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TO THE COUNCIL, THE EUROPEAN PARLIAMENT AND THE ECONOMIC AND SOCIAL COMMITTEE

ENERGY AND ECONOMIC AND SOCIAL COHESION

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SUMMARY AND CONCLUSIONS

The need to integrate the objective of economic and social cohesion into the Community's energy policy

1. One of the priorities of the Treaty on European Union, in accordance with the objectives already set out in the Single Act, is to strengthen economic and social cohesion so as to reduce the disparities between the levels of development of the various countries and regions of the Community; in a context of overall growth, the growth of the least developed countries and regions should be given more support. This objective of cohesion must be integrated into all the Community's policies, and more particularly into those which are "horizontal" in the sense that they affect all economic sectors as well as people's standards of living.[1]

2. Energy policies are undoubtedly horizontal in this sense and their implementation has a decisive influence on the fundamental parameters of economic and social cohesion, namely economic activity, the environment and standards of living. At this time, when long-term unemployment is increasing throughout the Community, it is vital that energy policy should take full account of the direct and indirect effects which energy options and decisions have on employment, in both quantitative and qualitative terms.

2 bis. In fact the Community's fifth environmental action programme 'Towards sustainability' makes specific reference to the importance of the energy sector in relation to sustainability and environmental protection. The programme also recognises the special needs of the Cohesion Regions in regard to the sustainable growth in which energy plays an important role. Moreover, the key role of measures in the field of energy is also highlighted in the Commission's strategy for the limitation of carbon dioxide emissions and the commitments of the Community and the Member States in the Framework Convention for Climate Change.[1*]

3. The main objectives of Community energy policy are to ensure security of supply, to promote energy efficiency and the use of renewable energy resources, to minimize environmental impact and to complete the internal energy market, while at the same time contributing to regional development and to cooperation with third countries. An analysis is therefore needed of the ways in which the objectives of greater cohesion dovetail with those of the Community's energy policy, and ways must be found of ensuring consistency between the two sets of objectives.

4. Community energy policy is developing in the context of very disparate rational, regional and local situations. Moreover, the least developed countries and regions are not only handicapped by having insufficient access to energy supplies but are also the least efficient in their use of energy. If greater integration between energy systems in Europe is to help reduce these disparities, energy policy must include the objective of cohesion and must be prepared to play an important part in achieving that objective.

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1 Articles 130a and 130b of the Treaty on European Union.
1* COM(92)23 final, 27.3.1992, vol II

The need for supporting measures

5. The Community has already taken a number of specifically energy-related initiatives in the context of its structural policies, some of which have been adopted in the context of energy policy, including its R&D aspects and are oriented towards the "cohesion" objective. The main initiatives concerned relate to:

- the improvement of energy infrastructure in the least favoured regions (REGEN Programme), financed from the Structural Funds;

- improvements in energy management and energy efficiency, the exploitation of renewable energy resources and the promotion of new energy technologies (the THERMIE, SAVE and ALTENER Programmes in the context of energy policy, the JOULE R&D Programme and the VALOREN Programme financed from the Structural Funds); and

- the promotion of regional and urban energy planning in the context of energy policy.

Furthermore within the Community Support Framework Programmes (CSFP) of the regions whose development is lagging behind (objective 1) and from the point of view of improving basic economic infrastructures the Community has allocated to energy 1.712 million Ecu for the period 1989-1993[1bis]

6. The accelerating process of integration and the fact that large disparities remain in spite of the efforts made to reduce them show that those energy-related measures and initiatives which can help strengthen cohesion must be consolidated and expanded, and that we must seek to ensure that they are better suited to the specific needs of the least developed regions. Resources for this purpose can be found at Community level, but the Member States and the regions must recognize that this is a priority for them too.

7. The principle of subsidiarity must be applied here.

The Member States and the regions:

- must ensure that energy is taken into account in their regional development programmes;

- must provide for the necessary institutional and legal measures; and

- must make available the financial resources needed for implementing measures to reduce inequalities in their access to energy. All this must be supported, as necessary, by Community resources, in the form not only of financing but also of know-how, technology and the capacity to organize cooperation between the less developed regions and those which enjoy greater advantages.

The Community, for its part, must draw up a strategy and implement the supporting measures needed if energy is to help strengthen cohesion. In fact:

- the need for Community action (second paragraph of Article 3(b) of the Union Treaty) arises from one of the main objectives laid down in the Treaty, namely economic and social cohesion;

1bis (See SEC (92) 1327 of 1.7.1992)

- the nature (type) and intensity of the proposed action at Community level must comply with the criterion of proportionality implicit in the subsidiarity principle (see the third paragraph of Article 3b of the Treaty). In particular, such action will consist of:

  * recommendations to the Member States and the regions;
  * encouragement for cross-border and inter-regional cooperation;
  * financial support, both under the Community's energy policy programmes and from the Structural Funds.

Strategy and guidelines for supporting measures

8. In this Communication, a strategy is proposed for integrating the objective of economic and social cohesion into energy policy and, at the same time, for using energy to help strengthen such cohesion. This strategy consists in:

(i) developing an overall approach to the study of links between energy and cohesion, highlighting the role that energy can play in strengthening cohesion both at the level of energy policy and in terms of other policies such as regional development, agriculture, environment, transport, research and social policies;

(ii) introducing a set of supporting measures relating to energy infrastructure, energy efficiency and the exploitation of regional energy resources.

9. There would be two aspects to this strategy:

* **the "Energy Policy and Cohesion" aspect**, in which energy policy takes account of cohesion via:

  - programmes already developed or being drawn up under this policy, namely programmes for energy management and the development of energy technology (THERMIE, SAVE, ALTENER, JOULE, regional and urban energy planning), and

  - the completion of the internal energy market and the development of trans-European energy networks (see Title XII of the Treaty on European Union).

* **The aspect relating to "Other Policies, Energy and Cohesion"**, in which other policies take account of the ways in which energy can contribute to cohesion:

  - via the consistent implementation of energy-related supporting measures, and

  - by encouraging regional authorities to take account of energy projects in regional development programmes for which financing is made

available under the Community's structural policies, including - where appropriate - energy-related elements in new Community initiatives. These elements would relate, in particular, to:

- **"Cross-border energy"**, since action taken by frontier regions should be coordinated to able them to rationalize the management of their energy transport and distribution networks and to make better use of their own energy resources;

- **"Energy and the Countryside, Islands and the Outermost Regions"**, where improved access to energy and the exploitation of local energy resources can make an important contribution to the diversification of economic activity; and

- **"Energy and the Urban environment"**, since the interplay between energy, the environment and the economy has a considerable impact on the quality of life. Towns and cities, especially in the less developed regions, often have difficulty in improving and diversifying their energy supplies and cannot always pay sufficient attention to energy management. In this connection, attention should be drawn to the importance of planning, constructing and maintaining energy distribution infrastructure (gas pipelines, electricity grids, heat distribution networks, etc.), rational energy management and the exploitation of local energy resources, particularly renewable resources and waste.

Conclusions

10. The purpose of this Communication is to propose an overall approach to the problems of energy and Community cohesion. It has been drawn up by the Commission on the basis of studies, contacts with experts in these fields, the experience of Community programmes and their assessment and the discussions which arose from the conferences organized in Lisbon in June 1992 on the subject of "Energy and Economic and Social Cohesion in the Community" and in Milan in July 1993 on the subject "Energy and the Regions".

