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Report

drawn up on behalf of the Committee on Development and Cooperation

**on the Communication from the Commission of the European
Communities to the Council concerning cooperation with
developing countries in the field of energy**

COM (78) 355 final

Rapporteur : Mr G. FLÄMIG

By letter of 29 November 1978 the Committee on Development and Cooperation requested authorization to submit a report on the communication from the Commission of the European Communities to the Council concerning cooperation with developing countries in the field of energy.

By letter of 20 December 1978 the President of the European Parliament authorized the Committee on Development and Cooperation to draw up this report. The Committee on Energy and Research was requested to deliver its opinion.

On 21 December 1978 the Committee on Development and Cooperation appointed Mr Flämig rapporteur.

It considered the draft report at its meetings of 21 December 1978 and 29 March 1979.

On 29 March 1979 the committee unanimously adopted the motion for a resolution and the explanatory statement.

Present: Miss Flesch, chairman; Mr Sandri, vice-chairman; Mr Flämig, rapporteur; Mr Andersen (deputizing for Mr Cunningham), Mr Delmotte, Mr Deschamps, Mr Dewulf, Mr Dondelinger, Mr Feit, Mr Fioret, Mr Glinne, Mr Martinelli, Mrs Squarcialupi (deputizing for Mrs Iotti), Mr Vanvelthoven (deputizing for Mr Lezzi), Mr Vergeer and Mr Würtz.

The opinion of the Committee on Energy and Research is attached.

C O N T E N T S

	<u>Page</u>
A. MOTION FOR A RESOLUTION	5
B. EXPLANATORY STATEMENT	7
I. Introduction	7
II. Some data on the energy situation	8
III. The Commission's proposals	9
(a) Frameworks for Community action	9
(b) The programme	9
(c) The instruments	10
IV. Assessment of the Commission's document	11
(a) Legal status of the document	12
(b) The lack of a Community energy policy	12
(c) Inventory and coordination	12
(d) Cooperation with associated and non-associated LDCs	13
(e) Scope for developing the LDCs energy output	14
V. Conclusions	16
ANNEX I : EDF aid for energy	18
ANNEX II : Alternative energy for the ACP countries	20
Opinion of the Committee on Energy and Research	24

The Committee on Development and Cooperation hereby 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 concerning cooperation with the developing countries in the field of energy

The European Parliament,

- having regard to the Communication from the Commission of the European Communities to the Council (COM(78) 355 final),
 - having regard to the report of the Committee on Development and Cooperation and to the opinion of the Committee on Energy and Research (Doc. 74/79),
1. Points out that according to the most realistic forecasts the present rate of production and consumption of energy will inevitably lead to a serious energy deficit in the years 1985-1990 and emphasizes that, in addition to its grave economic and social consequences, such a situation would carry a heavy risk to peace in the world;
 2. Stresses that whereas their future economic development is directly dependent on a considerable increase in energy availability, it is the non-oil-producing developing countries who are going to be hit hardest by the prospective energy crisis;
 3. Agrees with the Commission that, simultaneously with international negotiations on relations between the developing countries and the industrialized countries, in which priority should be accorded to the energy problem, it is essential for the Community to establish a policy of cooperation with the LDCs in the energy field;
 4. Asks that, within the framework of this policy, specific provisions be included in the future ACP-EEC Convention, but that care be taken that their implementation is not detrimental, in terms of financial aid, to development policies in other sectors;

5. Stresses that it is important for the Community to have available an inventory of the LDCs' energy resources and short- and medium-term needs, such an inventory being an essential basic tool for the implementation of a cooperation policy in this field;
6. Agrees in principle with the operational objectives defined by the Commission;
7. Finds, however, that the achievement of these objectives presupposes the availability of energy-production technologies suited to the economic and industrial conditions of the LDCs, and consequently asks that the necessary measures to promote development of techniques for the production of energy in small- and medium-sized plant be taken by the Community;
8. Is of the opinion that, in view of this, the Community should make available to the LDCs techniques for the production of energy which require a low degree of technological sophistication and little maintenance;
9. Recognizes that special attention should be paid to the development of renewable forms of energy such as water power, wind power, solar energy and energy from organic sources but that this should not exclude co-operation on the exploitation of non-renewable sources of energy;
10. Hopes that establishment of cooperation in the energy field will promote the progressive development of energy industries in the LDCs;
11. Is of the opinion that the Community should ensure that its research and development policy, industrial policy and the policy of cooperation with the LDCs in the energy field are compatible;
12. Regrets the lack of a Community energy policy which constitutes a major handicap in efforts to establish cooperation with third countries in this sector and stresses the urgent need for such cooperation;
13. Considers that the Communication from the Commission, even with the Council's endorsement, represents no more than an initial guideline, and urgently requests the Commission to submit new, more detailed proposals, particularly as regards finance, that will enable a real start to be made on cooperation with the LDCs in the energy field;
14. Instructs its President to forward this resolution and the report of its committee to the Council and the Commission of the European Communities.

