European Communities

EUROPEAN PARLIAMENT

Working Documents

1983-1984

16 December 1983 DOCUMENT 1-1172/83

Report

drawn up on behalf of the Committee on Energy, Research and Technology

on the Communication from the Commission to the Council on Energy and Energy Research in the Community: A Five-Year Programme of Action and its Financing
(COM(83) 315 final)

Rapporteur: Madron SELIGMAN

PE 86.125/fin.

English Edition

By letter of 26 June 1983, the Commission of the European Communities requested the European Parliament to deliver an opinion on the Communication from the Commission to the Council on Energy and Energy Research in the Community: a Five-Year Programme of Action and its Financing. The Council did not consult Parliament.

By letter of 15 September 1983 the Committee on Energy, Research and Technology therefore asked the President of the European Parliament to authorise the committee to draw up an own-initiative report on the Communication.

On 29 September 1983, the President of the European Parliament authorised the Committee on Energy, Research and Technology to draw up a report as the committee responsible and the Committee on Budgets to deliver an opinion.

At its meeting of 12 July 1983, the Committee on Energy, Research and Technology appointed Mr SELIGMAN rapporteur.

The committee considered the Commission's communication at its meetings of 12 July, 20 September and 18 October 1983. At its meeting of 24 November the committee adopted the draft report and the motion for a resolution unanimously.

The following took part in the vote: Mrs WALZ, chairman; Mr SELIGMAN, vice-chairman and rapporteur, Mr HERMAN (deputizing for Mr FUCHS); Mr LINKOHR; Mr MORELAND; Mr NORMANTON, Mr PETERS (deputizing for Mr SCHMID); Mr PETRONIO, Mrs PHLIX; Mr PURVIS, Mr SALZER, Mr SASSANO, Mr TURNER (deputizing for Sir Peter VANNECK).

The opinion of the Committee on Budgets is attached.

This report was deposited on 9 December 1983.

C O N T E N T S

The Committee on Energy, Research and Technology submits to the European Parliament the following motion for a resolution, together with explanatory statement:

MOTION FOR A RESOLUTION

on the Communication from the Commission of the European Communities to the Council on energy and energy research in the Community: a five-year programme of action and its financing

The European Parliament,

- having been consulted by the Commission by letter of 26 June 1983,
- having regard to the report of the Committee on Energy, Research and Technology and the opinion of the Committee on Budgets (Doc. 1-1172/83),
- having regard to the result of the vote on the Commission's Communication,

A. whereas the Community has made substantial progress towards the 1990 objective of reducing oil consumption to 40% of primary energy consumption, by reaching 49% in 1982;

B. whereas, however, there are considerable uncertainties about the ability of Member nations to maintain the rate of progress towards this target, owing to the fall in the dollar price of oil, which makes alternative sources of energy financially less attractive, and also because the easiest conservation and conversion measures have already been taken bearing in mind that a large proportion of energy consumption is related to the crisis in production;

C. whereas the Council of Energy Ministers, in failing to make any significant decision at the last four Council meetings and in approaching energy policy piecemeal, has shown lack of political will to carry out the repeated instructions of the European Council or to meet the wishes of Parliament by authorising a comprehensive programme of joint action on a scale large enough to have a significant impact on the changing market situation;

D. whereas the dollar price of oil is unlikely to rise substantially in the short term while OPEC has an unused production capacity of some 11 million barrels per day, the consensus of opinion among authoritative forecasters is that oil prices will start to rise again in real terms in the early 1990's, in which case there will inevitably be a third crisis in those Member States which are still heavily dependent on oil;

E. whereas it is estimated that proven recoverable oil reserves will be exhausted by the year 2020 and are, furthermore, located in politically volatile and vulnerable areas;

F. whereas the oil consumption of developing nations in Latin America, Africa and South East Asia is rising at an annual rate of 4-6% and represents over one quarter of the western world's total consumption at 11.6 million barrels per day;

G. aware of the growing dependence of the Community on non-oil energy imports;

H. whereas investment in the Community's energy sector is only 1.6% of GDP, compared with 3% in Japan and 4% in the USA.

1. Emphasises the importance of indigenous energy production capability in the Community to continuing economic and social growth, for which a dynamic programme of investment in energy and energy research is essential, as a new factor to underpin recovery in Member States and the Community;

2. Is convinced that comprehensive steps must be taken now to insure against the unacceptable risk that a third oil shock will ever again cripple western economies. Complacency is unwarranted and irresponsible;

3. Therefore welcomes the determination of the European Council, expressed in its declaration of 19 June 1983, to develop and make more effective Community action in research, innovation and new technologies, of which this five-year programme is a fundamental component;

4. Strongly supports the projects outlined in the five-year energy action programme proposed by the Commission, which it considers to be most appropriate for joint action at Community level and, in particular calls for urgent Council action to:

(i) pass regulations for the 1984-87 Energy Demonstration Projects Programme and to allocate the necessary funds to the 1984 budget;

(ii) reach agreement before the end of 1983 on an effective balanced policy for solid fuels, taking account of the difficulties faced by some Member States, and to allocate credible financial resources for it in the budget;

(iii) approve the important energy research proposals in the Community's science and technology framework programme;

(iv) approve the Commission's proposals on the rational use of energy to achieve a shift from oil to other indigenous and renewable fuels;

(v) calls on the Commission to propose new draft regulations in 1984 to extend the scope of the rational use of energy;

(vi) include in the budget increased funding for an expanded programme of hydrocarbon technology;

5. Considers that the action programme should also include:

(i) measures to increase security against enemy action of energy supply lines which originate outside the NATO area and of indigenous energy sources, e.g. by electricity generation in underground nuclear parks;

(ii) establish a genuine common market in energy consuming equipment, plant and appliances, by increased standardisation;

(iii) initiate a more structured Euro-Arab dialogue on the basis of cooperation rather than future confrontation;

6. Notes that most of these policies do not necessarily involve heavy capital expenditure by the Commission itself, but that even if it were to prove necessary to provide substantial aid, the Commission should not hold back;

7. Considers that where expenditure by the Community on this action programme is necessary, it need not be additional to expenditure by Member States though it must be adequate to be effective;

8. Is aware that a decision in principle by the Council of Energy Ministers to adopt the energy action programme, costing 1.5-2 million ECU at its peak, must be subject to the proviso that a solution is found to the problem of financing the whole Community budget, unless special temporary financial arrangements and a framework of continuity can be established for the five year duration of the programme (see resolution No. 15), and the rights of the Budgetary Authority are respected;

9. Considers the programme will be ineffective in avoiding oil induced inflation, unless measures can also be adopted to assist the developing countries to free themselves from undue dependence on imported oil supplies;

10. Calls on the Commission to draw up a separate framework programme for training and energy infrastructure projects for the ACP States in the context of the Lomé Convention;

11. Considers that the list of criteria mentioned in COM (83) 305 final for energy projects which, despite sizeable programmes at national level, will benefit by Community participation, should be modified and extended as follows:

"Joint Community action is indispensable where there is a reasonable certainty that significantly greater benefit will be achieved by action at Community level than can be achieved by each Member State acting on its own, i.e. where there is:

(i) a need for improved external relations or specific negotiations with major energy interests outside the Community;

(ii) scope for exploiting economies of scale and favourable borrowing powers;

(iii) acceleration of R D & D by pooling knowledge and experience and avoiding duplication;

(iv) a reluctance by industry to invest in rational use of energy due to the limitation of cash flow in an economic recession;

(v) a collective interest in the security provided by developing indigenous energy at competitive prices and assisting indigenous energy sources, such as oil refineries, to weather the storms of competition from source countries;

(vi) additional flexibility provided by a more integrated infrastructure of Community energy supply (e.g. gas and electricity interconnections and diversified gas sources);

(vii) need to introduce contingency arrangements to protect the Community against energy supply crises and consequent economic disruption, (e.g. by establishing a strategic petroleum reserve partly financed by the Community);

(viii) a need to harmonize energy pricing and tax structures;

(ix) a long-term or macro-sized project such as JET or NET, which requires more finance than any one nation can bear alone;

(x) a trans-frontier problem concerning energy and environmental health and safety, which requires common action."

12. Considers it self-evident that, since a major part of the export trade of each Member State is with other members of the Community, under the policy of preference and economic prosperity, it is indivisible. Therefore, no Member nation can hope to be an island of energy-based prosperity, when other Member States (and indeed the developing nations) are suffering from energy problems; hence the need for a Community energy action policy, to establish convergence in energy resources for all Member States;

13. Calls on the Commission to investigate the reasons why interest rebates from the EEC Budget have proved less attractive to industry than equivalent grants, in a period of falling interest rates;

14. Considers that the administrative burden of evaluating projects which merit interest rebates, should be delegated to approved local agencies or banks in the Member States, at least for the smaller projects;

Financing

15. Considers that, since the energy action programme is specifically a limited five year bridging operation, it merits special financial provisions; but does not consider that a further energy consumption tax or a levy on energy imports imposed on top of the varied and complex range of national energy taxes, would be the best method to adopt;

16. Considers, however, that deeper consideration should be given by the Council than has been given in the past, to the merits of a variable energy import levy (either on crude oil and oil products, coal or all imported energy), which would achieve various desirable objectives, i.e.:

(i) provide additional revenue for the Community budget which is confronted by a ceiling on VAT which could then contribute to the finance required by the five year energy action programme, along with the loans and grants arising from other Community sources;

(ii) help to stablise energy prices and provide a "safety net" against oil price collapse;

(iii) act as a disincentive to waste of energy;

(iv) give a five year breathing space to indigenous energy sources (coal, gas, oil and renewable energies) to become more competitive against imported energy;

(v) eliminate the anomaly where oil, coal, gas and uranium are among the few imports into the Community which are free of duty or levy;

(vi) channel into the Community some of the savings arising from reduced oil prices, which should prudently be used for energy investment, not for enhanced general consumption;

(vii) the Commission should be able to use its collective bargaining power to ensure that the oil and energy producers, and not the consumers, bear the cost of the levy, thus avoiding any increase in industrial costs;

17. Member States who would incur a higher levy, due to their heavy dependence on imported oil, would be compensated by receiving a larger share of the capital available, in order to develop indigenous energy by projects for the rational use of energy, nuclear power and alternative energies, as part of the energy action programme, which aims at energy convergence;

18. Considers that the introduction of such a levy would be more effective if similar and simultaneous action were taken by all Member nations of OECD, in order to prevent discriminatory counteraction by oil producing nations and to retain the competitiveness of the Community's energy intensive industries.

19. Calls on the Commission of the European Communities to propose to the Council the following resolution:

PROPOSAL FOR A COUNCIL RESOLUTION

concerning a five-year programme of action,
and its financing, in energy and energy research
in the Community

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having taken note of the Communication of 15 June 1983 from the Commission, entitled "Energy and energy research in the Community: a five-year programme of action and its financing",

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the Economic and Social Committee,

Whereas it is necessary to determine the energy strategy of the Community over the next five years,

Whereas it is necessary to take steps to insure against the unacceptable risk that a third oil shock will ever again cripple western economies,

Whereas there are considerable uncertainties about the ability of Member States to maintain the hitherto satisfactory rate of progress towards the 1990 energy objective of reducing oil consumption to 40% of primary energy consumption;

Whereas the consensus of opinion among authoritative forecasters is that oil prices will again start to rise in real terms in the early 1990's,

Whereas proven recoverable oil reserve are expected to be exhausted by the year 2020 and are further more located in politically volatile and vulnerable areas;

Whereas oil consumption in the newly industrialised and the developing nations is already rising at 4-6%;

Whereas the Community is becoming increasingly dependent on non-oil energy imports;

Whereas investment in the Community's energy sector is only 1.6% of GDP, compared with 3% in Japan and 4% in the USA;

Recollecting that the economic origins of the Community were as much in matters of energy, as of agriculture;

HAS RESOLVED AS FOLLOWS:

Article 1

For the purpose of guaranteeing energy security and ensuring that the 1990 energy objectives are achieved by reducing the consumption of oil to 40% or less of total energy consumption, a programme of action and its financing shall be adopted for a period of five years, incorporating the following specific measures:

1. Pass regulations for the 1984-87 energy demonstration projects programme and to allocate the necessary funds in the budget.

2. Reach agreement before the end of 1983 on an effective balanced policy for solid fuels and to allocate credible financial resources for it in the budget.

3. Approve the important energy research proposals in the Community's science and technology framework programme.

4. Approve the Commission's rational use of energy proposals to achieve a shift from oil to other indigenous and renewable fuels, and grant the necessary financial resources in the 1984 budget.

5. Calls on the Commission to propose new draft regulations in 1984, to extend the scope of rational use of energy.

6. Include in the budget increased funding for an expanded programme of hydrocarbon technology.

Article 2

The appropriations required to implement the programme, including the costs of staff, will rise to 1.5-2 billion ECU in 1986 or 1987, which represents a total of approximately 6 billion ECU in five years.

