizers and improving production conditions (irrigation, land consolidation, etc.). Increasingly, however, the measures are considered as an important element in income support. The schemes comprise a wide range of subsidies on current inputs, on investment, interest rates, freight etc. Commercial farmers who use large amounts of capital are the main beneficiaries. But if selectively used, for example on farms "suitable for development", on farms in less-favoured areas or if used to stimulate certain types of production, input aids can improve the incomes of target groups.

Most cost-reducing measures tend to stimulate production. Furthermore, input subsidies give domestic producers a competitive edge over foreign suppliers who are not subsidised to the same extent. Any



Export price stabilization: meat in New Zealand.

large-scale subsidisation of costs is, of course, expensive in budgetary terms, but domestic consumers may benefit from somewhat lower product prices. Input subsidies on the whole are transparent since they appear in the budget, but the full cost to the government of subsidising long-term investment and cheap credit is not always easy to measure. From the standpoint of positive adjustment, it would appear that cost inflation in agriculture can best be dealt with through macro-economic measures against inflation rather than through input subsidies.

Direct income support

In a few OECD countries, special schemes have been designed to improve the incomes of farmers in less-favoured areas and/or small farmers who are not adequately helped by general agricultural measures such as market-price support. The main reason for giving such support is to promote regional balance, equity and the continued use of agricultural land in areas that would otherwise be abandoned. Income assistance is provided through direct income payments which may be a lump sum per farm or linked to acreage and the number of animals.

In contrast with the other measures discussed, direct income payments may bring about more equal income distribution in agriculture if the amounts involved are not too small. There will be an effect on output, but not much, because the target farms have limited production capacity. Direct income transfers are transparent, and their budgetary cost is not very high when they are used in connection with other schemes as is now the case, though their administration is often cumbersome. Moreover direct support for farmers with special problems diminishes the need for high levels of support for the farming population as a whole. So far there is little evidence of countries switching on a large scale from other measures to this system of direct payments.

In recent years, farmers in some countries have received a lump sum at the end of the marketing season, financed out of the budget, to make up for sharply falling incomes and corresponding to the amount of the fall. The measure is transparent, does not seem to stimulate uneconomic output and tends to stabilise returns. If systematically applied, however, the cost of such measures could be rather high, and the system may work against necessary longer-term structural adjustment.

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Farm-income support policy is one element of a complex set of policies – agricultural, economic, social, regional and environmental. In fact, each country uses a variety of income-support measures. OECD's report makes the following points by way of conclusion:

- What matters most is not always the type of income support measure used but how it is used and how much support is generated. Excessive support will have very unfavourable economic side effects which are incompatible with positive adjustment.
- At present, income support to farmers is mostly provided through support and stabilisation of product prices. Those countries which rely mainly on market-price guarantees for income support do not see deficiency payments as a feasible alternative, except for a few products. In general, commodity-oriented measures are an inefficient means of solving the income problems of small producers or those farming under difficult conditions.
- There is a danger that commodity-oriented support will have unintended side effects on resource allocation and the ability of the sector to adjust.
- Almost all income-support measures have some effect on production and consequently on trade, but there are differences in the extent to which production is affected. To the extent that such measures generate excess supplies, they may lead to high levels of import protection and the use of export subsidies which may distort international trade.
- A cost/benefit analysis of income-support measures implies asking whether society is prepared to accept the cost of income support so as to achieve the benefits desired, whether purely economic or not.

No single solution is proposed, but certain approaches, and especially certain types of application, seem better suited to achieving broad policy objectives than others. Security of supplies is a valid policy objective but should be considered in an international context. If treated as synonymous with maximum national self-sufficiency, the concept of food security is incompatible with the orderly development of international trade. In this context, the positive contribution of an open, multilateral trading system to world food security should be taken into account. Equally, the trade-offs between policies aimed at improving efficiency and those with wider social and other objectives require careful and constant monitoring so that economic distortions within agriculture, between agriculture and other sectors and between countries are minimised.

Changes in the main systems of agricultural income support will occur only gradually, and the search for possible alternative approaches requires a longer-term view, keeping in mind the need to stabilise prices in line with underlying longer-term trends on domestic and international markets. It may be useful to pursue discussions in international fora on the feasibility of changing the emphasis in agricultural income support from commodity-oriented measures to direct transfers.