EXPLANATORY STATEMENTI. INTRODUCTION

There can be no doubt that the most crucial political problem of the day is the establishment of a new world development strategy which would first freeze, and then gradually reduce, the gap between the industrialized countries and the developing countries, i.e. one whereby a more balanced and fairer distribution of the world's resources and riches can be achieved. Any such strategy must inevitably concern itself also with the question of energy supplies to the industrialized and the developing countries, for this is the dominant and most worrying feature of the imbalance which currently exists. The statement has been made before; indeed it might be said that frequent repetition has deprived it of some of its force and persuasive and mobilizing power. Nor should we forget that while the industrialized countries have long been declaring their willingness in principle to participate in the establishment of an international development strategy, it was with great reluctance that they came to admit that it was linked to the problem of energy supply.

The difficulties encountered in reaching an agreement on the areas to be dealt with in the North-South Dialogue provide a perfect example of this attitude of the industrialized countries. Not that projects, policies and memoranda on international energy policy were lacking: but the common characteristic shared by all these 'decisions' - apart from the fact that they resulted in no action as a rule - was that they dealt with the question of energy supply only in terms of the situation and the needs of the big energy consumers, the industrialized countries. No link was established between development aid policy plans and measures taken in the energy sector.

The developing countries, on the other hand, have always stressed the close interdependence between energy problems and other aspects of development. Once again, this was strikingly illustrated at the North-South Conference.

The fact that, in addition to the originally scheduled Committee on Energy, three other committees were set up to deal, respectively, with raw-materials questions, development and financial and monetary affairs, was due to the persistence of the LDCs whom the Community came finally to support. Though the LDCs were able to obtain satisfaction as to the scope of these negotiations, the fact the Conference became bogged down is an indication of 'the industrialized countries' unwillingness to treat development problems globally, especially as regards the inclusion of energy questions.

The North-South Conference thus represents the only genuine attempt to look at energy and development problems at world level as parts of a single whole. The consequence of the Conference's virtual failure has been that, ever since, partners in the various international negotiations have simply ignored the problem. But it is no answer to bury one's head in the sand.

II. SOME DATA ON THE ENERGY SITUATION

The Communication from the Commission to the Council contains some statistical data illustrating the seriousness of the energy supply situation throughout the world, and more particularly in developing countries who are not oil producers.

It is evident that, since the 1973 crisis, the economic and political consequences of the world energy situation have been steadily becoming more serious and are likely soon to become irremediable. This is as true for the industrialized countries as it is for the LDCs.

It is already known that, with the present output capacity, supply will fail to meet demand by 1985-1990. Here it should be noted that, among the many differences in the energy supply situation between the LDCs and the industrialized countries, one is of fundamental importance: the industrialized countries can reduce their energy consumption through energy saving programmes and more rational energy utilization. The developing countries cannot. The Third World, whose countries are inhabited by 71% of the globe's population, today accounts for only 16% of world energy consumption. To take the oil sector alone, we find that while they hold about 75% of the total resources, the LDCs' share of total consumption is less than 20%. Again, in 1974 the annual per capita energy consumption (in t.o.e.) was 8 tonnes in the USA, 3 tonnes in Western Europe and 0.25 tonnes in Africa. In other words, in 1974 less than one-quarter of the world's population had used up over three-quarters of the total energy available. These figures must give cause for concern, especially when set against the prospect of petroleum shortage in 1985-1990 and the inevitable price increases. How, in this situation, can the non-oil producing developing countries triple their energy consumption by 1990-2000, as they must if they are to develop? It is not without reason that the Commission of the European Communities states in its Communication that 'these prospects substantially justify an increased effort of cooperation between industrialized and developing countries in the field of energy - an effort to which the Community must contribute with all the means at its disposal'.