A breakdown of this sum by sub-programme will be prepared before the programme commences.

All figures are given strictly as a guide.

Article 3

Special temporary financing of the action programme shall be made, for the limited five year period of the programme, from the Community's budget and from loans and grants arranged by the Commission. For this purpose the Commission shall propose a form of levy on imports into the Community from third countries, of oil/oil production/coal/gas or all energy products, the proceeds of which should be used for the finance of measures designed to promote energy investment.

Article 4

The energy action programme shall be coordinated with the existing Community programmes to provide technical and financial assistance to developing nations who have severe energy problems.

Article 5

The following criteria shall apply for energy projects where, despite sizeable programmes at national level, there remain gaps in coverage which can be complemented most economically at Community level, i.e. where there is:

(a) a need for improved external relations or specific negotiations with major energy interests outside the Community;

(b) scope for exploiting economies of scale and favourable borrowing powers;

(c) acceleration of R D & D by pooling knowledge and experience and avoiding duplication;

(d) a reluctance by industry to invest in rational use of energy due to the limitation of cash flow in an economic recession;

(e) a collective interest in the security provided by developing indigenous energy at competitive prices, and by assisting indigenous energy sources such as oil refineries, to weather the storms of competition from source countries;

(f) additional flexibility provided by a more integrated infrastructure of Community energy supply (e.g. gas and electricity interconnections and diversified gas sources);

(g) need to introduce contingency arrangements to protect the Community against energy supply crises and consequent economic disruption, (e.g. by establishing a strategic petroleum reserve partly financed by the Community)

(h) a need to harmonise energy pricing and tax structures;

(i) a long-term or macro-sized project such as JET or NET, which requires more finance than any one nation can bear alone;

(j) a trans-frontier problem concerning energy and environmental health and safety, which requires common action.

Article 6

The Commission will submit a report on the progress and effectiveness of the programme at the end of 1985 and in light of experience gained in the course of the programme the Commission may recommend changes in the resources or priority allocated to any sub-programme.

Done in Brussels,

For the Council,

The President

20. Instructs its President to forward this motion for a resolution together with explanatory statement to the Council and the Commission of the European Communities and the parliaments and governments of the Member States.

B

EXPLANATORY STATEMENT

THE COMMISSION'S FIVE-YEAR ENERGY ACTION PROGRAMME

I. GENERAL

1. The world economy could not stand a third oil shock like 1973 and 1979. While forecasters disagree about whether, and when the third oil crisis is likely to take place, your rapporteur is concerned that in principle the Five-Year Energy Action Programme proposed by the Commission must be initiated without delay, to ensure against the risk of such a crisis ever again being allowed to cripple our economy.

2. The Commission Communication under consideration (COM (82) 315 final) (hereafter referred to as the Five-Year Action Programme), of 15 June 1983, is the tactical plan to implement the Commission's strategy which was set out in the Commission's document COM (83) 305 final of 2 June 1983, entitled "Community Energy Strategy: Progress and Guidelines for Future Action".

3. It is a statement of energy and energy research priorities for action. It is designed to end a prolonged period of indecision and inaction by the Council of Energy Ministers and Budget Ministers, in the context of a rapidly changing energy scenario. Its aim is to prevent a repetition of the misguided complacency of 1975-6 when oil prices fell in real terms and people started building oil-fired power stations again and energy conservation was put on the back burner.

4. The Commission has in fact produced a long series of communications and legislative proposals for energy and energy research which, despite frequent deliberations in the Council, have yielded no action or decision. A list of these is attached as annex to the Commission's strategy document COM (83) 305 final.

5. The unchanged objective (as stated in the Community's 1990 objectives) is to reduce the dependence of the Community on energy imports from Third Countries. This will not be easy since lower oil prices have reduced the incentive to cut oil consumption to discover and develop alternative energies.

6. It is now necessary for the Council to show the political will to use the present breathing space to take the decisions which have been called for in a series of Summit and European Council meetings over the last four years.

7. Very few of the projects listed in the Action Programme are new. The Commission and Parliament have been pounding away at the walls of Jericho for several years, with little success.

What is needed is the "magic trumpet" which will cause the Council's protracted resistance to crumble.

This "trumpet" could be either the long awaited agreement among Member nations to reform and increase and improve the balance of the whole Community Budget, or it could be a disastrous interruption in our imported energy supplies.

It would be regrettable if the Council has to wait for such a disaster, before taking the necessary decisions and action; all the more so, since, while the Council fails to act, the problems get worse (as was the case with Super Sara).

8. Sceptics express profound doubts concerning the ability of the Community to act more effectively than Member States themselves in the field of energy policy. This attitude overlooks the genuine progress in some fronts towards the energy objectives set out for the Community in the Council Resolution of June 1980. The new energy action programme, however, lists a number of further projects in which it considers joint action by the Community has an important role to play. It groups them under three main titles:

(a) Rational use of energy, to achieve a shift from oil to other indigenous or renewable fuels;
(b) Enhanced prospecting for indigenous oil, gas and uranium;
(c) Financial assistance for investment in more balanced development of supplies of coal, nuclear gas and alternative renewable energies;

It is not necessary for the present report to comment on the detailed measures envisaged under these headings, since they are already, or will soon be, the subject of separate individual proposals and reports for the Parliament. They are listed in the draft motion for a resolution.

9. While the Community has made substantial progress by reducing the oil consumption in 1982 to 49% of primary energy consumption and contributing to a reduction of 20%, in world oil demand over the past three years, there are considerable doubts about the ability of Member States to maintain this rate of progress towards a target of 40% by 1990. For this reason, the Commission is pressing for additional measures in its action programme. Unless the projects are implemented, the usual oil market mechanisms will function as soon as economic activity picks up and the price of oil will rise - so will inflation, followed by recession and unemployment - the familiar vicious circle.

II. CRITERIA FOR COMMUNITY ACTION

10. Reference was made above to the scepticism which is sometimes reflected in Council with regard to the respective roles of the Community and national governments in the implementation of energy policy.

The Commission has not dodged this issue. In Part 1, para of the strategy document, the Commission performs a valuable service by listing six criteria which, in its view, should guide case by case decisions on the appropriateness of Community action, as opposed to action by national governments.

Your rapporteur has considered it desirable to modify and extend these criteria as follows:

> Joint Community action is indispensible where there is a reasonable certainty that significantly greater benefit will be achieved by action at Community level than can be achieved by each Member State acting on its own, i.e. where there is:

(a) a need for improved external relations, or specific negotiations with major energy interests outside the Community;

COMMENT

The Council meeting on 12 July 1983, gave great emphasis to the need for a more unified approach to external energy relations. Joint Community action can already claim some successes. The Community has already held structured talks with Norway re future gas supplies, and effective dialogue with the USA on the subject of European supply of equipment for the Russion gas pipeline. It is arguable that Member States in the past, would have achieved a more

advantageous outcome of price negotiations concerning Russian and Algerian gas supplies, and with OPEC on oil, if they had acted jointly with other members of the Community. Community pressure probably influenced the USA to decontrol certain energy prices and to compete more fairly in supplying oil-based chemical feed stocks.

(b) scope for exploiting economies of scale and favourable borrowing powers;

COMMENT

The energy industries of the Community will have a far greater competitive impact on the World market if their product range is targeted at the whole market of 275 million people, rather than confined initially to their home market. More use should also be made of the advantageous finance available from the European Investment Bank and its associates.

(c) acceleration of R D & D by pooling knowledge and experience and avoiding duplication;

COMMENT

The pooling of knowledge and experience, and the elimination of duplication in research and development, is one of the best and most cost-effective avenues for exploiting the competitive advantages of Community membership.

(d) a reluctance by industry to invest in rational use of energy due to the limitation of cash flow in an economic recession;

COMMENT

The slow progress towards rational use of energy is due largely to the fact that companies who are not making profits often lack the available cash to invest in rational use of energy, however profitable it might be. A Community loan on preferential terms, might break this particular vicious circle.

(e) a collective interest in the security provided by developing indigenous energy at competitive prices and assisting indigenous energy sources, such as oil refineries to weather the storms of competition from source countries;

COMMENT

Security of energy supplies is a matter which tends to fall between two stools, due to the exclusion of the EEC from defence matters. The vulnerability of the Community's nuclear power stations and North Sea oil rigs to enemy action is obvious. Similarly, our oil supply situation is getting steadily out of Community control, as crude oil producers are becoming increasingly involved in downstream refining. This calls for joint action at Community level.

(f) additional flexibility provided by a more integrated infrastructure of Community energy supply (eg. gas and electricity interconnections and diversified gas sources);

COMMENT

Interconnection between Member States will give a flexibility of supply, which should eliminate the anomaly of surplus capacity in one nation and shortages in another. Similarly, diversification of gas sources increases security and counteracts price blackmail.

(g) need to introduce contingency arrangements to protect the Community against energy supply crises and consequent economic disruption, (eg. by establishing a strategic petroleum reserve, partly financed by the Community);

COMMENT

The 1974 Emergency Energy Agreement is already in operation in the event of a 7% shortfall in oil supplies. What is needed is a regime for sub-crisis measures, and a decision to establish a strategic petroleum reserve, in Community hands whose cost would be financed mainly by the Community, but partly by the oil companies.

(h) a need to harmonise energy pricing and tax structures;

COMMENT

Few people dispute the need for a common approach to energy pricing and taxation.

(i) a long term or macro-sized project such as JET or NET, which requires more finance than any one nation can bear alone;

COMMENT

The need for joint action on very large projects like JET no longer requires justification. The same approach might be justified in such areas as the construction of enormous gas pipelines from the Gulf, from Nigeria, or even from Canada, to Europe. Satellite power systems, or deep drilling for gas could eventually be giant projects, needing joint action at Community level.

(j) a trans-frontier problem concerning energy and environmental health and safety, which requires common action;

COMMENT

Environmental problems do not respect frontiers, and those with an energy connection are obvious candidates for Community level action.

11. Since the Energy Action Programme requires a definite commitment by Member States to give a new impetus to action in the energy sector, the Commission's document might have been expected to include a draft of a Council resolution or decision, adopting a proposed five year programme as a guide to its future deliberations on proposals for specific measures. The document COM (83) 315 does not do this however. It will, therefore, be appropriate for the European Parliament to make good this lack, but itself proposing a Draft Council Resolution, which will guide Community institutions in the future. An amendment to this effect is included at the start of the draft report.

12. In addition to this general political commitment, the Commission requires the assurance of a minimum level of credibility, in terms of the financial resources committed to a Community energy action programme, whose continuity is guaranteed by a framework extending over five years.

13. In drawing up its Five-Year Action Programme, the Commission followed four guidelines:

(i) Specific proposal for expenditure should be based on an assessment of achievements within Member States themselves, since the aims of Community action must be to reduce waste and duplication;

(ii) The Community should not attempt to be a substitute for economic operators themselves: Community action should aim at setting a framework which encourages operators to take the correct long-term decisions regarding energy supply and use;

(iii) There is no reason why a programme of the kind under consideration should be of indefinite duration; rather the Commission wants a programme "intended to build a sound bridge to the medium term", which could place this Community in a new situation by the end of the 1980's where a continued effort using the same formula might no longer be needed;

(iv) While the programme should provide a framework for continuity, rigidity must be avoided by regular reviews.

III. THE FUTURE OF OIL PRODUCTION AND PRICES

14. In endorsing the Commission's Five-Year Energy Action Programme, your rapporteur considers it important to take a view on the prospects of oil production and oil prices beyond 1990, to the year 2000 and, indeed, to year 2020.

There are as many different opinions as there are experts about the precise evolution of the oil scenario in the next three decades.

But it is generally accepted that proven recoverable oil reserves will be exhausted by the year 2020. According to the I.E.A. publication "World Energy Outlook" (1982), the rate of discovery of crude oil relative to production has been constantly falling, and was below the rate of production 1970-79.

There was a slight recovery in 1980 and a substantial one in 1981, when twice as much oil was discovered as was extracted.

(In the immediate post-war period it actually rose to five times!) Enhanced oil recovery ratios have contributed to the recently improved D/P ratio. There are an estimated 30.000 oil fields in the world. They are classified as follows:

	Number	% of output
Small fields (up to 0.5 billion barrels initial reserve)	29.700	25
Giant fields (up to 5 billion barrels initial reserve)	245	20
Super fields (above 5 billion barrels initial reserve)	35	55

In previous decades giant and super giant fields account for the bulk of world oil discoveries.

Since the mid-1960's less and less giant and super giant fields have been discovered.

Of the 600 sedimentary basins worldwide, 400 have been explored, and of these, only 160 have been proved to contain oil. Most of these, however, are in deep offshore, or polar areas and will require new technology at high costs.

To maintain the present level of oil production, would require the discovery every year of two Prudhoe Bays!

Dollar oil prices in real terms are not expected to rise very far for seven to ten years, indeed, they may even fall further, due firstly to the 11 billion barrel per day excess production capacity in OPEC, and due secondly to the increasing strength of the dollar.