Country Problems and Strategies: Belgium, Luxembourg and Turkey

BELGIUM

The highly exposed Belgian economy has suffered from several marked and growing imbalances since the first oil crisis. Its problems started with consistently high increases in real wages during the 1970s which had the effect of depressing corporate profit margins, leading to slower growth in industrial output, declining employment and a sharp increase in public sector expenditure, which contributed to a very large public deficit. At the same time, Belgium's balance of payments swung into deficit, and its external indebtedness grew substantially.

The deterioration of the Belgian economy accelerated in 1980-1981, following the second oil crisis. The public sector deficit (including financial transactions) reached the equivalent of 16½ per cent of GNP in 1981, one of the highest in OECD (this corresponds to a deficit of 13¼ per cent of GNP on a national accounts basis), and debt servicing alone accounted for 8 per cent of GNP. Outstanding general government debt reached 88 per cent of GNP in 1981, one of the highest levels in the OECD area. The external deficit (exacerbated by the impact of the public sector deficit) increased to 4½ per cent of GNP. Unemployment had risen to over 12 per cent of the labour force, and output had been falling for 18 months. By the beginning of 1982, these fundamental imbalances had become appreciably more marked than in most other OECD countries and were tending to become self-perpetuating.

From 1979 onwards, the government had attempted to formulate adjustment policies designed to reduce the share of public expenditure in GNP and, more recently, to curb the growth in real wages. But in an economy where exports account for 70 per cent of GDP and over 40 per cent of total demand, international economic influences bulk large and detract from the effectiveness of domestic policies. As it is, the structure of production in the Belgian economy has not adapted to changing demand, while declining sectors continue to account for a larger proportion of activity than in other OECD countries. Moreover, its traditional export markets have experienced slow growth, and Belgian industry failed to take advantage of the rapid growth in OPEC's growing demand for imports up to 1981.

In the early months of 1982, however, a far more ambitious economic recovery plan (plan de redressement) was introduced, whose primary goal was to shift incomes from households to businesses in order to restore corporate profitability. The means employed was a devaluation of the franc and a partial suspension of wage indexation. These were radical departures from traditional policies for a country committed to the stability of the exchange rate against European currencies and to contractual wage determination on top of full indexation. The second plank of the new programme involved measures designed to reduce the public sector deficit and to balance the social security account.

The first step was the devaluation of the franc by 8½ per cent in February 1982, accompanied by a price and wage freeze lasting until the end of May 1982. This, together with a modification of wage indexation for the remainder of 1982, prevented a wage/price spiral, although inflation did increase in 1982 to 8.7 per cent (from 7.6 per cent in 1981). Domestic demand continued to fall in 1982, but a series of measures was taken to limit the fall in employment, ranging from the extension of early retirement schemes to the mandatory hiring of young trainees. Work-sharing schemes were also introduced in 1983, with the initial aim of reducing working hours by 5 per cent and increasing employment by 3 per cent by the end of 1983.

The plan also embodied an ambitious objective for the public sector in 1982, which was to hold the central government current deficit at its 1981 level and to balance the social security account without raising the overall tax take. While the targets set for the 1982 deficit were exceeded, the overrun was much less than in 1981. Even so, the gross borrowing requirement (including debt reimbursement) was 18 per cent of GNP.

Although the programme is viewed as a medium-term strategy, it has already had a positive impact in a number of areas. Inflation has been kept in check (despite the effects of the devaluation) and external competitiveness has improved, resulting in an improvement in the real trade balance and some reduction in the Belgium-Luxembourg Economic Union (BLEU) current account deficit. But while the allocation of national income has shifted markedly in favour of the corporate sector, investment remains sluggish, and unemployment has continued to rise, reaching 14 per cent at the end of 1982.

Wage restraint has helped contain inflation by preventing a surge in production costs, and the devaluation enabled industry to increase its profit margins substantially. The underlying trend for manufacturing output was flat in 1982, while GDP for the year as a whole declined slightly. The rise in unemployment was due to a 2 per cent fall in the level of private-sector jobs, where the slight improvement in activity translated into a reduction of short-time working and a rise in productivity, and to no growth in public sector employment.

Fiscal policy, which has already been tightened on both the expenditure and revenue sides, is framed in the context of a medium-term target of reducing the government borrowing requirement to 7 per cent of GNP by 1985. The emphasis here is likely to be on reducing public expenditure and transfers rather than on increasing the tax burden, though.