This is essentially a discussion and information document intended to fuel debate and to prepare for the decisions which the Community and the Member States will eventually have to take, on policies and programmes relating to energy and regional development or on the use of the Structural Funds.

The Commission is sending this document to the Council, to Parliament, to the Economic and Social Committee and the Committee of Regions and invites the Council:

(a) To take note of the Commission's analysis and its intention to:

* ensure that the objective of greater economic and social cohesion is taken into account in measures introduced under the Community's energy policy;

* to ensure that the potential contribution of energy to cohesion is integrated into other Community policies;

* to integrate, where appropriate, energy-related elements such as those referred to in point 9 above into new Community initiatives financed from the Structural Funds;

(b) to recommend that the Member States include an energy component in their regional development plans and programmes.

I ANALYSIS OF THE ROLE OF ENERGY IN STRENGTHENING ECONOMIC AND SOCIAL COHESION

1. Links between energy, the economy and economic and social cohesion

Economic development and social progress are closely linked to the availability of energy resources which enable people to produce goods, carry on trade and satisfy the whole set of needs which arise from the improvement in their living conditions. Energy and development are thus intimately bound up with one another, but the relationship between them changes over time in line with the changes in economic and social structures, which are themselves conditioned by factors as diverse as technical progress, international relations, political and institutional frameworks and our relationship with our environment. There are various ways of looking at energy in terms of economic development:

- it is a production factor and therefore one of the keys to industrial competitiveness;

- there is a whole series of energy-related branches of industry which play a considerable role in national economies and international trade, so that energy has a significant impact on employment;(2)

- it plays a key role in satisfying people's essential needs and its availability determines standards of living;

- its production and use cause a large number of environmental and sometimes health problems.

Thus, however one looks at the energy question, one finds that it is intimately bound up with the various parameters by which economic and social cohesion is measured: economic activity, the quality of the environment and standards of living.

It cannot be denied that the least favoured regions of the Community are in the worst situation as regards energy:

- the countries in which they are found are the most heavily dependent on imported sources of energy.[2] Thus Greece, Ireland, Italy, Portugal and Spain have levels of dependence of between 85% and 65% - considerably greater than the Community average (50%) - with Greece, Italy and Portugal being particularly dependent on oil (which accounts for more than 60% of their energy supplies, as against 36% for the Community as a whole);[3]

- these regions have the lowest per capita levels of energy consumption (between 1 and 2.5 toe/year/inhabitant as against 3.4 toe for the Community as a whole). This is because they produce fewer goods and services and frequently enjoy a mild

2 See Annex 1, tables 1 (relating energy to cohesion) and 1 (a) (employment in the energy sector).
3 Greece, Ireland, Italy, Portugal and Spain import virtually all the oil they consume.

climate. In addition, their inhabitants have a relatively limited purchasing power and own less equipment (electrodomestic goods, cars, heating systems or air conditioning, etc.) than the Community average;

- these regions are relatively inefficient in their use of energy,[4] chiefly because they are technologically backward and their sources of energy supply are less diversified.[5] This lower efficiency is the main reason for their high energy intensity (toe/unit of GDP) - higher, in general, than that of the most developed countries of the Community;

- they have little or no access to the major interconnected energy networks (electricity and, above all, natural gas), which hampers the diversification of energy supplies and denies consumers high-quality energy.

In terms of energy, therefore, the less developed regions of the Community are in an unfavourable situation which is both one of the causes and one of the consequences of their economic backwardness. An energy policy which takes account of the need for greater economic and social cohesion, i.e. which aims to provide all countries and regions of the Community with a sufficient level of development, must ensure that all enjoy security of supply and have access to reasonably priced high quality energy obtained from a range of sources. Such a policy must manage, in a consistent fashion and in the long term, the complex bundle of actions and interactions between energy and the economy, energy and the environment, energy and decisions affecting where people live and work.

2. The impacts of Community energy policy on economic and social cohesion and the need for supporting measures

The main objectives of Community energy policy are to ensure security of supply for the Community as a whole at a reasonable cost, to minimize the environmental impact of energy systems, to make the internal energy market a reality, to promote greater energy efficiency and the development of renewable resources, while at the same time contributing to regional development and to cooperation with third countries.

The achievement of these objectives can often have widely differing impacts on economic and social cohesion. For example:

2.1 Security of supply means, in the first place, making better use of Community energy resources and further diversifying both of the forms of energy used and the sources from which it is obtained.

4 A comparison of one sector with another (see the country-by-country comparison of the MEDEE and MURE databases developed in connection with the programmes run by DG XII) shows that the amount of energy consumed in supplying a particular service (transport of goods), producing a particular product (e.g. steel, aluminium) or satisfying a particular need (heating) is generally greater in the least developed countries of the Community.

5 Thus consumers who have no access to certain forms of energy (e.g. natural gas in Portugal) are obliged to make less efficient choices (using electricity for heating).

This is particularly true in the case of natural gas and oil, of which the Community is a major importer. Security of supply also involves constituting strategic stocks (chiefly of oil) because of the latent risks of a disruption in supplies. Finally, it means improving and extending the supply networks (particularly for gas and electricity) and their interconnections so as to provide greater access to the available resources and capacities, and it means taking steps to ensure that demand is more flexible.

These various elements of a supply security policy have very different effects on economic and social cohesion:

- the improved exploitation of local energy resources can only be of benefit to the less favoured regions, since it means that wealth and jobs are created while the environment is protected;

- the constitution of strategic stocks involves considerable expenditure and costs which place a proportionally heavier burden on the less developed countries for reasons already mentioned (greater dependence on oil, greater dependence on imported energy and the greater energy intensity of their GDP);

- extending and improving networks and their interconnections, where the latter affect the less developed regions, helps improve standards of living and stimulates economic activity. Access to high-quality electricity or natural gas supplies enables households and the tertiary sector to use more suitable equipment in terms of efficiency, price and comfort, improves capacity in the sense of providing better value for money and at the same time enhances economic competitiveness.

  Such extension and improvement of networks and interconnections requires major capital expenditure, and since the initial level of consumption in the less favoured regions is so low such projects are generally economically viable only in the medium to long term. They consequently have little attraction for private operators. Moreover, the less developed regions and Member States do not have sufficient resources to bear the total cost in all cases. Consequently, when such capital projects are potentially economically viable, the Community may help finance them (e.g. under the REGEN Programme).
  Clearly, however, excessive subsidies for the networks can prove a serious disincentive to the exploitation of regional or local energy resources. (For instance, a major

subsidy granted to the gas distribution network in a rural area may enable the distributor to sell his gas at a price which is competitive with that of wood and thus endanger, for example, a local system for deriving energy from wood).

In addition, the extension of energy networks will have to take account of possible synergies with other networks, in particular transport and telecommunications, thus limiting environmental impact.

2.2 The promotion of energy efficiency and the development of renewable energy resources help strengthen economic and social cohesion:

- both these approaches generate economic activity, thereby creating added value and employment. In many cases it can be shown that the exploitation of renewable energy resources and investments in energy efficiency make it possible to replace operating costs (arising from the purchase of imported energy) by regional investment and maintenance costs (essentially the creation of local jobs). Moreover, by making economic activity less energy intensive one increases the competitiveness of local firms;

- they both improve the quality of the environment and standards of living. Each ton of oil equivalent (toe) saved is, by definition, non-polluting since it represents one ton less of oil product in circulation, and renewable energy resources have the lowest environmental impact per toe, though their impact must not be neglected. Some of these resources also make it possible to supply high-quality energy (such as photovoltaic solar energy) to places which the networks cannot reach, and the rational use of energy often helps improve people's quality of life (e.g. maintaining homes at a comfortable temperature thanks to good insulation);

- most of the less developed regions of the Community have considerable potential for using energy resources which are, for the most part, renewable, and we know that although such resources are already making a significant contribution to meeting current demand (though this is often overlooked in the statistics), much greater use could be made of them.