In Annex II "Projection of World Energy in 2000" done by the Department of Energy in 1982 in the U.K., a number of separate forecasts are shown to reach approximately the same broad conclusions about oil prices and primary energy demand and supply in W.O.C.A.

It may take ten to twenty years to complete the gestation period involving research, engineering and the construction of major new energy resources to replace oil. Any delay may therefore condemn the Community to even greater economic tribulations than we have suffered in recent years!

IV. FINANCING

15. Since the five year energy action programme is regarded by the Commission as a bridging operation to catch up and stablise the energy situation in the Community, it is sensible that it should be provided with special finance, within a five-year framework of continuity.

16. In COM (83) 315 final the Commission has rather tentatively set out for consideration the outlines of a tax on non-industrial consumption of energy.

17. The Commission has not yet provided any detail of the revenue to be raised in this way, in each Member State; nor has it yet come forward with a comprehensive survey of existing energy taxes in each country. It is, therefore, difficult to evaluate the merits of the proposition.

18. The alternative of an oil, or energy, import levy has many more advocates. In particular, the authoritative ALBERT and BALL report to the European Parliament entitled, "Towards European Economic Recovery in the 1980's" of 7 July 1983.

19. The report claims the following advantages for such a levy:

(a) The levy would be a way of channelling the gains from a $4 per barrel fall in oil prices in 1983 into energy investment, instead of immediate general consumption. "It is about choosing between the short term and the long term."

(b) An import levy can be adopted very quickly without need for ratification by Member parliaments provided it is hypothecated to measures for the implementation of a common policy.

(c) It could be flexible and highly productive. It could raise around 3 billion ECU if the charge were 1 ECU per barrel, or 6 billion ECU at 2 ECU per barrel.

Since the energy action programme calls for up to 2 billion ECU per year and an interest rebate on the entire additional borrowing requirement proposed would be 2 billion ECU per year, i.e. a total of 4 billion ECU per year, the oil import levy could be set at 1.5 ECU per barrel.

Whether the revenue is hypothecated to energy, or whether it goes into the Community's own resources is a matter of discussion.

20. The draft motion for a resolution states other advantages of an oil or energy import levy. Criticisms, however, centre mainly on:

(i) The fact that the incidence of the levy would be uneven between Member nations. This objection reeks of the main illness of the Community - juste retour. It can easily be overcome by ensuring that expenditure is generally directed to those Member States who need it most - i.e. those who are most dependent on imported oil and, therefore, have most need of investment in alternative energy sources;

(ii) The Commission in its proposals for reform of the whole Community finance, considered and dropped the idea of an energy import levy, on the grounds that it would yield too little. How long is a piece of string? It could yield whatever is needed, both for energy investment and/or for non-energy expenditure;

(iii) Some representatives of industry claim that the levy could be inflationary!
A levy of 2 billion ECU would amount to less than 1% of the cost of energy consumed in the Community.
Energy averages 5% of industrial costs. Therefore, the net increase in average industrial costs would be 5/100 of 1% (one-twentieth of on percent).

Energy intensive industry would of course find it more desirable to shift away from oil though their increase in overall cost if they were committed to oil would probably be no more than 1.5%.

(iv) It is said that an oil or energy import levy would add to administrative burdens. In fact, the Commission has already set up a mechanism to register oil imports, which would easily be adopted to manage the levy.

(v) It is claimed that OPEC would retaliate against an oil levy, which would channel off some of their oil revenue, and would tend to reduce oil consumption. Yet many members of OPEC would prefer to keep their main asset - OIL - in the ground for as long as possible and do not support profligate consumption, at low prices. To them a levy would be an effective disincentive to waste oil.

21. The Commission suggests in its Communication (paragraph 38, page 16) that the revenue derived from an energy tax should be specifically set aside to finance the proposed energy programme. Your rapporteur considers that the legal implications of this suggestion needs to be studied carefully. The feasibility of three alternative methods of giving effect to the Commission's idea should be examined, always bearing in mind that each gives rise to its own particular set of difficulties. The alternatives are:

(i) One of taxing energy imports would simply be to increase the Commission Customs Tariff in respect of the relevant items. It is not always realised that energy items are already mentioned in the Regulation on the Common Customs Tariff[1]. However, at present many of these are zero rated. Technically, it would be a straightforward matter of entering a new rate. In practice, there would be numerous difficulties to be overcome. Not least of these would be the need to obtain unanimous agreement in the Council (after consultation of Parliament). There would also be the need to watch the situation with regard to GATT. There are situation in which an increase in a rate of customs duty with respect to one commodity must, under GATT, be balanced by concessions in other areas. It is true that in all energy-exporting countries are signatories to GATT. On the other hand, some of them have links with the Community, through cooperation agreements, free trade agreements or the Lomé Convention in such a way as to make the type of action contemplated here problematical.

---

[1] Council Regulation (EEC) No. 300/71 of 19 October 1982 amending Regulation (EEC) No. 950/68 on the Common Customs Tariff, OJ No. L318, 15 November 1982

(ii) Another possibility looked into is that of creating a new Community "own resources" pursuant to Article 201 of the EEC Treaty. This resolution would take the form of an energy tax. Article 201 is the one that provides for own resources to take over the financing of the Community from the earlier system of national contributions. The requirement here would be for the Commission to make the appropriate proposal and then for it to be unanimously agreed by the Council, after consultation of Parliament, but also approved by national Parliaments. It hardly needs to be pointed out that approval for the creation of new Community "own resources" is not very easy to obtain.

(iii) A third alternative might be to proceed on the basis of Article 235 of the EEC Treaty. This Article allows the Community to give itself the powers it needs "to attain, in the course of the operation of the common market, one of the objectives of the Community," if these powers have not already been granted under the Treaty itself. The tax would have to be presented as an integral element of a common energy policy, and not just as a source of general revenue. Again a unanimous Council decision would be needed, after consultation of the European Parliament.

V. CONCLUSION

Despite repeated declarations by summit meetings of heads of state in support of a programme of essential Community actions in the energy field, the energy and budget councils have invariably failed to reach agreement on an adequate budget for a comprehensive energy investment programme.

It is very doubtful whether some Member States are making any basic structural reduction in energy consumption (as opposed to reduction due to recession). Annex 5 reveals that France, Greece and Ireland appear to have made no basic reduction in the ratio between primary consumption of energy and GDP. If this is so, the energy situation will deteriorate rapidly as soon as the economy revives.

The choice now is clear. Either the Council reaches agreement on an enlarged and better balanced budget for the Community, which includes provision for a framework of expenditure in Chapter 7 rising to 1.5 to 2 million ECU per annum on a five year energy action programme, or the Council sanctions the introduction of special financial provisions.

It is too late to put off the decision for yet another year. Measures to fend off the next oil crisis need many years to reach fruition.

ANNEX 1

TABLE 1: MAIN INDICATORS OF STRUCTURAL CHANGE
1973 - 1979 - 1982 - 1985 - 1990

Mtoe

	1973	1979	1980	1982*	1985	199
DEMAND						
Inland energy consumption	931	985	944	872	1000	106
Inland oil consumption	564	537	494	425	469	43
Inland oil consumption as % of energy consumption	61%	54%	52%	49%	47%	4
Total primary energy inputs to power stations	236	279	279	282	311	369
(of which) solid fuels	101	125	130	132	132	163
nuclear	18	37	43	64	89	132
Solid fuels and Nuclear as % of total	50%	58%	62%	69.5%	71%	80
SUPPLY						
Total domestic primary energy production	351	458	462	491	533	561
(of which) solid fuels	198	180	185	184	182	188
gas	112	138	129	114	121	109
nuclear	18	37	43	64	89	132
oil**	13	89	91	115	121	104
new & renewables***	10	14	14	14	20	28
Net energy imports	620	559	527	409	499	538
(of which) net oil imports	596	487	438	323	381	362

ENERGY AND ECONOMIC GROWTH	1973-1963	1980-1975	1985-1980	1990-1985
Inland energy consumption (% change per year)	+4.7%	+1.9%	+1.2%	+1.3%
GDP (% change per year)	+4.7%	+3.0%	+2.1%	+2.7%
Coefficient E/GDP	1.0	0.63	0.57	0.5

Sources: 1973 to 1982 : Statistical Office of the European Community
1985 & 1990 : Submissions by Member States, up-dated where necessary.

* provisional data

** mid-points of ranges submitted

*** hydro-electricity, geothermal energy, solar, biomass, etc

TABLE 9: PROJECTIONS OF WORLD ENERGY IN 2000

EXTRACT FROM "OIL PRICES IN THE LONG TERM" –

PROJECTIONS	Date of Publication	Real Oil Price in 2000 ($ bl)	WOCA Primary Energy Demand (MBDOE)	WOCA Economic Growth Rate (1980-2000 % pa)	OIL PRODUCTION WOCA MBD	OIL PRODUCTION OPEC MBD	WOCA Coal Production MBDOE	WOCA Gas Production MBDOE	WOCA Nuclear Output MBDOE
THIS STUDY	Oct '82	30-65	110-164	2.3-3.6	44-70 *	25-35	26-35 *	13-26 *	6-15 *
CHASE MANHATTAN BANK	Sept '81	53 (30-76)	149	3.4	50	24 (?)	38	26	13
CHEVRON	June '82	30-55	143	3.5	52	26	37	24	12
CONOCO	Jan '82	45-55	152	3.4	60	28	39	27	14
ENERGY MODELLING FORUM	Feb '82	70 (42-90)	152-161	3.6	49.65	28-34			
INSTITUTE OF ENERGY ECONOMICS, JAPAN	May '82	50 (42-60)	140-155	2.5-3.0	51-62	23-30	37	27	16
INTERNATIONAL ENERGY AGENCY**	Oct '82	28-45 **	154-179	3.1-3.7	48-55	24-28	37-45	26-28	***
A H TAHER, PETROMIN	Early '82	[55-98]ϕ	140	3.1	41	21	47	27	18
TEXACO	July '81	40 (37-45)	150	'below historic trend'	60	34	38	27	13
US NATIONAL ENERGY POLICY PLAN	July '81	58 (41-79)	140	3 (2.4-3.4)	48 (42-54)	26 (21-43)	37 (28-43)	29 (23-36)	16 (10-17)
"	Aug '82	52 (44-61)	137 (132-143)	3 (2.6-3.5)	50 (48-54)	26 (23-29)	34	23	11

* These are estimated supplies on starting price assumptions. In the recommended price range supplies are higher

** The IEA projection is not a forecast. With an energy deficit of 9-12 mbdoe active policy intervention is required to offset further price rises.

*** The IEA project OECD Nuclear capacity at 12-13 mbdoe. Our OECD projection is 7-11 mbdoe.

ϕ An extrapolation of his 3 to 6% pa range to 1990. Hazarding a guess beyond 1990 is unreasonable given the uncertainty. Prices are lower in a scenario of producer-consumer co-operation but higher in a confrontation scenario.

AN INTERDEPARTMENTAL STUDY DONE IN LONDON – DECEMBER 1982

TABLE 2

Member State	Reduction in inland oil use by Member State 1982/1979		Share of oil in gross inland energy consumption 1982	Share of nuclear and fuels in electricity generation
	Mtoe	%	%	%
Belgium	-5.6	-22.4	47	64.4
Denmark	-4.8	-30.4	65	91.5
Germany	-34.2	-23.9	44.5	78.0
Greece	-0.4	- 3.3	73	61.8
France	-27.0	-23.5	51	75.5
Ireland	- 1.8	-28.3	56	23.0
Italy	- 9.8	-10.2	68	18.9
Luxembourg	- 0.3	20.0	34	8.3
Netherlands	- 8.9	-29.0	39	29.3
United Kingdom	-18.5	-20.0	40	84.5
EUR-10	-111	-20.7	49	69.5

ANNEX 4

TABLE 3: THE BURDEN OF NET OIL IMPORTS, BY MEMBER STATE, 1973 & 1982

	Net oil import dependence in %		Net oil import bill as % of GDP	
	1973	1982	1974	1982
Belgium	62.5	49.8	4.2*	6.2
Denmark	90.5	54.9	4.6	4.9
Germany	54.4	41.7	2.9	4.0
Greece	88.8	64.4	4.0	6.2
France	71.5	48.5	3.4	4.1
Ireland	78.5	56.4	6.7	5.7
Italy	79.5	67.1	4.7	5.6
Luxembourg	37.7	33.8	-	-
Netherlands	54.8	42.7	2.2	3.9
United Kingdom	49.7	-14.8	4.6	-1.4
EUR - 10	61.6	36.1	3.7+	3.3

* Belgium + Luxembourg

Source : as Table 1

\+ It is also noteworthy that the net cost of total energy imports, in relation to GDP, has actually remained stable for the Community as a whole between 1974 and 1982 at 3.8%.