The government's budgetary measures for 1983 could enable public spending as a percentage of GNP to be stabilized for the first time in a decade. Important as it is to cut the public sector deficit, there is a danger that attempts to move too quickly in that direction may prove counterproductive on account of their deflationary effects. On the revenue side, there might be room for increasing indirect taxes, which are relatively low, in contrast to direct taxes which are appreciably above the European average. Cuts in spending have so far been achieved through reducing a large number of welfare benefits, but without really modifying the system as a whole. The authorities might find it necessary, and perhaps more equitable, to reconsider the overall objectives and the financing of the social security system which, having been put in place during a period of high growth, now needs to be adapted to the present-day capacity of the economy.

A slow upturn in activity is expected in 1983-84, which will be largely dependent on the economic recovery in Belgium's export markets. Inflation should fall appreciably, and BLEU's current account deficit could be eliminated by end-1984. But unemployment will remain high for the foreseeable future, as will the public sector deficit.

Exports will be the mainstay of economic activity over the forecast period. Companies will be able to take advantage of their improved profitability to increase their share of foreign markets. Moreover, given Belgium's current level of relative costs and prices, its industry should now be well placed to benefit from the recovery anticipated in the OECD area as a whole. This will be essential to offset the insufficiency of domestic demand growth and go some way to alleviating its consequences – namely, high unemployment and a high public sector deficit.

The short-run cost of the economic recovery plan has been high but given the size of the balances weighing on the economy, this was probably the only way to bring about a sustainable improvement. The authorities are planning to monitor closely wage developments in 1984, when there are to be no contractual increases beyond indexation, and the government has been authorized by Parliament to intervene so as to ensure that wage costs in Belgium rise no faster than in partner countries. If a return to indexation after 1984 cannot be avoided, it should be applied less rigidly to ensure that the benefits of the existing strategy are not wiped out.

The economy's competitiveness depends not only on reducing relative wage costs but also on adapting the structure of production to demand. This would be made easier if the fall in real interest rates which began in 1982 continued.

Unemployment is likely to prove a more stubborn problem, since it has reached such proportions that an upturn in activity will not be enough to produce a significant number of new jobs. The government's work-sharing measures are one of the most original features of its economic policy and may help to reduce job losses. But they will only have a lasting effect if they do not reduce productivity growth and if they are framed in a context of shifting relative factor costs in favour of employment.

LUXEMBOURG

Although the authorities considered Belgium's devaluation as inappropriate for Luxembourg, the Luxembourg franc was devalued by 8½ per cent in line with the Belgian franc, in order to preserve the Monetary Union, and measures were taken to reduce domestic inflationary pressures. In the event, the controls on prices and wages during the months immediately following the devaluation succeeded in keeping the rate of inflation at 9½ per cent, below what was expected. Domestic demand fell sharply again in 1982, and foreign demand, especially for steel products, was also depressed. Unemployment rose, though it ended the year at the relatively low rate of 1½ per cent.

The authorities maintained their cautious budgetary stance; the State's budget deficit in 1982 fell to an even lower level than projected, and is expected to remain small in 1983, as the new measures of additional aid to the steel industry which were announced at the end of April, is to be financed by both direct and indirect taxes. In 1982 there was a 3¾ per cent fall in industrial production, coming on top of a 6¾ per cent decline in 1981. This means that industrial output is now below the previous trough recorded in 1975. Unlike 1981, however, it was not only steel production that declined, but other sectors as well. Banking, in contrast, enjoyed another year of substantial expansion.

These trends continue the long-term structural changes that began in the early 1970s, and which accelerated after the first oil crisis. The process of de-industrialisation, offset by a sharp growth in the services sector, has been more marked in Luxembourg than in other European countries. Whereas industry's share of total value added in 1974 was well above the OECD average, at 47 per cent compared to 38¼ per cent, by 1980 this position was reversed, with industry (including construction) in Luxembourg accounting for 33 per cent of total value added against an OECD average of 37½ per cent.

The sharp contraction in industry's relative share of GNP is largely a result of its concentration on steel making. The steel industry accounted for 65 per cent of manufacturing output in 1974, but by 1982 this had fallen to under 40 per cent. Crude steel production in Luxembourg has fallen faster than the OECD average, in fact; capacity was cut back from 1976 onwards whereas, for the OECD area as a whole, capacity did not begin to decline until 1980-1981. Nevertheless, there remains greater excess capacity in Luxembourg than elsewhere; capacity utilisation has dropped from 95 per cent in 1974 to about 55 per cent now, whereas in the OECD overall, capacity utilisation was around 58 per cent in 1982.

The decline in manufacturing was counterbalanced by the rapid development of the tertiary sector, mainly in the field of financial services. In 1974, banking and insurance accounted for just over 10 per cent of total value added, and this ratio doubled by 1978 and has undoubtedly increased further since then.