Energy efficiency and the development of renewable energy resources imply a major investment both in financial terms and in terms of human resources (appropriate training in the field of energy). An additional obstacle for the less developed regions is the need to acquire technology and know-how which are not always readily available. Programmes such as THERMIE or the earlier demonstration programmes were designed to overcome such problems throughout the Community, but it must be admitted that although their overall impact has been positive they have been less effective in the less developed regions. Most of the aid for projects supported by the Demonstration Programmes or, at present, under the THERMIE Programme is channelled[6] to the

6 More than 2/3 of such aid have been used in regions not covered by objectives 1, 2 and 5b (see "Thermie and economic and social cohesion", EVE/ADEME, a document prepared for DG XVII, September 1992).

developed regions, and a higher percentage of approved projects is abandoned in the less developed regions. It should also be noted that the projects implemented in these regions include a considerable element of innovation imported from the more developed regions but which is not always particularly suitable or does not offer the best opportunities for dissemination.

The obstacles encountered in implementing such programmes in the less developed regions are chiefly as follows:

- local resources are less competitive[7] than "centralized" energy resources (gas, the electricity grid, oil products, coal). This is often a matter of price[7*] but it can also be related to the regional and local operators' lack of know-how, which means excessively high capital costs, unreliable equipment and greater difficulties in financing projects relating to energy efficiency or the exploitation of renewable energy resources;[8]

- it is more difficult to disseminate technologies in these regions because too little is known about the potential markets, users are less well informed, and the smaller number of economic operators with the technical ability to inform users and to plan and carry out projects means that there is less regional and local capacity for absorbing such technologies;

- inappropriate institutional and legal frameworks mean that the potential of these regions cannot always be fully exploited. All too rarely does one find structures (such as a Regional Energy Agency) whose purpose it is to organize such exploitation, and certain monopoly situations make it difficult or impossible to use certain resources or to exploit local potential (hydro-electric resources, wind power or combined generating potential).[9]

2.3 Regulations on the environment and research, demonstration and development programmes aimed at reducing the environmental impact of energy systems help to improve the quality of the environment and hence that of human health in all regions of the Community and are thus favourable to cohesion.

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7 Measured in terms of the cost of supplying the consumer with a unit of energy produced from local resources (e.g. solar heating, photovoltaic electricity) as compared with the cost of supplying the same unit of energy produced from "conventional" sources (e.g. gas, electricity, oil products). It must be borne in mind that the consumer does not make his choice simply on the basis of a comparison of costs but is also influenced by the comparative quality of the service provided (e.g. reliability of equipment) or by the subsidies (see point 2.1) which can alter the terms of the economic comparison.

7* The purchase price for consumers usually fails to take account of the environmental costs of the energy.

8 For instance, projects for installing more efficient heating systems in public buildings (such as hospitals, schools, etc.), though extremely viable on paper (sometimes with payback periods of less than a year), are thwarted by inflexible budgets and the fact that there are no firms to provide third-party financing.

9 The report from the Commission to the Council on the progress on cooperation between public utilities and auto producers of electricity (SEC(92)1411, 22 July 1992) shows that the prices paid in some countries to independent electricity producers make it uneconomic to exploit such resources or potential.

The Commission's proposed strategy[10] for reducing carbon dioxide (CO_2) emissions includes the introduction of a carbon/energy tax. This tax is considered as one of the measures needed to increase energy efficiency and the use of clean and renewable energies along with SAVE and ALTENER, thereby increasing economic activity, employment and energy security, as well as for reaping environmental benefits [10bis]. To ensure that environmental measures in the energy sector are in accordance with the objectives of cohesion, particular emphasis will have to be placed, in the less favoured regions, on the other elements of the proposed strategy for reducing CO_2 emissions, namely the promotion of energy efficiency, the development of renewable energy resources and the efficient use of natural gas.

2.4 The completion of the internal energy market should make it possible to take greater advantage of the complementarity between energy systems which are as yet too compartmentalized, to restructure costs and to rationalize the production, transport and distribution of energy. In the long term, the costs of access to energy will decrease for most industries and other Community consumers.[11] However, prices will not fall equally in all countries and regions of the Community. For instance:

- some less-developed regions and areas (especially some rural areas and the outermost regions and islands) are not and will not be supplied with natural gas, since the low level of consumption and the remoteness of these regions makes it uneconomical, even with subsidies, to extend the infrastructure to those areas;

- intensive consumers in the less developed regions, given their remote geographical location, will benefit only slightly from the relative decrease in gas and electricity prices. Industries in Greece, Ireland and Portugal and in the south of Italy and Spain will find it more difficult than those in other regions of the Community to diversify their sources of gas or electricity supplies;[12]

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10 Proposal for a Council Directive introducing a tax on carbon dioxide emissions and energy (COM (92) 226 final, 30.6.1992).

10bis See also the Commission's White Paper on Growth, Competitiveness and Employment (COM(93)700 final of 5.12.1993).

11 They will decrease in the sense that, for a given price level for primary energy resources (and equal tax treatment for energy products throughout the Community), the costs of supplying energy to consumers will be lower than they would be if there were no internal market.

12 Being more remote from the major power stations and from the places where natural gas is imported or stored, they will have greater difficulty in obtaining supplies from other countries.

- the liberalization of the market in oil products (which are the main sources of energy in the less favoured regions) will intensify competition and lead distributors to undertake increasingly severe rationalization which will mean a further reduction in the number of sales outlets in areas which have a low population density and are not within easy reach of the major road networks. Consumers will then have to bear additional costs (of transport time and fuel) in order to obtain their supplies and will, moreover, have to pay higher sale prices than in densely populated areas.

It is thus clear that in the least-developed regions of the Community and especially in certain rural areas and in the outermost and island regions, the internal energy market will initially not necessarily mean easier access to energy.

2.5 The need for supporting measures. This analysis shows that the implementation of Community energy policy can make a positive overall contribution to economic and social cohesion if, in the less developed regions, support is given for measures aimed at strengthening this cohesion. Such supporting measures have three main aims:

(see boxes: No 1: Impacts of the objectives of energy policy on cohesion and the proposed supporting measures;

No 2: Details of the proposed supporting measures).

- to extend and improve the natural gas and electricity transport and distribution networks, including the interconnections between Member States and third countries [12bis] ;

- to promote energy efficiency;

- to make optimum use of endogenous energy potential, chiefly renewable energy resources.

12bis "Electricity and Natural Gas Transmission Infrastructures in the Community", Communication from the Commission to the Council (SEC(92) 553 of 27.3.1992).