ANNEX 5

TABLE 4 : CHANGES IN THE RATIO BETWEEN INLAND PRIMARY CONSUMPTION AND GDP, BY MEMBER STATE

	1973 - 1977	1977-1980
Belgium	-11.2	- 5.1
Denmark	- 6.6	- 6.5
Germany	- 8.0	- 4.8
Greece	+ 1.8	+ 0.7
France	-14.1	+ 2.5
Ireland	-13.8	+ 7.7
Italy	- 4.1	- 7.1
Luxembourg	-17.2	-13.6
Netherlands	- 8.5	- 3.5
United Kingdom	- 7.3	- 8.0

Source: Study of Energy Saving in the Community's Member States prepared for the Commission by the Fraunhofer Institut, 1983

EUROPEAN PARLIAMENT

Annex 6

OPINION OF THE COMMITTEE ON BUDGETS

Letter from the chairman of the committee to Mrs WALZ, chairman of the Committee on Energy, Research and Technology

---

Subject: Opinion of the Committee on Budgets on the communication from the Commission concerning energy and energy research in the Community: a five-year programme of action and its financing (COM(83) 315 final)

Dear Madam Chairman,

At its meeting of 21 and 22 September 1983, the Committee on Budgets delivered a favourable opinion on the above communication from the Commission after learning that the possibility of a tax being introduced on energy consumption as a means of financing this five-year programme was, in the words of the Commission, simply a working hypothesis which could not have any practical implication for the adoption of the programme.

The Committee on Budgets considered that apart from the fundamental question raised by the possible introduction of a tax of this kind on energy consumption, such a proposal could be examined only in the context of a change in the Community system of taxation. If the hypothesis were to become fact, Parliament's ideas on the subject should crucially affect the Community decisions which could not, therefore, be taken within the framework of the consideration of a five-year research programme, to which the proposal in question would constitute merely a corollary.

(sgd) C. BARBARELLA
Acting chairman

Present: Mrs BARBARELLA, acting chairman; Mr ADAM (deputizing for Mrs HOFF), Mr BARBAGLI, Mr BARBI (deputizing for Mr ADONNINO), Mr D'ANGELOSANTE (deputizing for Mrs BOSERUP), Mr GOUTHIER, Mr LOUWES, Mr MEGAHY (deputizing for Mr FICH), Mr NEWTON DUNN, Mrs NIKOLAOU, and Mr WOLTJER (deputizing for Mrs HOFF).

53. The so-called 'SCR' methods appear promising as a way of reducing NO_x emissions in flue gases from coal combustion. These are methods based on selective catalytic reduction in which, for instance, ammonia is used to convert NO_x into nitrogen and water. Since nitrogen gas (N) already forms more than 70% of the atmosphere, this raises no waste problems.

54. In the present state of the art it is possible to reduce NO_x emissions from petrol engines by 90%. This involves an increase in the price of each car of less than 1,000 guilders and an increase of around 5% in fuel consumption. (This latter increase will be more than offset however in the next few years by economies resulting from improved engine technology).

Improving engine technology in the form of better carburation and ignition has thus reached its limit as far as reducing NO_x is concerned. There is still scope for improvement through the development of more economical engines and the attendant fuel savings.

55. Using 'lean burn' engines results in a considerable reduction in fuel consumption and up to 50% reduction in NO_x. On the other hand hydrocarbon (CH) emissions are higher.

56. A more effective solution is to use a device for scrubbing exhaust gases which consists of a catalytic converter combined with a labda probe. The labda probe is necessary to ensure that the fuel/air mixture is constantly regulated correctly. It can happen with catalytic reduction that there is no oxygen left in the exhaust gases after combustion.

Hydrocarbons, carbon monoxide and nitrogen oxides are converted chemically into carbon dioxide, water and nitrogen gas respectively by being passed through a filter catalytically activated by platinum. Because of its nature the catalytic converter soon wears out if petrol containing lead is used.

It is essential as a first step to introduce a distribution system for lead-free petrol. (On the subject of lead in petrol your rapporteur would refer you to the relevant report, Doc. 1-279/83 of 20.5.1983).*

---

* A bill is before the German Parliament which would make the introduction of lead-free petrol obligatory by 1 January 1986.

57. The method described above has become well established in the United States and Japan since 1974. Australia intends to introduce similar measures in 1985. Cars manufactured in West Germany, Italy, France and the United Kingdom for export to the abovementioned countries are also fitted with these devices and are adjusted to run on lead-free petrol.

58. Lead-resistant catalytic converters are being developed but will not be ready for a few years yet and definitely cannot be described as 'state of the art'. There is a good case for the adoption of lead-free petrol in the interest of the 'international harmonization' of the automobile industry.

Catalytic removal of NO_x from the exhaust gases of diesel engines is not possible (although carbon monoxide and hydrocarbons can be removed in this way). Diesel engines use large quantities of air and as a result the exhaust gases contain too much oxygen for catalytic reduction of NO_x to be possible.

It is still theoretically feasible through improved engine technology to reduce current levels by 30% and, at the expense of a 1-2% drop in fuel efficiency, even by 45%.

59. The use of LPG as a fuel instead of petrol gives significantly (20 or 30%) lower NO_x emissions provided the engine is correctly tuned.

Design modifications to petrol engines with a view to lowering NO_x emission levels will presumably produce similar results in engines running on LPG.

The fuel metering device used may be an obstacle, however, to the realization of the potential benefits of LPG in practice. Given the fact, among other things, that vast quantities of LPG are burned off uselessly in the production of petroleum (in particular in the Middle East), which is a scandalous waste of energy, the use of LPG should be encouraged.

The risk of 'knocking', which it is technically possible to eliminate almost entirely, must be weighed against the positive benefits of reducing energy wastage and pollution.

60. Lastly, it goes without saying that any movement away from private and towards public forms of transport will contribute to a reduction in pollution.

VI. STANDARDS AND LIMIT VALUES

61. Various types of limit values can be set down for air pollution, for instance the permissible quantity of SO_2 (and/or other substances) in (milli) grams per cubic metre of flue gas.

A much more efficient criterion is the permissible quantity of SO_2 (or other substance) per amount of electricity generated (in watts) or energy consumed (fuel in joules).

Standards may also apply to a permissible ceiling for emissions for a certain region or the permissible pollutant content in the air outdoors on average per annum and per region.

62. The aim of any standard is to keep average concentration and peak values in the biosphere below levels which are considered permissible or harmful. In the past the level considered permissible for policy decisions was strongly dependent on the target group and on the state of the art.

Crops seem to be more sensitive than people. Existing standards, the primary purpose of which is to limit the danger to public health, scarcely seem to bear any relation, given the trend of damage observed, to the complex biological, atmospheric and soil conditions outside the laboratory.

63. Consequently the prime objective must be a maximum reduction in emission levels. The second must be to stimulate research into the process which causes the damage in the short and long term and to establish tolerance limits based on currently available findings. We must realize that as understanding of this problem grows it will become increasingly difficult to estimate tolerances.

64. Knowledge of long-term effects of low concentrations will have a growing influence on standards. In the case of cumulative effects in the destruction of soil fertility there is in fact no level at which pollution is harmless. If there is it depends on the speed of degradation and the chemical resources of the unaffected soil material. This applies particularly to the soil in woodlands and natural ecosystems.

In the USA for example both the National Academy of Sciences and the National Commission on Air Quality consider that an increase in SO_2 concentrations of at most 2 micrograms/m^3 could be tolerated in the natural ecosystems of the national parks. This is approximately one-tenth of the concentration usually found in Central Europe.

VII. LEGISLATION

65. The administrative and legal situation in the Member States constitutes a serious obstruction to the taking of the measures needed in the short term. Air pollution policy is often delegated to local or regional authorities (as in Germany and Italy). This creates specific problems of harmonization.

A second obstruction lies in the way authorizations are granted and the lack of legislative means of withdrawing authorizations once they have been granted or of making them conditional on new environmental standards.

Here the principle of legal certainty plays a large part. The only solution would be a long-term one and this conflicts with the urgency of the problem.

66. Your rapporteur has refrained, although this would certainly have been useful, from providing an overview of the jungle of regulations concerning air pollution in the Member States. This is a task for the Commission.

67. As legislation created at EC level prevails over national and regional legislations, EC legislation would seem to be the best solution. The Community has already made a start along this path. For a summary of EC legislation in the field of air pollution the reader should see the annex to this report.

68. The Commission has recently put forward a proposal for a Council directive on the combating of air pollution caused by industrial plants, which can be considered as a kind or framework directive.

69. Without wishing to anticipate the separate debate of this draft directive in the European Parliament, your rapporteur would nevertheless like to underline in this report the fact that this draft directive can be no more

than a first step towards effectively combating the phenomenon of acid rain. This is because the draft directive:

- lays down neither specific air quality limit values nor emission levels,
- deals primarily with the construction and operation of new plants,
- gives precedence to the economic viability of the undertaking and therefore disregards the macro-economic implications.

VIII. RECOMMENDATIONS

70. It will have become clear from what has been said above that the problem of acid rain has developed into one of the major environmental problems of our time. Acid rain is responsible for damage to nature on a vast scale, damage which because of its imponderable nature cannot be quantified. Acid rain also exacts an equally heavy toll in socio-economic terms, which can be quantified with a certain degree of accuracy and at any event amounts to several percentage points of GNP.

71. A phenomenon which is responsible for material and non-material damage on such an enormous scale requires a major action programme which by definition must be international; such a programme must be set in motion immediately and must have a fixed time-span. It will be the task of the Commission to frame such a programme, have it adopted and implement it in the European Community.

72. The long-term objectives of this programme of measures to combat air pollution should be the following:

(a) the introduction of technologies conducive to a closed-circuit economy;

(b) the restriction of polluting emissions to a level which interferes as little as possible with the natural back-ground level, i.e. is as close to zero as technically possible;

(c) the introduction of energy saving methods consistent with a society where energy consumption is limited to a responsible minimum.

73. These long-term objectives cannot be achieved in one go. Consequently, what is needed is a step-by-step approach by means of realistic measures of a fixed duration and with limited objectives, laid down in separate directives or regulations.

74. These measures can be roughly categorized as follows:

(a) legislation laying down air quality limit values (immission values) for each pollutant or category of pollutants,

(b) legislation adopting emission levels/ceilings for each emission source or category emission sources for the Community as a whole and for the individual Member States,

(c) action programmes aimed at providing the technical and financial means to achieve the objectives set out in points (a) and (b).

75. The setting of overall limit values for air quality is a good example of a task which can be undertaken at Community level and indeed one on which the Community has already made a start (SO_2 directive). It would seem sensible to adopt a phased approach to this problem based on specific objectives to be achieved within a given time-span, thereby incorporating a strictly task-oriented element into the legislation.

The adoption of gradually more stringent immission values for specific countries or regions, on the other hand, would seem to be a task for the national, regional or local authorities concerned, rather than for the Community. A Community directive would, therefore, seem to be the most appropriate means of laying down quality standards at European level.

76. With regard to the adoption of emission standards for each emission source there are basically two ways in which the Community can play a guiding role.
Firstly, maximum emission levels can be adopted for each Member State. The Member States can then determine individually the methods and technical means necessary to keep emissions below that ceiling. Setting national quotas at European level, however, is likely to give rise to difficulties. The adoption of a different technical approach by individual Member States without harmonization could also adversely affect trade and conditions of competition internationally.

77. Secondly, the Community can set indicative levels in respect of emissions from industrial plant or production processes. These might include specifications on fuel quality combustion and cleaning techniques.

The Community has also made a start on this task by adopting emission levels for motor vehicles.

In view of the scale and urgency of the air pollution problem, the need to adopt early measures and the reluctance of industry (as evidenced all too clearly by, inter alia, representatives of UNIPEDE* at the parliamentary hearing in Brussels) to adopt measures themselves in the short term, a regulation would appear to be the most appropriate instrument in this case. Such regulations should similarly be based on a phased approach to emphasize the fact that they are geared to specific objectives.

78. Finally, the action programmes. It ought to be possible for the industry itself on the basis of the requirements laid down in the abovementioned directives and regulations - to devise programmes, for individual sectors for example, on a voluntary basis following initiatives from the Commission.

This could roughly follow the lines of the initiative taken by the Commission to reorganize the steel industry. Although a totally different kind of reorganization is involved, some of the problems are the same. The situation in this sector too is characterized by a complete absence of any moves by the industry to reach agreements on an international level; here too there will have to be negotiations to determine which plants are to be tackled first and during subsequent phases, and here too the aspect of competition plays a very important role. Further aspects which might be discussed include: selective use of low-sulphur fuel (gas + low-sulphur coal and oil), decisions on which new technologies to use, financing instruments and exchange of know-how.

79. A number of proposals have been made in the past from various quarters concerned with tackling the air pollution at an early stage by recourse to one or more of the measures mentioned above. Two examples of such proposals might help to crystallize our thoughts on the subject.