The Government has sought to limit the fall in industrial production with a series of measures for promoting structural adjustment. These were designed to encourage the modernisation of the steel industry, to stimulate investment in existing industries and to facilitate the creation of new innovative, high technology ones. Considerable state financial aid has been given to the steel firms, mainly to protect employment, and further government assistance is being extended to ease their continued contraction.

Non-steel enterprises have not expanded in the past eight years to take up the slack. In 1982, the level of employment in manufacturing industry other than steel was nearly the same as in 1974, and non-steel output has increased more or less in line with the EEC average. Job creation in the new industrial activities established since 1976 amounted to some 2,400, with chemicals being relatively important.

The services sector is likely to increase its share of total output over the next few years, probably at a slower rate than in the 1974-1982 period. The main reason for this is that steel production is destined to

fall further as capacity is cut back in line with the EEC's strategy for sharing out steelmaking amongst its Member countries. Employment in Luxembourg's steel industry is thus expected to drop from about 16,800 in 1982 to 11,000 or 11,500 in 1987, much the same annual rate of outflow as in the past eight years (around 7 per cent).

TURKEY

Following a sharp deterioration in its economic performance in the second half of the 1970s, Turkey adopted an economic stabilization and recovery programme in January 1980. This was designed to reduce inflation and the balance of payments deficit, both of which had soared as a result of the government's attempts to maintain a high rate of economic growth in the wake of the first oil crisis. Instead of pursuing adjustment policies aimed at counteracting the effects of the sudden jump in oil prices, the authorities opted to retain an expansionary stance and to fall back on Euromarket borrowing. The widening current account deficit developed into a payments crisis in 1977, and successive policy initiatives in 1978 and 1979 failed to turn the situation round.

During the three years the new strategy has been in force, remarkable progress has been made in curbing inflation and trimming the external payments deficit. At the same time, a positive rate of economic growth, relatively high by recent OECD standards, has been maintained, while the government has embarked on a restructuring programme aimed at enhancing the efficiency of the industrial and financial sectors through greater reliance on market forces.

Structural Reform

The new economic programme was devised on the basis of tight fiscal and monetary policies in the hope of re-establishing Turkey's creditworthiness, which had been lost as a result of the 1977-78 balance of payments crisis. These policies succeeded in cutting back the current account deficit from $3.2 billion in 1980 to just over $1 billion (2 per cent of GNP) in 1982. The rate of inflation, which peaked at 130 per cent on a year-to-year basis in the first few months of 1980, was slashed to only around 25 per cent by the end of 1982. This was nearer the prevailing rate recorded during the 1970-1977 period, when inflation averaged nearly 20 per cent.

The new economic programme created the conditions for recovery in economic growth, which spurted to 4.2 per cent in 1981 and 4.4 per cent in 1982, after being negative at −1.1 per cent in 1980 (and averaging 0.5 per cent a year in the three years 1978 to 1980). Unemployment remains a persistent problem, though mainly as a result of the high rate of population growth. The rate of unemployment (including disguised unemployment in agriculture) rose to an estimated 18.2 per cent in 1982, making an average for the 1978-1982 period of 15.4 per cent, compared to 12.2 per cent in the 1973-1977 period.

The tight fiscal policy stance has succeeded in reducing the budget deficit to 1.2 per cent of GNP (against 1.6 per cent in 1981). This apparently modest level of deficit is however a significant burden in a country in which capital is scarce.

The Central Bank cut its credit to the private and public sectors by an average of 20 per cent in real terms in 1982. This, in addition to high real interest rates which have reduced the demand for credit, had the effect of limiting the rise in total credits extended by the commercial banks to 28 per cent in 1982, compared to 67 per cent in 1981. The government has attempted to improve the performance of the banking sector *inter alia* by requiring banks to increase their capital. With bank profitability declining and the number of doubtful loans in their portfolios increasing, many banks have found their outdated branch structure a costly millstone, and the new measures are likely to prompt the closure of unprofitable offices. At the same time, the authorities have taken steps to reduce the cost of credit, by lowering interest rates on time deposits and reducing reserve requirements, for instance, all of which is expected to lower banks' costs by 5 to 7 per cent and could open the way for real interest rates to come down further from their existing high level of about 15 per cent.