BOX No 1

Impacts of the objectives of energy policy and the proposed supporting measures

Impacts on cohesion and the proposed measures / Objectives of Energy Policy	Benefits to less-developed regions and areas	Disadvantages for less-developed regions and areas	Proposed supporting measures to strengthen cohesion
Security of supply	- Security in the economic sector and diversification. - Job creation (e.g. construction and maintenance of networks)	- Major financing required for the networks. - Costs of srategic storage.	- To increase energy efficiency. - To develop endogenous potential. - Aid for extending the networks.
Promotion of energy efficiency and endogenous energy resources (especially renewable resources), to contribute to sustainable development.	- Generates economic activity and thus employment. - Improves the environment and living standards.	- Major capital expenditure required. - Penetration is slower and more expensive.	- Aid for identifying potential, disseminating technology, financing projects; programmes such as THERMIE, SAVE, ALTENER, JOULE, etc. to be applied differently.
Reducing the environmental impact of energy systems.	- Improved environment and living standards.	- Higher costs of these measures in those regions.	- To develop endogenous potential, in particular renewable resources, and to promote the efficient use of gas.
Completion of the internal energy market.	- Better complementarity between energy systems, improved cost structures; rationalization of energy systems, price transparency.	- Unequal access to networks. - In some cases, energy prices may increase relatively.	- Aid for developing endogenous potential. - Extension and improvement of networks.

BOX No 2

Details of the proposed supporting measures

Supporting measures	Details of the Measures (investment aid, technical aid, regulatory measures, institutional support, etc.)
NETWORKS	- Constructing or strengthening interconnections (gas and electricity) between the outlying regions and the other regions while taking account of possible synergies - with transport and telecommunications networks. - Extending the electricity grids so as to supply all rural areas (if this course of action is more economical than decentralized solutions). - Improving electricity grids to provide better quality electricity supply. - Constructing gas distribution networks, especially in urban areas. - Aid to local and regional authorities for managing the networks.
ENERGY EFFICIENCY	- Energy auditing, going beyond mere diagnosis, to identify potential energy savings, to propose alternative solutions and to help implement those solutions (in all sectors: transport, industry, household and tertiary). - Efficient energy management in towns and cities (transport systems, energy distribution, etc.) by setting up local and regional teams. - Specific measures to promote Community programmes (THERMIE, SAVE, JOULE, etc.). - New heating systems for run-down urban areas. - Aid for acquiring efficient equipment (e.g. gas) for SMEs and households. - Aid for providing information and training in the least-favoured areas (THERMIE, SAVE, JOULE, etc.).
EXPLOITATION OF RENEWABLE ENERGY POTENTIAL (PARTICULARLY ENDOGENOUS RESOURCES)	- Investment aid for generating electricity from renewable energy resources (small-scale hydro-electric and wind power to supply a grid; micro-hydroelectric, wind and photovoltaic power for decentralized uses). - Production of electricity and heat from waste (especially urban waste). - Exploitation of the energy potential of forests and the production of bio-fuels. - Creating or strengthening a supporting structure to identify projects and to help implement them (e.g. via the activities of OPETS - Organizations for the Promotion of Energy Technology). - Promotion of solar heating and air-conditioning in buildings.

N.B. : This list of specific measures is not exhaustive. These measures may be carried out at different levels - Community, national and regional.

P.M. : The CORDIS system of information operated by DGXIII in Luxembourg contains a description of these measures.

3. Taking account of energy in other Community policies

The proposed supporting measures help strengthen cohesion not only via energy policy but also through their impact on other Community policies. For instance:

3.1 As already pointed out, promoting energy efficiency and the exploitation of endogenous potential and making greater use of natural gas are among the priority strategies for reducing the environmental impact of energy systems.[12*] Their beneficial effects, however, go well beyond that of simply replacing coal or oil, since they make it possible to tackle other environmental problems while being vigilant as regards the impact which measures may have on human health. Household waste, for example, can be used to produce energy; forests and woodlands can be maintained (particularly in terms of fire protection) thanks to the efficient organization of the timber industry, one of whose outlets is the production of energy; energy can be extracted from pollutants which arise as by-products of certain activities.

3.2 The recent decisions reforming the Common Agricultural Policy (CAP),[13] aim to reduce surplus production while keeping a sufficient number of farmers on the land. This is to be achieved by changing farming methods and diversifying the environment-friendly uses of the countryside. In both these respects, energy efficiency and renewable energy resources can play an important role:

- as regards the reduction of production costs, this aspect has been somewhat neglected in past years by reason of the relatively high guaranteed price level. It will be necessary to modernise installations in order to rationalize energy consumption (eg. solar energy for greenhouses, photovoltaic pumps for water) or to promote the combined use of renewable (wind, solar) and non-renewable energies.

- in terms of the diversification of economic activity, endogenous energy potential could be exploited for the new uses to which farmland is being put. This could be achieved via forestry policies including the development of energy production from wood, and by growing energy crops. The latter essentially concern bio-fuels whose development could have important repercussions on the future of agriculture and on the maintenance of employment in agriculture. A draft directive,[13*] concerning the defiscalisation by at least 90 % of this type of fuel, is under discussion.

12* See Fifth Community Action Programme "Towards Sustainability"

13 See the analysis set out in the supporting document "Energy, the countryside, islands and the outermost regions".

13* COM(92)36 final of 05.03.1992

The role to be played by energy efficiency and renewable energy resources (including bio-fuels) must be seen in the context of a countryside less dominated by farming than it has been in the past. The Community's countryside is extremely heterogeneous and cohesion problems particularly affect areas where the main activities (farming and forestry) are dominant but show little diversity, are relatively unproductive and are carried out by an aging population. These declining rural areas have, in fact, plentiful renewable energy resources which, if properly exploited, could help relaunch the economies of these regions.

3.3 Transport in the less developed regions is dominated, to a greater extent than the Community average, by road transport, both of goods and passengers.[14] Despite all the efforts which have been made to improve public transport and to build railways, inland waterways, etc., this situation has not changed significantly. The future common transport policy (CTP) developed in the White Paper[14*] devotes particular attention to the protection and conservation of the environment. Since environmental problems are often due to energy use, it is necessary to take account of the latter in the CTP. One of the priorities for transport policy should be to deal with the adverse effects of this predominance of road transport. The main problems are that oil-based fuels account for an overwhelmingly large proportion of energy consumption in those regions that their, towns and cities are congested with traffic and heavily polluted and that there is a large number of road accidents which take a terrible toll in terms of deaths and serious injuries. The proposed supporting measures can help combat these problems and strengthen cohesion. For instance:

- extending and interconnecting energy distribution networks will reduce the need to transport energy products (which are often highly dangerous) by road, and will thus reduce the costs of supplying the less-favoured regions;

- energy efficiency in transport means, above all, reducing the energy consumed by vehicles but it also involves improving transport systems,(e.g. traffic flow in urban areas, road maintenance, etc. changes in users' behaviour patterns regarding public transport, the use of more environment friendly fuels and vehicles, such as electric vehicles and bicycles etc...) This may lead not only to lower energy consumption but also to considerable improvements in the environment and the quality of life.

3.4 A number of Community research activities,[14**],particularly in the field of energy, are still concentrated in the more developed countries and regions. The major energy research programmes concern fields (such as nuclear fission and fusion) which are of Community interest but remote from the industrial capacity of

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14 As shown by the data supplied by the MURE model developed under the JOULE Programme (see Note 4).

14* See also COM (92) 494 final of 2 December 1992: "The future development of the common transport policy".

14** See also COM (93) 203: "Synergies between R&T policy and economic and social cohesion policy".

the less-favoured regions, and programmes involving non-nuclear energies, such as JOULE, even if they include many technologies of clear interest to the less favoured regions, (energy efficiency and renewables) are not sufficiently fosterd in those areas. The supporting measures proposed in this Communication imply the promotion of technological development, innovation and technology dissemination suited to the less-favoured regions. Such activities should be carried out preferably by research teams in the countries and regions concerned, priority being given to inter-regional and international cooperation. The results of such research should be tested in the places where they will actually be used. In this way, stimulus can be given to research activities and facilities, which are a key element in strengthening cohesion.