80. The first proposal comes from Germany, and was made by the 'Katalys-Umweltgruppe Köln e.V.' in 1982. This proposal relates to Germany, but with a certain amount of good will it could also apply to the European Community. The proposal sets out a scenario to be implemented in four phases.

81. Phase 1: By 1986 all coal-fired power stations of over 600 MW capacity should be desulphurized.

Phase 2: By 1989 all other coal and oil-fired power stations with a capacity of 100 MW and above should be desulphurized or replaced by new fluidized bed combustion plants.

---

* UNIPEDE : International Union of Producers and Distributors of Electrical Energy

Phase 3: By 1995 the remaining public and industrial combustion plants should be desulphurized or replaced by clean plants and 50% of households and small consumers should have converted to urban heating.

Phase 4: By around the year 2000, the conversion process is completed and urban heating systems are introduced on a general scale.

82. A feature of this proposal is that it sets out a clear time-scale and confines itself to desulphurization.

83. A more detailed proposal, which on the whole is considered to be very reasonable and technically feasible, was put forward by the EEB (European Environment Bureau) at the hearing on acid rain organized by the European Parliament in Brussels on 19 and 20 April 1983. The proposal adopts a 'double-track' approach, i.e.

(a) lowering of emission levels as far as possible by making use of the best practicable means and adopting emission standards,

(b) adoption of air quality standards (immission values) and emission limit values, both for the European Community and for the individual Member States, taking into account current knowledge on the effects of emissions.

84. The EEB proposal contained the following specific points:

$\underline{SO_2}$

Legislation on SO_2 should be introduced both for existing and new industrial plant and power stations:

- large plants (oil and coal-fired): at least a 90% reduction of SO_2 and an emission level of under 130 g SO_2 per gigajoule,
- small plants: use of gas or other low-sulphur fuels (maximum S content in coal 0.6%, in heavy oil 0.8%, and in light oil 0.3%).

$\underline{NO_x}$

Legislation should also be introduced to cover NO_x emissions both in industry and in power stations:

- new coal-fired plants: maximum emission of 250g/GJ, to be lowered to 200g/GJ within 5 years,

- new oil-fired plants: 130g/GJ, in five years 90g/GJ,
- new gas-fired plants: 65g/GJ, in five years 40g/GJ,
- a target of 30g/GJ can be adopted to enable selective catalytic reduction (SCR) to be gradually introduced,
- existing plants: a maximum of around 250 (coal), 130 (oil) and 65 g/GJ (gas) and SCR for serious cases.

NO_x and CH

A drastic and rapid reduction in traffic emissions is called for via new standards for motor cars and a shift from private to public transport should be encouraged.

Suspended particulates

The standards in relation to suspended particulates must be as follows both for industry and power stations:

- new coal-fired plants: 10g/GJ with the aid of cloth filters,
- existing coal-fired plants: 10-20g/GJ, where possible with cloth filters.

85. Moreover, the EEB takes the view that similar standards should be adopted for process emissions (SO_x, NO_x and heavy metals) and the bio industry (NH_3).

86. In the case of existing plants, the EEB believes that a programme of conversion and reorganization should be introduced to adapt them to the above standards.

87. Distortions of competition should be avoided by setting up a fund for the necessary investment. This fund could be financed by a levy per kg of SO_2 and/or NO_x emitted.

88. Central to these proposals by the EEB is the idea that total emissions of the main components of air pollution in the Community must be reduced by a factor of 2 during the first 5 years and again by a factor of 2 over the following 5 years, i.e. cutting air pollution by half by 1988 and by 75% by 1993.

89. Your rapporteur is not in a position to judge the merits or the economic viability of the EEB's proposal as a whole, although its technical feasibility is not in doubt since the standards proposed by the EEB appear to have been technically possible in other countries. All the same he considers the EEB proposal to be worthwhile, given the current plight of the environment.

The proposal could usefully be incorporated as an objective of a major programme of measures to combat air pollution referred to in paragraph 71.

90. The Commission proposal for a Countil (framework) directive on the combating of air pollution caused by industrial plants also represents an important initial step of such a programme to combat air pollution.

91. The steps which the Commission should take as soon as possible include:

(a) drawing up directives laying down air quality standards for the Community in respect of the pollutants listed in Annex II of the framework directive, or for each category of pollutants,

(b) this does not relieve the Commission of its obligation to tighten up the air quality limit values and guide values for SO_2 and suspended particulates set out in the Council directive of 15 July 1980. That directive was in fact guided by considerations of human health and fails to take into account the influence of pollutants on the ecosystem - this approach must now be considered totally out of date,

(c) drawing up proposals for regulations setting emission standards for the Community for each emission source or category of sources as listed in Annex I of the framework directive, or emission limit values,

(d) this also means that the commendable proposals now put forward by the Commission to lower the CO emission levels in Directive 70/220/EEC on air pollution by gases from positive-ignition engines of motor vehicles by 23% and combined HC and NO_x levels by 20% - 30% will also have to be extended to diesel engines of heavy vehicles, as called for in the report on air pollution by gases from positive ignition engines of motor vehicles (Doc. 1-82/83) and that these standards must also eventually be tightened up,

(e) this in turn means that the Commission should endorse recommendations such as those made in the report on lead in petrol (Doc. 1-279/83) concerning the introduction of lead-free fuel and the lowering of lead levels in petrol, and at the same time promote the introduction of catalytic reduction systems for exhaust gases, which have long been in use in Japan and the United States,

(f) framing on a voluntary basis of action programmes, where possible in collaboration with the categories of industries listed in Annex I of the framework directive; these programmes should be geared to achieving the objectives set out in points 1 to 5 as speedily as possible,

(g) bringing order to the bewildering mass of specifications some of which are expressed in mg/m^3, and others in tonnes per year and yet others in g/GJ,

(h) setting out details in a separate note of how the desired air pollution programme is to be financed, taking into consideration:

- the principle that the polluter is the first to pay and then the consumer,
- the suggestion that a separate fund be set up financed from levies on, for instance, emissions of SO_2, NO_x, NH_3 and heavy metals, making it possible on the one hand to finance the programme of measures to combat air pollution and on the other to bring pressure to bear on the polluters to clean up their production processes,
- the question of the extent to which existing Community financial instruments separately or (in some cases) together can play a supporting role,
- and in particular the means available to the EAGGF to combat the problem of NH_3 in agriculture,

(i) instituting a European forest damage register,

(j) promoting a statistical survey of European air pollution which should form part of a European environmental survey such as called for repeatedly by the European Parliament within the framework of the budget,

(k) coordination of scientific research into air pollution so as to avoid duplication of effort and ensure that the results are made available as rapidly as possible.

92. To conclude this chapter we are obliged once again to sing the lament from the budget litany which the directly-elected Parliament now intones loudly throughout its four year term. The message of this lament is that the Commission must make available sufficient staff and financial resources if it genuinely wishes to do something about air pollution at Community level.

If the Commission cannot find these staff and resources by increasing the size of the Community budget, then they must be found by reallocating existing staff and funds. Neither the European Parliament nor the public will have any sympathy with the Commission if it maintains its feeble attitude on this question, in view of the importance of the problem of acid rain.

MOTION FOR A RESOLUTION - DOCUMENT 1-239/82

tabled by Mr MERTENS, Mrs SCHLEICHER, Mr ALBER, Mr McCARTIN, Mrs LENTZ-CORNETTE, Mr DEL DUCA, Mr PROTOPAPADAKIS, Mr VERROKEN, Mr GHERGO, Mrs MAIJ-WEGGEN, Mr HELMS, Mr BROK and Mrs RABBETHGE on behalf of the Group of the European People's Party (Christian-Democratic Group)

pursuant to Rule 47 of the Rules of Procedure

on air pollution

The European Parliament,

- having regard to the Convention of 13 November 1979 on long-range transboundary air pollution,
- having regard to the Council Directive of 15 July 1980 on air quality limit values and guide values for sulphur dioxide and suspended particulates,
- having regard to the Third Community Environmental Protection Programme, paragraph 21 of which refers to this problem,
- having regard to the report by Mr Muntingh on the combating of photochemical pollution,
- having regard to the report by Mr Mertens on the proposal from the Commission of the European Communities to the Council for a decision establishing a reciprocal exchange of information and data from networks and individual stations measuring air pollution within the Member States,
- having regard to Written Question No. 1509/81 by Mrs Schleicher on the reduction of sulphur emissions,
- whereas it is becoming increasingly difficult for individual countries acting alone to solve the problems of air pollution,
- having regard to the serious health hazards which may arise especially for those living in conurbations and large cities,
- having regard to the alarming reports of diseases afflicting forests throughout Europe (causing the death of fir, spruce and pine and the drought injury to beech crowns), particularly in Bavaria, the Black Forest, the Stolling and Harz Mountains and elsewhere in the Community's Member States in central and southern Europe,
- having regard to the considerable damage caused to buildings by sulphur compounds,
- whereas the construction of high stacks has reduced the problem in the localities concerned (smog hazard), but, at the same time, has led to new and as yet unexplored hazards and ravages as a result of the long distance covered by the pollutants,

- whereas a solution at European level would be of particular value, especially for those living near the frontiers of Member States,

- having regard to the problems caused by discrepancies in the legal systems of the various Member States and their as yet differing requirements concerning air pollution,

1. Urgently calls on the Commission to:

   (a) propose as quickly as possible a directive establishing uniform discharge values for the major air pollutants

   (b) and, where technically feasible, fixing uniform limits for the emission of air pollutants by various types of industrial establishments,

   working from the principle that such emissions must be limited at their source.

   Priority should be given to the installation of waste gas desulphurization apparatus in power stations and industrial plant with high discharges.

   (c) Urges that these discharge and emission values be accompanied by uniform provisions on measurement and evaluation.

   (d) Recommends that, in addition to SO_2, such provisions should cover the other main gaseous compounds and the heavy metal particulates (such as cadmium, zinc, chromium, nickel and lead).

   Uniform Community provisions on these major air pollutants also appear to be urgently necessary to avoid distortion of competition

   Since requirements vary from one Member State to another, the corresponding burden on industry differs accordingly.

2. Calls on the Commission to implement a programme of research with the aim of establishing reliable long-term discharge values for all the air pollutants concerned, numbering approximately 300 - 600, since scientists are as yet unable to prescribe such values for the existing plethora of pollutant substances.

MOTION FOR A RESOLUTION - DOCUMENT 1-1267/82

tabled by Mrs WEBER, Mr G. SCHMID, Mr LINKOHR, Mr SCHINZEL, Mr von der VRING, Mr KLINKENBORG and Mrs FOCKE

pursuant to Rule 47 of the Rules of Procedure

on acid rain (air pollution)

The European Parliament,

A. having regard to the directive of 15 July 1980 on air quality limit values and guide values for sulphur dioxide and suspended particulates (OJ No. L 229),

B. having regard to the directive of 3 December 1982 on a limit value for lead in the air (OJ No. L 378),

C. having regard to a directive of 19 July 1982 establishing a reciprocal exchange of information and data from networks and individual stations measuring air pollution within the Member States (OJ No. L 210),

D. deeply concerned at the world-wide, catastrophic damage, involving heavy losses, caused to forests, monuments, buildings and goods by heavy air pollution,

E. deeply concerned that this damage is only one of the effects of air pollution and that serious consequences for human beings cannot be ruled out,

F. having regard to the decision of the European Parliament to prepare an own-initiative report on measures to combat air pollution,

G. having regard to the difficulties involved in comprehensively and definitively naming and eliminating the various causes behind the dying of forests,

H. aware of the ecological and economic importance of common action,

Resolves

1. to restrict emissions of sulphur dioxide from new large firing plant in all Member States to not more than 400 mg/m^3 of waste gas, but with the aim of substantially reducing this limit value as fast as the state of the art will allow;

2. to complete the refitting of existing large firing plant without exception in all Member States within five years at the latest (permitted maximum emission value to be 400 mg/m^3 of waste gas);

3. to introduce a sulphur tax law in all the Member States. Exempt from the tax will be those quantities of SO_2 that would be emitted even with best purification equipment available;

4. to achieve direct desulphurization of fuel oil in all Member States;

5. to encourage the introduction of new firing methods in all the Member States (e.g. fluidized bed process);

6. to provide for the reduction in all Member States of the lead contect of petrol in two stages to eliminate it entirely, comparable to the Swiss legislation, which aims to achieve this by 1986, and the reduction of all other environmental pollutant levels caused by car traffic;

7. to step up the preparation and use of emission registers, to regularly collate the results of existing monitoring stations, and, in the long term, to establish an effective European network of stations to constantly monitor the quality of the air and any changes that occur;

8. to bring about the rapid harmonization of the standard values for pollution to ensure the comparability and convertibility of these values in each of the Member States;

9. to instruct the Commission to develop the appropriate tools to permit the implementation of rapid and effective emergency measures - already needed in some regions of the Community;

10. to allocate funds from the amounts set aside for emergency relief to aid particularly threatened areas now - in the interests of the overall ecological situation in the Community (e.g. Bavarian Forest, Black Forest);

11. to raise at the next world economic summit the problem of the pollution of the environment, in particular those pollutants that extend beyond frontiers and even continents, in view of the shared responsibility and the world-wide need for regulations;

12. in the field of energy policy, to give greater consideration than has hitherto been the case to the needs of environmental policy, i.e. by linking energy policy with the clean air policy
    - through measures designed to reduce energy consumption, to ensure the rational use of energy, to introduce decentralized heat and power generation etc.,
    - through the replacement of pollutant energy sources with cleaner energy sources (biogas, sun, wind, water).