Structural reform in manufacturing is another objective of the new economic programme. After many years of inward-looking development policies, which have sheltered Turkish industry from market forces, companies are now being exposed to greater competition, designed to bring about the re-structuring of inefficient sectors. Many companies have been able to adapt and to compete successfully in foreign markets, as witnessed by the recent surge in Turkish industrial exports. In other sectors, adjustment has been slow, because of the indivisibility of the capital equipment in place, or because there is understandable reluctance to recognise that some recent investment in new plant should never have been made in the first place – which poses a difficult problem for the government, especially where jobs or the economic development of a backward region are at stake. In a few exceptional cases, banks, or the state itself, have acquired majority holdings in companies in difficulty.

Export-Led Recovery

The long-term adjustment of the Turkish economy has resulted in industry becoming the main motor of growth, although agriculture, which now accounts for just over 20 per cent of GDP and about 60 per cent of employment, is less dependent on the hazards of climate, thanks to considerable infrastructural investment in recent years. Industry now contributes over 26 per cent of GDP, but it no longer averages the 10 per cent annual increase in value added achieved before the crisis. After falling by some 2 per cent a year in 1978-80, industry's value added recovered sharply in 1981, with a 7 per cent rise. But the tight policy stance limited industrial growth to only 3.2 per cent in 1982.

Industry's export success has been a major factor in the improvement in Turkey's current account recently. During the 1970s, the fall in the terms of trade and an overvalued currency discouraged exports, especially as domestic demand was strong. The Lira was devalued in March 1978 and again in June 1979 in an attempt to improve export competitiveness, but it was only with the introduction of the new economic programme and the 33 per cent devaluation of the Lira in January 1980 that the stage was really set for an export-led recovery. Restraint in growth of domestic demand also contributed. Between 1980 and 1982, the dollar value of exports doubled, from $2.9 billion to $5.7 billion, and their share of GNP also doubled, from 5 to 11 per cent.

Manufacturing industry was largely responsible for this performance: exports of processed and manufactured goods increased by 120 per cent in 1981 and 50 per cent in 1982 in dollar terms. Sectors such as chemicals, rubber and plastics, petroleum products, iron and steel, metal products and machinery, electrical equipment and motor vehicles all recorded exceptionally rapid export growth, after accounting for only a small share of foreign sales in the 1970s. In consequence, the share of textiles, clothing and leather goods in total manufacturing exports declined from 60 per cent in 1973 to 37 per cent in 1982. Export growth has been particularly strong in the markets of North Africa and the Middle East, and in 1982 they accounted for 45 per cent of total Turkish exports, against only 22 per cent in 1980. Turkish engineering firms, stimulated by weak domestic demand and improved competitiveness have extended

their activities abroad, especially in the Middle East and have $17 billion on their order books. On the other side of the account, imports have increased only slowly in the past two years; following a 56 per cent jump in 1980 (due to a doubling of the oil bill), imports rose only 12.9 per cent in 1981 and are thought to have fallen by 2.2 per cent in 1982 in dollar terms.

The economy is expected to continue along its present path, with GNP growing by 4¼ per cent in 1983, though more as a result of a 4 per cent increase in domestic demand than by virtue of high export growth. Inflation is expected to remain at around its present level, while the trade deficit could narrow from $3 billion in 1982 to $2.6 billion in 1983 and the current account deficit from $1.1 billion to $800 million.

With the most pressing of its short-term economic problems behind them, Turkey's policy-makers can concentrate on medium-term considerations. An inflation rate of 25 per cent is still too high and the balance of payments remains vulnerable. But besides framing economic policy to bring about a further improvement in these areas, the government of the OECD's poorest country has to grapple with some longstanding underlying weaknesses in Turkey's economic fabric. For example, there is a yawning gap between the more prosperous urban industrial areas and the backward rural areas which needs to be reduced to ease social tensions. Secondly, the modernisation and expansion of the industrial and service sectors needs to be accelerated, and increased investment would be desirable in the agricultural sector, with a view to making Turkey a major exporter of food, notably to African and Middle Eastern countries.

All in all, Turkey's principal human and natural economic potential is still relatively unexploited. For example, little headway has so far been made in developing its tourism industry, where there are enormous possibilities for attracting both package tourists and more sophisticated travellers. An improvement in economic performance in sectors like tourism and in the productivity of agriculture and industry would go a long way to assuring more balanced growth and an improved external account. The prospect that the grace periods on Turkey's rescheduled debt expire in 1985 with the consequence that debt repayments will increase to $1.8 billion a year, compared to $800 million last year, should be an added incentive to bring down inflation. This would also help improve Turkey's creditworthiness to enable it to finance its increasing debt repayments in the next few years through additional commercial foreign borrowing.

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