3.5 Improving energy infrastructures and promoting energy efficiency have been major themes in a number of Operational Programmes under the Structural Funds. Help provided under regional Community Support Frameworks amounted to 1.7 billion Ecu between 1989 and 1993. In addition programmes such as VALOREN and REGEN have been proposed, adopted and implemented on the basis that better energy infrastructure and greater exploitation of endogenous potential both have a major impact in the less developed regions on the policies of town and country planning and regional development.

As has already been pointed out (see para 5, page 2), strengthening or extending infrastructure, developing energy efficiency and exploiting renewable energy resources make it possible to correct regional imbalances since they provide economic operators with favourable conditions for creating new economic activity. Nor must it be forgotten that improved access to high-quality energy supplies can help halt the depopulation of regions with a low population density.

Moreover, as has already been shown by many studies of urban and regional energy planning, energy projects and similar schemes can make a very significant contribution to the creation of jobs (e.g. the construction, operation and maintenance of energy systems).

It is still too early to say what has been achieved by the VALOREN and REGEN programmes or to present a complete analysis of their impact on the development of the beneficiary regions and on strengthening economic and social cohesion.

The VALOREN programme has just been completed and is currently being evaluated. The REGEN programme concerns capital projects for the period 1990-93. Not all these projects are yet completed and, in some cases, must be continued beyond the end of that period. However, the success achieved so far and the difficulties encountered in implementing these programmes illustrate both the potential for strengthening cohesion and the very real obstacles to be overcome.

In addition to these programmes relating specifically to energy and aimed at the same general objectives as the supporting measures proposed in this Communication (see point 2.5), other programmes set out under the regional policies[15] could support energy projects but very little attention has actually been given to energy in the projects implemented so far.

3.6 Integration into policies for employment and industrial change

The application of technologies and systems of production and work organisation aimed at raising the level of energy efficiency give rise to new needs in terms of developing human rsources, training and professional qualifications. On the response to those needs will depend the capacity of undertakings to adopt successfully to indstrial change and thus to the strengthening of their competitivity and the future development of employment.

Interventions by the European Social Fund, and in particular those under the new objective 4 and the community initiative in preparation for "industrial change", are faced with this challenge. It is a question of easing the adaptation of workers to industrial change and the development of production systems, in particular by professional training and retraining. It is aimed at workers in work, and particularly those threatened with unemployment, within the whole of industry and the services area.

Measures under this objective cover:
- training and professional requalification;
- guidance and counselling;
- anticipating trends in the labour market and requirements for professional qualifications;
- assistance to allow adquate training systems to be improved and developed.

In this context, ESF interventions contribute to eliminate obstacles linked to an insufficient level of qualifications, which run the risk of braking the development of community energy policy. The training of undertakings salaried staff (not only engineers and executives but also administrative staff) in the application of energy technologies aimed at ensuring increased energy efficiency, together with the adoption of energy consumption models by industry which are more environmentally friendly (development of eco-industries and clean technologies). This constitutes a crucial stake. But training is not limited to the strictly technological aspects; it also aims at creating flexible organisational methods and production systems, in the absence of which technological success itself runs the risk of being compromised.

15 Projects having the same general objectives as the measures proposed in point 2.5 have been financed under the following programmes: Operational Programmes under Regional Community Support Frameworks; Integrated Mediterranean Programmes (IMP); Rural Areas Development Plans (RADP); LEADER (covering rural areas); REGIS (for the outermost regions); ENVIREG (environment); STRIDE (research); PRISMA (tendering for services by businesses); EUROFORM (training and qualifications), etc. This list is not exhaustive. In addition, the EAGGF has financed a number of programmes to supply mains electricity to rural areas.

3.7 Conclusions - Until now it has not been a matter of priority for the other Community policies to take account of the contribution which energy could make to cohesion, even though some initiatives have made it possible to improve the energy situation in certain regions and to use energy projects to further their development. Proper implementation of energy related measures can clearly make a significant contribution to the success of these other policies and, through them, strengthen economic and social cohesion. However, certain obstacles will have to be overcome (see point 2.2), and a more integrated overall approach must be adopted for implementing such measures.

II IMPLEMENTING THE SUPPORTING MEASURES

The two lines along which the measures should be developed

The supporting measures to which priority must be given in order to take fuller account of the objective of strengthening cohesion, whether directly via energy policy or indirectly via their impact on other Community policies, naturally relate to the different regions which, for one reason or another, receive aid (areas covered by objectives 1, 2 and 5b). As already stated, these measures cannot be implemented merely with the financial resources of the Member States and the regions concerned, and in view of their positive contribution to strengthening cohesion they will naturally find their place in the Community's aid policies.

Joint efforts at Community, Member State and regional levels must be made in accordance with the principle of subsidiarity:

- the Community must provide not only financial aid but must also define the proposed measures and the ways in which they are to be developed. The Community should also provide support in terms of technology diffusion, the organization of inter-regional cooperation, network development, making available the accumulated experience of local and regional energy planners and putting forward proposals as to how energy policies can best take account of economic and social cohesion;

- the Member States and the regions must take account of energy in their regional development programmes by including the proposed supporting measures and by taking the necessary steps to implement them. These include extra support for the local and regional bodies responsible for preparing and carrying out the measures concerned (or setting up such bodies where they do not yet exist); setting up training programmes; adopting rules to remove the obstacles in the way of resource exploitation; supporting the dissemination of Community programmes (such as THERMIE) and mobilizing financial resources to complement Community aid.

The actual methods to be used in developing and implementing the proposed measures will therefore depend on whether the problems concerned can most appropriately be resolved at Community, Member State or regional level. Action must be taken basically along the two lines described above, namely:

- "Energy Policy and Cohesion", and

- "Other Policies, Energy and Cohesion".

1. **"Energy Policy and Cohesion" (including the energy R&D aspects) means taking account of cohesion in the context of energy policy.**

For the purposes of the recommended supporting measures, this might include the following:

- As implied by the Regulation setting up the THERMIE Programme,[16] the programme should be implemented differently in the less-developed regions. Detailed research should be carried out to identify the innovative technologies which are best suited to the energy requirements of these regions and, at the same time, to discover and support the economic operators who would be interested in using such technology and those capable of installing it, or who could be trained to do so. One possibility is to entrust this task to the OPETs[17] located in or near these regions. These organizations could help potential candidates, particularly small and medium-sized businesses and industrial firms, to draw up their proposals, to find partners and financial backers and to set up their projects. At the same time, greater account should be taken of the particular characteristics of these regions when assessing the projects presented: innovation does not necessarily have the same meaning in regions with very different levels of development. Application procedures should also be simplified and payment of grants should be speeded up, since constraints of time and financing place a greater burden on the less favoured.

- The JOULE programme [16]supports a substantial number of projects in the less well developed regions, mainly in the area of renewable energies. Research bodies from those regions are associated with most of the projects, in partnership with others situated outside those regions. It is nevertheless appropriate to seek to strengthen this practice though, on the one hand, the extension of projects to other areas, in particular energy efficiency, and on the other by means of initiatives for applications of an integrated type directly developed on a major scale in those regions, and implying a larger number of sectors and economic players.