MOTION FOR A RESOLUTION - DOCUMENT 1-1268/82
tabled by Mr BOCKLET, Mr Karl FUCHS and Mr LUCKER
pursuant to Rule 47 of the RUles of Procedure
on the death of woodlands

The European Parliament,

A. concerned by the recent increase in dying trees in some Member States of the European Community,

B. aware of the great danger this represents for woods and their essential function for leisure, ecological balance, natural protection and economic life,

C. convinced that these dangers can only be countered effectively by concerted Community action in close cooperation with the Member States,

D. aware that it is a matter of priority to reduce the pollutants in the atmosphere in order to remove the health hazards for humans and thereby to guarantee a healthy environment not only for woodlands but also for nature as a whole, humans, animals and the countryside,

1. Calls on the Community to undertake, in cooperation with the Member States, immediate and appropriate measures to prevent further damage by air pollution to woodlands and all natural life;

2. Calls for the coordination and stepping up of research into the causes of this ominous development;

3. Calls for the definition of transfrontier, internationally binding, regulations to limit emissions from old and new installations, with the aim of reducing pollution, moving away from the tall-chimney policy which only leads to the spreading of pollutants over large areas;

4. Calls for the increased support of non-pollutant sources of energy including nuclear energy;

5. Calls for immediate negotiations with the eastern bloc with the aim of reducing transfrontier emissions.

MOTION FOR A RESOLUTION ANNEX IV

tabled by Mr von WOGAU, Mr ALBER, Mr FRÜH, Mr HAHN, Mr SCHALL and Mr WAWRZIK

pursuant to Rule 47 of the Rules of Procedure

on the death of trees in the Black Forest

The European Parliament,

whereas

- the death of trees in the Black Forest has now assumed alarming proportions and that if it continues it will not only destroy the recreation area but also jeopardize the basis of existence of many Black Forest holdings,

- it was estimated that in 1978 - quite apart from environmental pollution caused by nitrous oxides, carbon monoxide, hydrocarbons, heavy metals and dust - precipitations of sulphur dioxide in the countries of the European Community amounted to 5.4 million tonnes. Precipitations of sulphur dioxide alone in the Federal Republic of Germany are estimated at as much as 3.5 million tonnes annually,

- precipitations of sulphur dioxide are not only one of the causes of damage to forests but also pose a threat to cultural monuments of the upper Rhine. Total damage through corrosion to buildings and materials has been estimated by the OECD at between 3 and 5% of the gross national product of the Member States, so that in the Federal Republic of Germany, for instance, this amounts to between 40 and 70 thousand million marks annually,

- as a result of the destruction of firs over approximately the last ten years principally in southern Germany, an area of 100,000 ha out of 160,000 ha of firs were considered damaged in 1982,

- since the beginning of 1982 the destruction as a result of harmful emissions of spruce which are particularly valuable economically has now increased very rapidly in the Black Forest and in the alpine foothills as well, and deciduous trees - in particular beech trees - are also showing signs of damage,

- in the Federal Republic of Germany alone, by mid-1982 a total of 562,000 ha of forests or almost 8% of the total forest area have been damaged as a result of emissions,

- in Baden-Württemberg in the early summer of 1982, 40% of firs and 10% of spruce were deemed to be damaged by emissions. Since then this damage has assumed even greater proportions. The total damage amounts to approximately 200 million marks annually,

- damage to forests in Europe in 1981 and 1982 is already so serious that there is no longer time to wait for scientists to prove beyond doubt the noxious effect of each individual pollutant or combinations of pollutants on the various species of trees,

1. Views the deteriorating state of European forests as an increasingly serious indication of the need to reduce harmful emissions into the environment;

2. Demands that the measures to be implemented should take into account the transfrontier nature of this phenomenon; the need to reverse a development which has been in progress for several decades must be made clear;

3. Calls on the Council and Commission to become conscious of the responsibility of the European Communities in combating the causes of the death of forests in the western part of central Europe;

4. Considers that the Commission of the European Communities should as a matter of urgency immediately develop a concerted European strategy to reduce environmental damage caused by emissions, of which the death of forests is only one symptom;

5. Calls for a special meeting of the Council to be convened within the shortest possible time after due preparation by the Commission to enable the Community to play an active part in the immediate future by issuing legally binding decisions in conformity with the objectives of the European Treaties;

6. Urges the Commission, by applying the emergency procedure, immediately to propose directives to the Council aimed at restricting the upper limits of the pollutants responsible for the death of forests to an acceptable level. It is particularly urgent that the Community should fix upper limits of sulphur dioxide in waste gas from power stations at 400 mg per cubic metre. Similar Community measures are also urgently required with regard to nitrous oxides;

7. Considers it a matter of urgent necessity that the consultation and adoption procedures for Community legal acts to reduce pollutants in the environment should be considerably speeded up. The Commission must shortly make proposals for shortened procedures in particular as regards the conversion of Community law into national law;

8. Calls, furthermore, for an immediate Community programme to examine the complex causal connections between the various pollutants responsible for the death of European forests with the participation of the research projects of the various Member States which have so far been in part uncoordinated;

9. Calls to this end for a research institute on the causes of damage to forests to be set up with financial assistance from the European Community. Considers that the Upper Rhine area would be particularly appropriate as a location for this institute;

10. Instructs its President to forward this resolution to the Council and Commission of the European Communities and to the national parliaments and governments of the Member States.

MOTION FOR A RESOLUTION - DOCUMENT 1-102/83

tabled by Mr SCHIELER

pursuant to Rule 47 of the Rules of Procedure

on the establishment of a European Research Centre to combat air pollution and the death of forests

The European Parliament,

A - deeply concerned that the rate at which forests in Europe are dying is increasing,

B - having regard to the alarming numbers of conifers (firs and pines) most threatened by this phenomenon,

C - convinced that the problem of the death of forests can only be solved at international, i.e. European level,

D - whereas the Government of the Federal Republic of Germany, while it holds the Presidency of the Council, intends to place measures to combat the death of forests on the agenda of the next Community Summit Conference in Stuttgart on 6-7 June 1983,

E - whereas the Land Government of Baden-Württemberg has submitted a proposal to the Government of the Federal Republic of Germany, while it holds the Presidency of the Council, on the establishment in Baden-Württemberg of a European Research Centre to combat air pollution and the death of forests,

1. Has decided to support the establishment of a Research Centre to combat air pollution and the death of forests;

2. Proposes Freiburg as the seat of this Research Centre;

3. Instructs its President to forward this resolution to the Commission and the governments of the Member States.

Justification

There can be no delay in setting up a European Research Centre. The rate at which forests are dying has increased dramatically in recent times and now poses a serious threat.

The proposed site of Freiburg is the home of famous institutes of forestry science (the Faculty of Forestry Sciences of Freiburg University and the Forestry Test and Research Institute of the Land Baden-Württemberg) which already occupy leading positions in the field of international research. The research carried out by the Freiburg research institutes has been quoted as the basis for many expert opinions on the subject of the death of forests. The existence of a Forestry Sciences Centre drawing on the scientific institutes in Freiburg should be an important factor in the choice of the site as existing facilities in Freiburg could be put to the best possible use.

MOTION FOR A RESOLUTION

tabled by Mr EISMA

pursuant to Rule 47 of the Rules of Procedure

on East-West negotiations on acid rain

The European Parliament,

A - noting that the countries of both Eastern and Western Europe are causing extensive damage to the natural environment by the emissions of SO_2 and NO_x

B - having regard to the provisions of the 1979 Convention on long-range transboundary air pollution of the United Nations Economic Commission for Europe that has since been ratified by nine individual Member States of the EEC,

C - whereas the European Economic Community is also a signatory to that Convention,

D - whereas the Convention provides solely for the exchange of scientific data information on policies and measuring programmes, etc. relating to air pollution,

E - whereas the Convention has not yet been ratified by all European countries,

F - whereas the question of reducing SO_2 emissions in the countries of both Eastern and Western Europe is simply covered by an annex to the Convention,

G - whereas there is no mention of reducing NO_x emissions in the Convention or in any annex thereto,

1. Calls on the Commission and the Council to urge the countries responsible for most SO_2 emissions, such as Czechoslovakia, Poland and Romania, to ratify the Convention;
2. Urges the Commission and the Council to step up negotiations with European countries outside the Community so that SO_2 emissions on both sides are reduced;
3. Would like to see a reduction in NO_x emissions also incorporated into the above-mentioned Convention;
4. Enjoins the Commission and the Council to conduct the negotiations with the countries of Eastern Europe in such a way that the measures to reduce SO_2 and NO_x emissions already adopted and implemented in the Community are put forward to secure parallel measures in Eastern Europe;
5. Instructs its President to forward this resolution to the Commission, the Council and the governments of the signatory states to the Convention on long-range transboundary air pollution.

OPINION

of the Committee on Economic and Monetary Affairs
Draftsman: Mr de Goede

On 21/22 September 1982 the Committee on Economic and Monetary Affairs appointed Mr de Goede draftsman of the opinion.

It considered the draft opinion at its meeting of 15 June 1983 and, at the same meeting, adopted the conclusions by 18 votes to 1.

The following took part in the vote: Mr Moreau, Chairman; Mr Hopper and Mr Deleau, vice-chairman; Mr de Goede, draftsman; Mr Alber (deputizing for Mr Mihr), Mr Beazley, Mr Von Bismarck, Mr Bonaccini, Mrs Desouches, Miss Forster, Mr Halligan (deputizing for Mr Caborn), Mr Heinemann, Mr Müller-Hermann, Mrs Nielsen (deputizing for Mrs Desouches), Mr Nyborg, Mr Papantonion, Mr Rogalla (deputizing for Mr Ruffolo), Mr Schinzel and Mr Von Wogan.

1. 'Acid rain' is attributed to various types of air pollution. Although there are still many gaps in our knowledge of the causes, effects and prevention of air pollution the picture is gradually becoming clearer and more complete. For example, the Committee on the Environment, Public Health and Consumer Protection recently held an inquiry involving a number of environmental and health organizations and industry which culminated in the public hearings on 19 and 20 April in Brussels (PE 83.652 and PE 84.101).

2. Air pollutants generated in combustion processes are held to be largely responsible. Sulphur dioxides, from the combustion of coal and oil (gaseous fuels contain little sulphur), nitrogen oxides produced by high temperatures and combustion fumes (gaseous nitrogen), acid derivatives (from reaction with water in the atmosphere such as rain, fog), heavy metals, carbon monoxide and photochemical oxidants are the most important causes of air pollution. When combined their harmful effect is greatly increased.

3. Electricity power stations, urban heating installations, traffic, industry and also domestic fuels are the chief sources of air pollutants. The figures for the various types of pollution vary according to the country and region. In the Federal Republic, for example, 56% of SO_2 pollution is attributed to power and heating plants; this figure is lower for the Netherlands, ca. 40%, partly because of the use of natural gas. Industry is responsible for 28 and 31% respectively, and traffic for 3 and 5%. Figures for nitrogen oxides (NO_x NO_2) read as follows, traffic, FRG 45%, the Netherlands ca. 60%; power stations 35 and 20%; industry 15 - 20% and 12%. The combustion of fossil fuels releases large quantities of very toxic heavy metals (e.g. lead, cadmium, mercury). The electricity power stations are mainly responsible for this too (FRG 40%). Climatic conditions (long sunny periods and no wind, for example) mean that air pollution remains for a longer period in the same place which increases the photochemical oxidants. This occurs, for example, in the Rhine estuary in the Netherlands, the Ruhr district in the Federal Republic and the Athens region.

4. Research into the extent and causes of air pollution in the various countries and regions of the Community must be increased. It would be desirable to extend existing data collection networks and to establish them in regions where they do not already exist. Exchange of data, in particular with Eastern European countries and Scandinavia, but also with the United States and Japan could increase understanding of how to combat and restrict its adverse consequences.