- The SAVE Programme[16] must also treat the less-developed regions differently, as provided for in the Regulation. Although it is too early to assess the implementation of this programme, special treatment for the less-developed regions is to be highly recommended since these regions are generally more energy-intersive than the Community average.

  In the context of this Programme, therefore, account should certainly be taken of the fact that less-favoured regions have a lower capacity for implementing certain recommended measures such as:

16 See the attached sheets presenting the various programmes.
17 OPET – Organization for Promoting Energy Technology.

. Building certification. This is not always possible when the bodies responsible do not have trained technicians, when many building permits are issued retrospectively and when architects are not specifically prepared for it;

. The development of bodies which practice third-party financing. This presupposes technical and financial capacity which is hard to find and which must therefore be given greater support than in the developed regions;

. Energy auditing. There is an urgent need to promote this activity in the less favoured regions, but it is often difficult to do so not simply because there are few firms specializing in this field but also because industrialists generally have little awareness of the need for it and must therefore be informed and convinced. Energy auditing must go beyond mere diagnosis and must propose alternative techniques and help firms find financial backing.

- Similarly, with respect to the ALTENER Programme [16] emphasis must be placed on the institutional and financial aspects as they affect the less favoured regions. As has already been stated, it is important to remove legal obstacles (e.g. by ensuring proper application of the Council Recommendation on the auto-production of electricity),[18] to provide investors in renewable energy with financial conditions at least as favourable as those available to the major energy producers (at present, a small producer of electricity from wind power has to pay a much higher interest rate than a major electricity company) and to take proper account of externalities (in particular environmental effects) when costing renewable forms of energy.

- The specific characteristics of the less developed regions could better be taken into account by enhancing and taking full advantage of the results of regional and urban energy planning schemes.[19] This should mean more precise identification of projects which might be carried out under the abovementioned programmes, better coordination of schemes and measures with regional and national authorities and aid for the creation of local capacity for implementing the programmes. It should also clarify the impact of the single market on cohesion in the less developed regions, the emphasis which should be placed on supporting measures and the question of which areas should be selected for priority action.

18 OJ L 335/88, 7.12.1988, p. 29

19 See COM(91) 53 final of 8 May 1991 on "Energy Planning in the European Community" and the conclusions of the Council meeting of 21 May 1992.

Such Community action must be supported by a major contribution from the Member States and regions, which must become more involved in energy planning and must make greater use of the results of such planning when they draw up their regional development programmes. They must also assist, when necessary, in strengthening or setting up regional and local bodies responsible for such planning.

- Another objective of Community energy policy is to extend and strengthen energy networks, since they contribute to the security and reliability of supplies. With respect to the major energy transport networks (gas and electricity) included within the concept of Trans-European Networks, the "cohesion" priority is explicitly recognized: "action by the Community shall aim at promoting the interconnection and interoperability of national networks as well as access to such networks. It shall take account in particular of the need to link island, landlocked and peripheral regions with the central regions of the Community" (Title XII, Article 129b of the Treaty on European Union). Cohesion must also be a clear priority when implementing the measures provided for in connection with the Trans-European Networks (guidelines, financing, etc.)

  The development of local energy distribution networks could, of course, be assisted as necessary by the Structural Funds or by existing Community loan facilities (EIB).

2. **"Other Policies, Energy and Cohesion" means integrating supporting measures into other Community policies because of their impact not only on the energy situation in less-favoured regions but also on the various parameters used for measuring the strength of cohesion.**

   As already stated (see the conclusion of point 3), such integration has often been attempted and sometimes achieved in the past but never sufficiently - to judge from the simple fact that developed and less developed regions enjoy very unequal access to energy. Analysis clearly shows that greater consistency is needed in introducing supporting measures via a range of Community policies.

   With regard to aid policies, Member States must ensure that their regional development programmes take proper account of the energy dimension.

Particular attention should be given to the following points:

- "Energy and the Countryside, Islands and the Outermost Regions", where priority would be given to energy-saving schemes, leaving room for network extensions where these make sense.

  Energy demand in the regions concerned is very thinly spread (with the exception of some densely populated islands such as Madeira). Moreover, these regions have a limited range of supply options but significant local resources, especially renewable energy resources. Energy supply costs are higher than in other regions while the quality and range of supplies is inferior. The promotion of renewable energy uses and energy efficiency is particularly attractive for such regions and areas, as was seen in certain countries during implementation of the VALOREN Programme.

  In these regions energy actions ought to highlight the development of endogenous potential, and particularly renewable energy resources. To judge from the experience of the VALOREN Programme, and bearing in mind the new directions being taken by the CAP, emphasis could be placed on the uses of biomass, small hydro-electric power stations, solar energy (solar heating and photovoltaic electricity) and wind energy. Energy efficiency, both in rural dwellings and in farming methods, would also play a role, as would improvements and certain extensions to electricity grids. Although priority should be given to capital grants, other supplementary measures (training, organization, aid for the purchase of efficient equipment using natural gas) could be supported.

- "Energy and the Urban Environment", where the accent should be on:

  . the management of gas, electricity and heating networks: local authorities may take on the role of distributor and occasionally even that of producer - for example in the production of energy from waste;

  . urban energy management: local authorities could rationalize energy consumption in buildings. (Town and city councils manage a great many buildings, issue building permits and can ensure that heating insulation standards etc. are complied with);

. schemes to improve energy efficiency in urban areas, in particular run-down urban areas, so as to ensure, among other things, an acceptable standard of living for the least-favoured social groups;

. the organization of transport systems, providing support for the creation of alternatives to private transport, improving traffic management and adopting town planning/land use regulations which would reduce commuter travel time.

In objectives 1 and 2 towns and regions energy actions ought to concern above all energy efficiency and networks, while not excluding the considerable endogenous energy potential offered by waste. Support for these various schemes could range from capital grants to aid for supplementary measures.

In addition, within the framework of Community initiatives for actions to encourage rationalisation of energy use in industry, energy networks and cooperation to facilitate the exchange of knowhow are envisaged. Thus, for example, in the framework of INTERREG, the following actions could be implemented, aimed at:

- "Energy and Cross-border Areas", involving in particular:

  . interconnections between gas or electricity networks along the lines of the REGEN Programme;

  . creating distribution networks (gas, electricity, heat) which would be shared by frontier cities or regions, thus providing sufficiently large markets to make the development of these networks economically viable;

  . schemes for the joint exploitation of endogenous potential (hydro-electric schemes on frontier rivers, energy crop projects, the creation of a market in firewood, etc.);

  . support for setting up bodies responsible for organizing and implementing these various schemes.

The Commission will decide on the content of further Community initiatives when the debate on the Communication on the Green Book[20] has ended and conclusions have been drawn from it. Past experience of programmes such as INTERREG, with their successes and problems, shows the special nature of schemes set up between frontier regions, bringing together heterogeneous institutions, harmonizing regulations and getting people with different experience and know-how to work together.

* * *

20 Green Book on Community initiatives (COM (93) 282)

ANNEX 1

TABLES

"ENERGY AND COHESION" INDICATORS

Table 1: Per capita consumption: dependence on imported energy; energy intensity

Table 1a: Employment in the energy industries

Table 2: Proportions of primary energy consumption accounted for by oil, coal and natural gas. Estimated proportion accounted for by renewable energy resources.

Table 3: Per capita CO_2 emissions, and emissions of CO_2 as a function of GDP.

Table 4: Relative distribution of energy infrastructure.

TABLE 1

Per capita consumption; Energy intensity; Dependence on imports (Community averages; figures for Spain, Greece, Ireland, Italy and Portugal)

INDICATORS(3) / COUNTRIES	PER CAPITA CONSUMPTION (1) toe/inhabitant	ENERGY INTENSITY toe/$1000 GDP (90)	RATE OF DEPENDENCE (2)
EUROPEAN COMMUNITY	3.6	0.219	59
SPAIN	2.1	0.239	67.6
GREECE	2.3	0.396	76.2
IRELAND	2.7	0.306	77.7
ITALY	2.2	0.177	86.9
PORTUGAL	1.5	0.349	96.7

(1) Note that, in the cases of Italy and Spain, these figures do not distinguish between the situations in the developed and the less-developed regions. For the latter regions, the information available shows that the figures are close to those for Greece and Portugal.

(2) The balance of trade in energy products (including electricity) as a percentage of primary energy consumption.

(3) Study in hand to develop indicators associating energy and the socio-economic situation in the Member States and regions.

(Sources : Eurostat; IEA/OECD; ENERDATA; World Bank).

TABLE 1(a)

Employment in the energy industries
(NACE 11,12,13,14,15,16)

YEAR	EMPLOYMENT (thousands)
1980	2017
1981	2055
1982	2026
1983	2015
1984	1967
1985	1915
1986	1870
1987	1797
1988	1756
1989	1725
1990	N/A
1991	N/A

(Source : Panorama of Community Industry)

TABLE 2

The proportions of primary energy consumption accounted for by oil, coal and natural gas, (EEC average, Spain, Greece, Ireland, Italy and Portugal).

INDICATORS / COUNTRIES	TOTAL CONSUMPTION OF PRIMARY ENERGY (Mtoe) (1)	PROPORTION ACCOUNTED FOR BY OIL (%)	PROPORTION ACCOUNTED FOR BY COAL (%)	PROPORTION ACCOUNTED FOR BY NATURAL GAS (%)
EUROPEAN COMMUNITY	1212	42.9	24.3	17,7
SPAIN	88	53.4	22.7	5,7
GREECE	21.4	60.7	37.3	0,4
IRELAND	9	55.5	22.2	21,1
ITALY	153	60.1	9.1	25,5
PORTUGAL	15.5	77.4	17.4	-

(1) The figures used in Eurostat minimize the role of renewable energy resources since no account is taken of biomass while hydro- electricity is evaluated on the basis of 86 toe/GWh. Thus for a country such as Portugal, once biomass is included (approximately 1.1 Mtoe per year) and with hydro-electric power rated at 230 toe/GWh, primary energy consumption rises to 17.5 Mtoe.

(Sources: Enerdata; Eurostat)

TABLE 3

CO_2 EMISSIONS PER CAPITA AND AS A FUNCTION OF GDP

INDICATORS / COUNTRIES	CO_2/INHABITANT	TONNES CO_2/ ECU 1000 GDP
EUROPEAN COMMUNITY	8.86	0.63
SPAIN	5.41	0.54
GREECE	7.34	1.42
IRELAND	8.73	0.92
ITALY	6.98	0.47
PORTUGAL	4.07	0.85

(Source: "Energy in Europe" December 1992, p. 9)

TABLE 4

RELATIVE DISTRIBUTION OF INFRASTRUCTURE				
	TRANSPORT	COMMUNICATIONS	ENERGY	TOTAL INCL. EDUCATION
EC7	100.0	100.0	100.0	100.00
IRL	57.7	50.5	46.5	66.5
GR	32.0	75.6	22.1	43.4
ES	56.8	56.7	37.1	60.5
PT	41.7	27.8	35.5	35.3

EC7 : D, F, B, NL, L, UK and DK
(the seven most developed Member States).

Source: 1985 - information from BIEHL & COLLABORATORS, "Study on Infrastructural Endowments, Infrastructural Financing and the Regional Development, 1986.

COM (92) 84 - 18.3.1992 Community Structural Policies - Assessment and Outlook.

ANNEX 2

PROGRAMME: THERMIE

(European Technologies for Energy Management)

Aim

- To promote energy projects involving innovative technology and economic risks;
- to disseminate efficient energy technologies.

Budget: ECU 700 million

NB This Programme follows up the demonstration energy programmes which, together with THERMIE, accounted for Community aid totalling approximately ECU 1400 million until 1991

Duration: 1990 - 1994

Subject

- Energy saving (in buildings, industry, transport)
- Decentralized energy production (heat, electricity)
- Renewable energy resources (solar, biomass, wind, water, geothermal)
- Energy production from waste
- Clean and efficient techniques for processing coal and other solid fuels
- Prospecting for, extracting, transporting and storing oil and gas

Method

An invitation to tender for this Programme is issued every year and 85% of the budget is allocated to this. The balance (15%) is used to finance action taken by the network of organizations for the promotion of energy technology (OPET) and certain specific measures decided by the Commission.

Concerned zones: The Community as a whole.

State of advancement

To date 2900 projects have been accepted and 2000 carried out (demonstration programmes + THERMIE).

THERMIE and Economic and Social Cohesion

- When projects are selected, the Commission takes account (subject to other criteria) of dissemination projects due to be implemented in the less developed regions.
- The Commission gives priority in particular to projects which have a major impact on improving energy supplies in the less-favoured regions.
- The competitiveness of small and medium-sized businesses and industries is improved, in particular, by the transfer of know-how and technology.
- Information and training in the less-favoured areas are promoted (e.g. by local associations cooperating with others from more developed areas).

However, the regions covered by objectives 1, 2 and 5b - which represent more than 40% of the population - receive a considerably smaller share of THERMIE financing. Consideration is currently being given to ways of improving this situation.

PROGRAMME : S.A.V.E.

(Special Action programme for Vigorous energy Efficiency

Aim :

- To assist member States in achieving their energy efficiency and environmental goals through a strengthening of energy efficiency infrastructures.
- To support the exchange of information on energy efficiency at all levels within the Member States.
- To create a positive environment for investment in energy efficiency.
- To assist in creating behavioural change in energy consumers with a view to improving energy efficiency.

Duration : 5 years, 1991-1995, total budget 35 M.Ecu.

Method :

- Establish energy efficiency legislation, where required, at Community level.
- Support the strengthening of energy efficiency infrastructures by part-financing sectoral pilot projects.
- Establish or assist in establishing energy efficiency networks.
- Concentrate on improving electrical and use efficiency.

Concerned zones : EC and third country.

State of advancement :

The programme has been in operation for two years. Three directives (energy efficiency of boilers, energy labelling of domestic appliances and a framework-directive) have already been approved. A total of 141 sectoral pilot projects have been supported and a number of conferences and seminars have been co-sponsored.

SAVE and Economic and Social Cohesion:

Since SAVE is primarily aimed at reducing energy consumption and therefore increasing consumer's disposable income, it could be argued that SAVE, if successful, would contribute significantly to economic and social cohesion. This might be more true in less developed regions where the poorer population spends a disproportionately large amount of their income on energy.

PROGRAMME: ALTENER

(Alternative Energy)

Aim:

- To help stabilize CO_2 emissions in the year 2000 at 1990 levels in order to combat the greenhouse effect;
- to promote use of the least-polluting renewable energy resources: this should cut CO_2 emissions by 180 million tonnes and double (from 4 to 8%) the proportion of total energy demand met by new and renewable energy resources in the year 2005.