5. It is gradually becoming clear what damage has been and is still being done every day. It is widely assumed that our ecosystem may be severely threatened, that nature and the environment, human and animal health may be affected and that for example the anticipated increase in the carbon dioxide content of the atmosphere, through the use of fossil fuels in the next century could have serious and even irreversible effects on the environment throughout the world, such as a rise in sea-level. The behaviour of the polar ice caps could then make the world's climate warmer.

a) It has now been established that forests in various Community countries and in Eastern Europe are dying off. The construction of taller chimneys has meant that the immediate surroundings are less affected by the emissions, although these are still too great, but the more distant areas are adversely affected to an increasing degree. According to various estimates, acid rain is now causing damage to woods, lakes, agriculture, buildings, health etc. amounting to several percentage points of the gross national product of the Community. The OECD estimates the damage at 3 to 5% of the GNP. The damage in certain sectors is very great, as is shown by an estimate from the German Forestry Association that half (!) of the German pine forests (2 million hectares) is already destroyed or threatened. As well as the environmental loss, this represents a considerable loss of wood production and a threat to an important source of employment (estimated job loss of ca. 50,000). In countries such as East Germany, Czechoslovakia, Poland, Yugoslavia, the Scandinavian countries and the Netherlands the actual damage to forests varies, but it is still unacceptable.

b) About 20% of the lakes in Scandinavia are affected by acid rain and are often biologically dead. This is also happening increasingly in Canada and many lakes no longer contain fish.

c) Buildings, many of them of priceless value, are also severely damaged by air pollution. Cathedrals and many historic buildings which have withstood the ravages of time for centuries are now threatened. Restoration, provided it is carried out in time, only provides a temporary solution and is also very expensive. In many cases too nothing can be done to prevent the deterioration and even the complete loss, in the long term of irreplaceable buildings. This also applies to important collections: textiles and paper (archives) are very sensitive to the effects of air pollution. The rate of corrosion of metals is also increased - cars and all types of steel constructions are adversely affected. The same applies to various building materials in particular sandstone, limestone, marble, cement, concrete etc.

d) The long-term effects on human health are not sufficiently known at present. Some pulmonary and respiratory diseases have been partly attributed to air pollution. The 4000 deaths in London in 1952 were the result of smog (combination of air pollution, smoke and fog).

6. The adverse effects of air pollution and the costs which result from it require urgent efforts to limit it drastically; it is absolutely vital that Community standards should be established to limit emissions of air pollutants. It would be preferable to establish international standards, as the damage occurs on a world-wide scale.

7. With regard to energy policy it is also important to pay greater attention both to energy-saving measures, from the angle of harmful effects on the environment, and to the preferred type of energy to be used. It is clear that the increased use of fossil fuels must be seen as largely responsible for the increased air pollution. Unless economically acceptable techniques

can be used to make significant reductions in the air pollution caused by the use of fossil fuels, a new approach might be appropriate.

8. When establishing permissible emission standards the cost aspect must naturally be considered. Another factor is the extent to which it is technically possible to reduce emissions from existing installations and other sources of air pollution. Nevertheless, strenuous efforts must be made as quickly as possible to limit harmful emissions with the principle of the 'polluter pays' as the guideline. The costs to industry resulting from the standards imposed will affect the competitiveness of the various undertakings. The imposition of national standards by only one or a few Member States will naturally affect the competitiveness of industry in the countries where these standards do not apply whilst transfrontier emissions will naturally still affect the countries which have themselves imposed standards. Community legislation is thus highly desirable and necessary.

9. In 1980 a directive was established on limit values and guide values for sulphur dioxide and suspended particulate matter (Council Directive 15.7.1980 No. 80/779). On 24 June 1982 agreement was reached on an EEC Directive for a quality standard for lead in the atmosphere. Mr P. Beazley, a member of our committee reported on this, with particular reference to the lead content of petrol, to the Committee on the Environment, Public Health and Consumer Protection (PE 83.574). The Commission is now preparing a directive on NO_2.[1] Investigations have been made into the possibility of establishing quality standards for other substances (inter alia with regard to methods of measurement and measurements). The Netherlands has therefore pressed for proposals on the reduction of photochemical air pollution. Existing Community legislation is insufficient to maintain the quality of the air at a satisfactory level. Developments in this area in the Eastern bloc countries are also worrying and more action must be taken.

---

[1] A draft directive COM(83) 173 final of 8 April 1983 has since been published.

10. Reduction of air pollution, and thus the considerable damage caused by acid rain, involves the two major problems of whether this is technically possible and whether it is economically and financially feasible. With current technology emissions of all air pollutants can be reduced significantly by up to 95% or more. Fuel desulphurization, clean combustion techniques and flue gas desulphurization have been adequately tested. Fuel savings as a result of technical innovation also help to achieve considerable reductions in aid pollution by traffic (engines), power stations (combined heat and power) and households (wind and solar energy). Technically, therefore, the problems seem surmountable.
From the financial and economic viewpoint the problem is more difficult, but not impossible. Estimates of costs vary widely. Desulphurization of oil costs 10 to 30 ECU per ton and the sulphur content of coal can be reduced by 15 to 30% at costs of 2 to 20 ECU per ton. Coal gasification is also a, rather expensive, solution. Installing desulphurization units at a later stage results in extra investment of several percentage points up to 60%. In new installations the fixed costs are increased by the cost of extra investment. The cost determining factors are, for example, the volume of the flue gas to be desulphurized, the quantity of SO_2 emitted, the capacity of the installation, the sulphur content of the fuel, storage costs, waste and the costs of the reheating process and also the proposed limit values. The investment costs lie between 40 to 100 ECU per installed KWh ($\pm$ 15 to 30% of the normal investment costs).

These are only a few figures. The figures available are too divergent and insufficient to be able to make reliable judgments on costs and further studies must be made. It seems reasonable to conclude that the costs involved are justified in view of the considerable amount of damage.

11. One of the most authoritative studies of the costs and benefits of combatting acid air pollution is the OECD 1979 study. This study also refers to the situation in the EEC countries. The study starts with a zero situation with no measures between 1974 and 1985 for the limitation of emissions, and goes on to examine various alternative situations in which to an increasing extent measures are taken to limit emissions during this period. According

to the calculations contained in this report these alternatives can lead to changes in the amount of SO_2 emitted varying from an increase of 21% to a reduction of 37%.
The costs of reducing emissions in the situations selected varied between $5 - $12 per head of population. The report states that these costs are virtually the same as the advantages arising from reduced damage. This indicates that emissions should be combatted according to the principle of 'the best technical means'.

12. A clean-up programme should be developed aiming at the lowest possible limit values. Total emissions must be halved within five years. In the five year period following that, a further reduction by half should be the aim. The Community's efforts to achieve this objective should be linked with closer and more lasting international consultation; areas outside the Community also produce emissions which have a harmful effect on the Community's territory, whilst their countries also benefit from measures taken within the Community.

13. The administrative and legal situation in the Member States constitutes a serious obstacle to the taking of the measures needed. The policy, or lack of one, is often implemented by local or regional authorities. The method of granting authorizations and the withdrawal or adoption of new environmental standards creates problems. Community legislation would seem appropriate here as other solutions take too long and produce too small a result. Such Community legislation should not only cover new installations but also existing installations, with provision for a reasonable transitional period.

CONCLUSIONS

14. The combatting of air pollution requires coherent measures at national, community and international level in view of the considerable damage caused by this pollution. The existing action programmes (22.11.1973 and 1982-1986) and the associated legislation must be supplemented and expanded and basic definitions established.

15. A continuous and objective assessment of the dangers and damage of a number of pollutants for health and the environment is necessary, as is the establishment of environmental quality standards. Total emissions must be stabilized and then reduced and it would be desirable to reduce these by half in five years, followed by a further reduction by half in a second five year period.

16. The strictest possible emission standards must be applied to permanent and significant sources of emissions. These should be fixed on a Community basis, as the differing, national policies at present result in divergent standards (and thus costs) which leads to unfair competition for the undertakings concerned. In this connection, special priorty must be attached to the reduction of sulpher dioxide emissions and motor vehicle exhaust fumes but also to the extension of the data collection network and research into the causes of the death of forests. The Committee on Economic and Monetary Affairs requests the Commission to inform Parliament of the cost of achieving this reduction in the context of its ERGA report.

17. A system of authorization to be set up by the national authorities on the basis of Community standards must be made compulsory. This must apply both to the construction, and operation of installations which could cause air pollution and alterations to them. The use of installations should have not harmful consequences for human health nor should there be major adverse effects on humans or the environment. Every possible preventive measure must be taken in line with the current state of the art. Established emission limit values should not be exceded.

18. Should, because of technical, economic or other circumstances, emissions not be reduced sufficiently, the type of energy policy to be pursed will have to be reappraised.

19. The Commission must be empowered to intervene and take sanctions so as to ensure that the common rules and standards to be set up are observed in all parts of the Community.

EUROPEAN PARLIAMENT

COMMITTEE ON ENERGY, RESEARCH AND TECHNOLOG

Opinion

on

the proposal from the Commission for a Council Directive on the combating of air pollution from industrial plants (COM (83) 173 final)

and

the following motions for resolutions tabled pursuant to Rule 47 of the Rules of Procedure:

- motion by Mr PURVIS and Mr SHERLOCK on coal and the environment (Doc. 1-876/82),
- motion by Mr von WOGAU and others on the death of trees in the Black Forest (Doc. 1-27/83)
- motion by Mr SCHIELER on the establishment of a European Research Centre to combat air pollution and the death of forests (Doc. 1-102/83)
- motion by Mrs WEBER and others on acid rain (air pollution) (Doc. 1-1267/82)
- motion by Mr BOCKLET and others on the death of woodlands (Doc. 1-1268/82)

Draftsman: Mr E PETERSEN

4.10.1983

On 24 March, 21 April and 29 April 1983, the Committee on Energy, Research and Technology appointed Mr Eggert PETERSEN draftsman on the documents discussed in this opinion.

The committee considered the draft opinion at its meetings of 24 March, 21 June and 29 September 1983, and adopted the conclusions in the opinion, by 12 votes in favour with 4 abstentions, at the last-mentioned meeting.

The following took part in the vote: Mr Seligman, acting chairman, Mr Petersen, draftsman, Mr Adam, Mr Bernard, Mr Flanagan, Mr Karl Fuchs, Mr Gauthier, Mr Linkohr, Mr Markopoulos, Mr Moreland, Mr Normanton, Mr Petronio, Mrs Phlix, Mr Purvis and Mr Veronesi.

The opinion was forwarded on 4 October 1983.

I. INTRODUCTION

1. All other things being equal, energy policy goals have environmental implications. These may vary from one geographical area to another, but energy production and consumption in every country are inevitably dominated by the combustion of fossil fuels. Energy related pollution also includes substantial contributions from households (especially from heating), industry and transport.

II. TECHNICAL ASPECTS OF POLLUTION

2. Sulphur and nitrogen compounds are released during combustion of fossil fuels; sulphur in the form of gaseous sulphur dioxide (SO_2) and nitrogen in a combination of the gases nitrogen monoxide (NO) and nitrogen dioxide (NO_2) (collectively known as NO_x).

These emissions combine with atmospheric H_2O (water vapour, rain, mist, etc.) to produce sulphuric acid (H_2SO_4) and nitric acid (HNO_3), hence the expressions 'acid rain' and 'smog'. Pollution may also take the form of dry deposition.

Acidification, natural biological processes and intensive methods of cultivation and harvesting in forestry and agriculture cause the release of heavy metals occurring naturally in the soil (copper, lead, zinc, mercury and cadmium), which may reach the groundwater. Acidification also leaches out mineral nutrients, and the aluminium released may inhibit root growth or kill roots.

3. Whereas these are the immediate effects of combustion, the long-term consequences are, in addition to the accumulation of all such substances in the ecosystem (causing damage, the nature and extent of which are as yet little known), an irreversible increase in atmospheric CO_2, enhancing the 'green-house' effect and inhibiting photosynthesis in plants[1].

Extent of SO_2 pollution

4. A 1977 survey estimated that Europe (including the USSR) and North America emitted an annual total of at least 50 million tonnes of SO_2,

---

[1] With potentially disastrous effects on the climate and on agricultural output.

about 80% from combustion and 20% from industrial processes. By way of comparison, pollution in Europe amounted to about 12 million tonnes of SO_2 in 1950[1].

5. In a survey[2] the OECD estimated the amount of SO_2 emitted on combustion by its European members at over 20 million tonnes in 1974 and slightly more today. The table below shows the 1974 figure for each country with a separate amount for industrial processes (to be added to the combustion emission figures).

SO_2 emissions by the OECD countries in Europe in 1974 (million tonnes)

Country	Combustion	Industrial Processes
Austria	0.336	0.106
Belgium	0.763	0.235
Denmark	0.422	0.202
Finland	0.330	0.218
France	2.982	0.318
Fed. Rep. of Germany	3.598	0.387
Greece	0.555	
Ireland	0.174	
Italy	2.644	0.207
Luxembourg	0.048	
Holland	0.244	0.299
Norway	0.121	0.061
Portugal	0.130	
Spain	1.451	
Sweden	0.580	0.250
Switzerland	0.143	0.009
Turkey	0.504	
U.K.	5.138	0.467
Total	20.170	

6. Our interest is not confined to the EEC countries, as SO_2 pollution crosses borders. The three major polluters in eastern Europe, Poland, the German Democratic Republic and Czechoslovakia, each emit quantities of SO_2 of the same order as do Italy and France.