Budget: ECU 40 million

Duration: Five years (1993 - 1997)

Subject:

- Hydroelectric power: the output of small power stations to be tripled (from 8 GW and 25 TWh in 1991 to 27 GW and 80 TWh in 2005);
- biofuels: the aim is to produce 11 million toe in 2005, i.e. 5% of the total energy consumed by motor vehicles;
- other new and renewable resources: for example, electricity generated from biomass.

Method:

- Financing (up to 100%) for studies and technical assessments to define technical standards or specifications;
- support for improving or creating renewable energy infrastructure (meeting between 30 and 50% of the costs);
- encouragement for setting up a European and international information and coordination network for renewable energy resources (meeting between 30 and 50% of the costs);
- aid for technical and economic assessments of the potential for the industrial production of energy from biomass.

In implementing this Programme, the Commission will be assisted by a committee made up of representatives from the Member States.

State of advancement:

This Programme was adopted by the Council on 13 September 1993.

ALTENER and Economic and Social Cohesion:
Rural areas and island regions are virtually the only places where renewable energy resources can be exploited, and many such areas are situated in less-favoured regions eligible for the Structural Funds (objectives 1 and 5b).
In such areas, the exploitation of renewable energy resources makes it possible to generate maximum added value for energy and local employment.

PROGRAMME : JOULE I AND II

(Joint Opportunities for Unconventional or Long-term Energy Supply)

Aim:

- To carry out R&D in energy technologies so as to protect the environment (combating the greenhouse effect) and the overall energy situation in Europe (security of supply, imports, processing costs).
- To improve the availability of technology by increasing and disseminating European know-how in the energy sector.
- To maintain and develop endogenous energy resources, whether existing (rational energy use, solid fuels) or potential (renewable energies).

Budget: ECU 144 million for Joule I; ECU 155 + 104 = 259 milion for Joule II

Duration: 1989-1992 = Joule I; 1991-1994 = Joule II, phases 1 and 2

Subject: Non-nuclear energy resources and the rational use of energy

- Development of techniques, processes and products enabling renewable energy to be more widely used
- Development of techniques, processes and products which make it possible to save energy in all sectors of consumption.
- Strategic evaluations of energy R&D and the development of quantitative Energy - Environment - Economy models.

Concerned zones: The Community as a whole

Joule and Economic and social Cohesion:

Examples:

- the exploitation of renewable energy resources may be an asset to certain backward regions.
- Measures for energy efficiency, especially in transport combined production or the consumption of electricity can reduce the energy dependency of regions.
- Support for the development of clean and efficient technologies for using endogenous solid fuels may help alleviate the economic recession in Europe's coalfields.

State of advancement:

Joule I (240 contracts) is nearing completion. It has made it possible to identify the most promising technologies, and these will be the subject of more detailed research under Joule II (220 contracts in phase 1). There is to be a second phase (restricted and public invitations to tender issued in May and June 1993 for contracts lasting on average three years).

PROGRAMME: VALOREN

(Exploiting Endogenous Energy Potential)

Aim:

- To exploit local energy resources
- To improve the structure of supplies (substitutes for oil)
- To disseminate efficient energy technologies
- To contribute to local development by creating jobs
- To improve the quality of life.

Budget: ECU 392 million

Duration: From 1987 to 1991

Subject:

VALOREN is a programme set up under the Structural Funds aimed at implementing multi-annual schemes for the rational use of energy and the exploitation of local energy resources, and to help promote appropriate energy technologies for the regions concerned.

State of advancement:

The programme has been completed and a good many schemes have bean implemented. Its social and economic impact, as well as its effects in the energy sector, are currently being assessed. Some of the beneficiary regions have already asked for a VALOREN II Programme.

VALOREN and Economic and Social Cohesion:

This Programme is aimed exclusively at the less developed regions (Objective 1).

PROGRAMME: POSEIMA

(Programme of options specific to the remote and insular nature of Madeira and the Azores)

Aim:

- Better Community integration (establishing an appropriate framework for the application of common policies)
- To help the Portuguese islands benefit from the progress of the internal market through the optimum use of existing Community rules and instruments
- To help both archipelagoes catch up with the rest of the Community in economic and social terms.

Budget: Approximately ECU 72 million (of which some ECU 25 million is for energy)

Duration: 1991-1993

Subject:

A whole series of special measures to help local development, including a three-year programme of Community aid to offset the excessive cost of transporting oil and oil products by sea to the Azores and Madeira.

Method:

The aid is granted subject to the implementation of investment programmes to improve the rational use of energy (energy saving and the development of local and renewable energy resources). The capital expenditure for such programmes must be equivalent to at least 50% of the Community subsidy for oil transport costs.

State of advancement:

The energy budgets amount to ECU 5 million for 1992 (disbursed) and ECU 8 million for 1993 (allocated). In the course of 1993 the Commission should receive the first report from the regional authorities concerning their counterpart expenditure on rational energy management.

POSEIMA and Economic and social Cohesion:

Madeira and the Azores are extremely remote islands (covered by Objective 1) where Community aid can only contribute to better cohesion.

PROGRAMME: REGEN

(Infrastructure of Energy Transports)

Aim

- To contribute to the development of peripheral regions by opening up their energy markets;
- To contribute to Community integration and the completion of the single market in energy;
- To help diversify and strengthen security of energy supply in the less developed regions.

Budget: ECU 300 million

Duration: 1990-1993

Subject: This programme concerns:

- Natural gas distribution networks in regions where there are none
- The main interconnections needed to link the isolated gas and electricity networks in the peripheral regions with the major trans-European networks.

Method

REGEN is a Community programme set up by the Commission under the Structural Funds. The Commission, acting on proposals received from the Member States, grants aid to finance infrastructure projects.

State of advancement

The Commission has approved aid amounting to:

ECU 87 million for supplying natural gas to Greece;
ECU 105 million for supplying natural gas to Portugal;
ECU 108.5 million for the gas pipeline linking Ireland with the United Kingdom;
ECU 35 million for the first stage of the project to link the Italian and Greek electricity grids.

This aid covers approximately 35% of the eligible expenditure planned until 1993.

All four projects are under way.

NB: Some of the work will continue after 1993.

REGEN and Economic and Social Cohesion

This Programme relates only to the less developed regions (Objective 1).

REGIONAL AND URBAN ENERGY PLANNING

Aim:

To help achieve the major Community objectives (internal market, economic and social cohesion, improvements to the environment and the quality of life) by promoting rational energy management, energy efficiency, the use of local and renewable energy resources and research into the best ways of supplying energy to regions, towns and cities.

Duration: This is an annual programme, which started in 1982.

Budget: ECU 3 to 4 million annually

Subject: This Programme finances three kinds of measure:

- Energy planning studies at regional or urban level (inventories, analyses and reports, medium- and long-term forecasting, choice of strategies and the establishment of a multi-annual programme of energy-related measures).
- Feasibility studies, supplementing the studies referred to above, relating to energy projects or sets of such projects.
- Aid for setting up local or regional teams to encourage and advise users on the rational management of energy.

Method:

Since 1989, this scheme has been the subject of an annual invitation to tender.

Concerned zones: All regions and urban areas within the European Community.

State of advancement: To date some 200 European regions, towns or cities had benefited from this scheme.

Impact on Economic and Social Cohesion:

The annual invitation to tender gives priority to "outlying or isolated regions of the Community and towns or cities within those regions, ... predominantly industrial and declining regions, towns or cities, ... rural or upland regions and areas...".

Thus, for example, half the Community's island regions have already made use of this Programme.

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