---

[1] 'Programme on long-range transport of air pollutants' OECD, 1977.

[2] 'The Costs and Benefits of Sulphur Oxide Control', OECD 1981

III. CAUSES AND EFFECTS

7. Only recently have dying forests in densely populated and industrialized areas of Europe and dying lakes in 'unpolluted' natural regions far from industrial areas provided visible evidence of cause and effect, although perhaps not direct proof, especially in the case of dying lakes. Increasing corrosion is further visible evidence. The damage caused to health is as yet incalculable, not to mention the impact on the bacteria in the soil which recycle the nitrogen and carbon compounds in the food chain, on which our whole biosphere depends. There is also physical damage to buildings of all kinds, costing huge sums each year. The damage to the Acropolis is the best example of this.

8. The blame has been put on power stations in particular, and industry. Faced with the huge cost of purifying (or further purifying) the toxic flue gases they emit, they questioned the cause and effect relationship described above and called for further investigations.

9. Two comprehensive investigations into the matter have indeed been carried out, both in the USA[1], and the findings published in June 1983. Both establish a direct link between the quantity of flue gases emitted and the quantity of acid rain or deposited gases (dry deposition). The central conclusion is unambiguous: acid rain is a problem, and a reduction of emissions is the solution!

10. In other words they have proved something that should have been obvious: you cannot go on belching out tons of toxic substances and gases, some of which produce acids, year after year without consequences. until recently the latter were invisible which the chemical and biological resistance of the soil and lakes was able to absorb the pollution, but gradually as the capacity to absorb and partly neutralize the acids was eroded the damage has become apparent. The situation has not been improved by the fact that farmers themselves are great offenders, spreading equally toxic substances.

IV. DESULPHURIZATION - THE TECHNICAL ASPECTS

11. It should be obvious that dilution techniques, i.e. building high chimney stacks at power stations or other energy-producing or consuming

---

[1] One by the National Academy of Science and the other commissioned by the President's scientific advisers.

plant, are no more the answer to the pollution problem than is the planting of 'smoke-resistant' trees or the intensive use of fertilizers and adding lime to increase resistance to pollution.

12. There are various technical ways of reducing SO_2 and they may be broken down into three classes or strategies: (1) curative, (2) diversion and (3) preventive. The first includes the spreading of lime in affected areas (e.g. lakes and woods), planting resistant trees and the like, with the aim of increasing resistance to SO_2 pollution. The second strategy attempts to dilute the pollution, and includes the use of low sulphur content fuels. The third strategy involved the desulphurization of fuel before or during combustion, and flue gas scrubbing after combustion.

13. It must be realized that the first strategy can be no more than a necessary interim solution, as the damage already caused and the expenditure and time required to install scrubbing systems as described in the third strategy mean that SO_2 emissions will continue for years. The second strategy is unacceptable, apart from the use of low sulphur content fuels, which should really fall under the third strategy. On the other hand the third strategy must be pursued with all the resources available, as the EEC and its neighbours will have to use fossil fuels to meet most of their energy requirements for years into the future, for familiar energy policy and economic reasons.

14. It is astonishing how rarely the increased use of renewable energy resources, combined heat and power systems, energy saving and the rational use of energy are mentioned among the preventive methods of reducing SO_2 pollution, and then only in passing. There is great potential here for reducing the consumption of fossil fuels. Of course there is also the use of nuclear power, but that raises other problems.

V. DESULPHURIZATION - THE COST

15. Flue gas scrubbing involves substantial cost, but also brings savings (especially under the first strategy) and the benefits are often difficult to quantify in financial terms, e.g. a cleaner and better

environment. It is generally assumed that reducing SO_2 emissions by half would restore the ecological cycle's ability to absorb and/or neutralize pollution.

16. The Academy of Science calculates that a 50% reduction in the USA would increase electricity and heating prices by 5%. In its study, the OECD estimates that reducing SO_2 emissions by half in western Europe today (using known technology as mentioned in the third strategy) would cost $4,600 million (in 1980 US dollars) (about £2,700 million) or $400 per tonne of SO_2 removed. This would cost Italy about $1,000 million and the Federal Republic of Germany, France and the UK about $600-700 million each per year. In Denmark it has been calculated that complete elimination of SO_2 emissions would cost about Dkr 4,000 million (1982 prices) (a good $500 million) in capital costs and a quarter of that again in annual running costs.

17. Expenditure would vary between 2.5 - 3.5% of total energy costs. The capital cost averages 0.6% of GNP for western Europe as a whole, and varies from one country to another between 0.1 - 0.3% and 1.0 - 1.2%.

18. costs vary widely according to the type of fuel used (with varying sulphur content), and the varying size and expecially age of the power stations concerned (the older and smaller the power station, the higher the relative capital cost).

19. The argument as to who is to pay for scrubbing SO_2 emissions continues unabated. Should the polluter pay; if not, who should? It has to be admitted that many problems are involved (political, administrative and fiscal), as pollution does not stop at frontiers (and national frontiers are not the only ones involved). The one certainty is that the consumer will end up paying for the goods and services he desires and needs from the undertaking emitting sulphur dioxide. Although it is politically difficult, we must all acknowledge that we have to pay for a cleaner environment, regardless of whether we use clean or dirty energy (usually a matter of chance) just as we pay (individually or via taxes) for research, hospitals, schools and roads, whether we use them or not. Perhaps a change of attitude is needed before we acknowledge that purification costs must be included in the final price of energy, as are the cost of building power stations and transmitting power. The EEC has clear responsibilities in this international problem.

VI. ACTION

20. On the basis of the above, the motions for resolutions we are considering here, and the Commission's words in its proposal for a directive, it can be said that we are facing a disaster and must take action immediately.

21. If action is morally and politically necessary, and technically reasible, it must be made financially possible.

In terms of energy policy we must produce energy in the cleanest possible way. This can be done either by the use of non-polluting energy sources or by savings achieved by the rational use of energy (in conformity with Community and national energy objectives). The most up-to-date and efficient techniques for purifying fuels and emissions must be used, as well as low sulphur fuels.

22. From the research and technology point of view there must be investment in producing effective and cheap technology for purification processes[1], and at the same time efforts must continue to develop techniques for more efficient use of energy, energy saving and the use of solar energy in the widest sense. European know-how and expertise can be applie and the employment and export opportunities are substantial. There are many excellent energy technology institutes in Europe, but cooperation between them and the exchange of information on the state of the are leave much to be desired. Cooperation can be encouraged without necesarily stifling healthy competition. It is the Commission's responsibility to point out gaps in technical knowledge and to indicate possible fields of cooperation (which it does, albeit sporadically). There is no need to set up new institutes for the purpose, but it might be desirable to lend financial support to those best placed to deal with specific projects, the normal community criteria for aid serving in the selection of projects and/or contracting parties and implementation.

---

[1] A coal-fired 4MW district-heating station which is pollution-free and recycles all flue gas energy and coal dust has been built at Kibaek in Denmark. The 7,800 g/hour of sulphur normally emitted has been reduced to 100g/hour. The plant operates economically, partly by virtue of the recycling of heat to produce savings of 14%. The technology can be applied in district-heating stations of up to 20 MW and propably larger.

VII. OBJECTIVES

23. Community action will of course require clear objectives for reducing emissions over a specific period, the aim being to restore the ecological cycle's ability to neutralize pollution.

24. It is therefore clear that the Commission's proposal for a directive on air pollution from industrial plant does not go far enough, encumbered as it is with exemptions. At most it seems to provide a lowest common denominator,, and it contains no sanctions against polluters failing to comply with the directive. The Committee recommends that the proposal be referred back to the Commission for further consideration. It is essential for any new Commission proposal to include a detailed estimate of the financial and economic costs associated with more far-reaching directives.

25. The minimum objectives for non-destructive energy consumption and the use of fossil fuels, including industry, must include:

A. PURIFICATION OF EMISSIONS

To levels where the atmosphere and the biosphere in general is capable of neutralizing pollutants; the pollution to be at least halved by the year 2,000, but with the aim of further reductions down to the technically feasible minimum during the first decade of the new millenium. This goal entails

B. GREATER TECHNOLOGICAL AND SCIENTIFIC COOPERATION

Objective A. cannot be achieved without substantial and increased efforts to obtain the technology required.

As we have to deal with trans-frontier pollution calling for international cooperation, the Community must take action on several fronts with the aim of:

1. charting the sources, quantities and effects of pollution;
2. indicating the action required, including technological action;
3. offering financial aid to produce the technology required, applying the usual criteria for Community aid (conformity with objectives, selection of projects and their execution);
4. community action in cases where the emission limits are breached.

These measures call for

C. AN INCREASE IN BINDING INTERNATIONAL COOPERATION

While the Communtiy is submitting proposals concerning the objectives listed in A. and B., and adopting its own implementing legislation, further international cooperation is required as the Community both emits pollution to and receives pollution from its neighbours, especially from eastern Europe.

The Commission is therefore requested to intensify its negiotiations with other countries in appropriate forums with a view to securing legally binding agreements. These agreements should also include the waters adjoining the Community, i.e. the North Sea, the Baltic and the Mediterranean.

CONCLUSIONS AND RECOMMENDATIONS OF THE SECOND STOCKHOLM CONFERENCE ON ACID RAIN (28-30 JUNE 1982)

1. The Conference noted that 13 countries had ratified the Convention on Long-Range Transboundary Air Pollution and urgently appealed to the remaining signatories to expedite their ratification so that the Convention formally can enter into force in the course of 1982. The participating Ministers and Heads of Delegation reconfirmed the commitment to the full implementation of, and active contribution to, the work within the Convention.
2. The Conference took note of the progress made under the provisional implementation of the Convention.
3. It was noted that in North America the Governments of Canada and the United States are developing a bilateral agreement which will reflect and further the development of effective domestic control programmes and other measures to combat transboundary air pollution and are taking interim actions available under the current authority.
4. The Conference considered that the signing of the Convention and the adoption of the Resolution on Long-Range Transboundary Air Pollution, in November 1979, was a clear recognition that acid deposition from air pollution, including long-range transboundary air pollution, is one of the major environmental problems, requiring policies for further urgent action at the national level and concerted international efforts.
5. The Conference recognized the value of developing a continuing public dialogue and the role of non-governmental organisations in this regard in order that scientific information is made available in an appropriate form.
6. Estimates indicate that in recent decades acid deposition has increased significantly, due primarily to increases in emissions of SO_x and NO_x through the combustion of fossil fuels. During the 1970's emissions increased in some countries, while others kept emissions of SO_x at stable levels or even reduced them. This can largely be explained by energy conservation measures, by reduced economic activities and by effects of emission controls.
7. An assessment of trends over the next 20 years indicates a stabilization of emissions and possibly a reduction. There are signs, however, that emissions in some countries are not going to follow the downward trend exhibited by those in some other countries. In addition it was recognized that downward trends in SO_2 emissions might be reversed if countries failed to comply with the obligations contained in the Convention.
8. Through various monitoring programmes, especially the European Monitoring and Evaluation Programme (EMEP), it has been confirmed that in most ECE countries a large part of acid deposition is of foreign origin.

9. The acidification problem is serious and, even if deposition remains stable, deterioration of soil and water will continue and may increase unless additional control measures are implemented and existing control policies are strengthened.

10. Based *inter alia* on the report from the preceding Expert Meetings, the Conference agreed that further concrete action is urgently needed within the framework of the Convention to reduce air pollution, including long-range transboundary air pollution. Such action should include:

(a) – consultations within the framework of the Convention with the purpose of establishing concerted programmes for the reduction of sulphur emissions taking into account environmental needs, socioeconomic priorities and energy consideration. The Conference considered that the establishment and implementation of the concerted programmes for the reduction of sulphur emissions to be a matter of urgency. Similar actions should be taken as soon as possible for reducing emissions of nitrogen oxides;

(b) – the use of best available technology which is economically feasible for the reduction of sulphur emissions. Flue gas desulphurization (FGD) has been proven as a main SO_x control strategy. Alternative technologies like the use of clean fuels, fuel cleaning and process modification are also applied. In new and, where practicable, rebuilt installations, such as power stations, the above mentioned technologies should be introduced. Due to the consequences for transboundary pollution high stacks in place of emission control devices must today be considered an obsolete abatement mechanism for sulphur emissions. Best available technology which is economically feasible should also be applied to reduce NO_x emissions from both stationary and mobile sources;

(c) – in applying these technologies account should be taken of the need to minimize waste products and polluting discharges to other environmental media;

(d) – the support for research and development of advanced control technologies, appropriate for reducing emissions of SO_x and NO_x as well as the use and transfer of such technologies;

(e) – the further development and implementation of energy conservation measures;

(f) – the further development of the North American monitoring programmes as well as the European Monitoring and Evaluation Programme (EMEP), *inter alia* through better geographical coverage; improved emissions data; standardization of sampling and measurement methods and improved modelling.