III. THE COMMISSION'S PROPOSALS

(a) Frameworks for Community action

In its communication to the Council the Commission points to a number of contexts in which cooperation with the developing countries on energy matters could be undertaken on the Community's initiative. First, possibilities of relaunching, on the basis of proposals for cooperation with the LDCs in the energy field, of the North-South Dialogue are envisaged. Among these possibilities the Commission notes 'the Committee of the Whole established by the 32nd UN General Assembly, preparation of the 33rd General Assembly', at which the Community might, if circumstances are propitious, take initiatives for the relaunching of the North-South Dialogue, the Special Session of the General Assembly to be held in 1980 which will adopt the 'International Development Strategy' for the 3rd Development Decade, and the Conference on New or Renewable Energy Sources scheduled to be held in 1981 in the framework of ECOSOC (Chapter C, Section 1).

Secondly, the Commission thinks that a Community initiative could be taken in the framework of the special relationship already established between the Community and certain countries, particularly at the time of the renewal of the Lomé Convention.

Lastly, possibilities for energy cooperation may exist, and should be explored, within the framework of the Euro-Arab Dialogue.

(b) The programme

The Commission suggests a cooperation programme in two parts, one concentrating on studies and energy inventories, and the other on operational aspects.

The studies and inventories would include

- establishment of an inventory of renewable and non-renewable energy resources;
- an analysis of the technical, economic, geographical, geological and other constraints against the mobilization of renewable energy resources.

- identification of various projects drawn up in national or international contexts: by Community Member States, the LDCs themselves, by the Community as such, by the IBRD or by regional banks.

The operational part of the programme would centre on the drawing up of five-year energy cooperation programmes, concerning, essentially:

- priority projects (large- and small-scale, national and regional) for increasing the indigenous energy supply and promoting its rational use;
- establishment of research and development programmes to be carried out with the LDCs concerned;
- provisions for industrial cooperation for the purpose of exploiting new energy sources and enabling the LDCs to produce themselves the equipment necessary to exploit their energy resources;
- establishment of exploration programmes;
- technical training of manpower to meet energy development needs.

(c) The instruments

In introducing the question of the financial instruments necessary for energy cooperation, the Commission begins by pointing out that commercial energy production is essentially a matter for private or public investors. If such investments are to be promoted in the LDCs, the question of guarantees and safeguards immediately arises (cf. Commission communication to the Council COM(78)23 on the need for Community action to encourage European investment in developing countries and guidelines for such action).

But the Community already has available its own financial instruments (EDF, EIB) which could be used for the purposes of energy cooperation. In this connection the Commission states in its document that 'one aspect of the financial aspect of energy cooperation with the LDCs will be a more systematic use of these instruments in coordination with those of the Member States, with due account taken of other priority calls on their sources of finance'. Under the Lomé Convention and the cooperation agreements with the Maghreb and the Mashrek, utilization of these funds requires the consent of the countries concerned, and thus the Community cannot unilaterally allocate them to the energy sector. This is why

energy cooperation must be backed by its own budgetary resources. By way of example, the Commission quotes an amount of 10 m EUA which would permit an early start on the cataloguing of existing and potential resources and on advisable pilot projects.

Finally, the Commission believes that coordination at Community level of the Member States' activities could be achieved through already existing mechanisms, such as the Committee for Scientific and Technical Research (CSTR). Customary Council procedures deriving from the November 1976 resolution on the harmonization and coordination of development policies could perform a complementary function.

The negotiations for the renewal of the Lomé Convention should enable the Community, first, to sound out the amount of interest among its ACP partners in energy cooperation and, subsequently, to work out jointly with them provisions in the new Convention for the functioning of this cooperation.

The Commission's intention to hold a seminar on research into and use of solar energy has now been realized. From 26 to 30 March, Community representatives, scientists, technologists and politicians from the LDCs met in Varese, Italy, to discuss renewable sources of energy and, in particular, to draw up proposals for small self-sufficient power stations for local service run on organically produced gas, solar energy or wind power.

IV. ASSESSMENT OF THE COMMISSION'S DOCUMENT

Your rapporteur must begin by reminding his readers that as to the principle of energy operation between the Community and the LDCs our committee, and with it the European Parliament, can only express agreement. In fact, Parliament has already done so in the budgetary debate at the October 1978 part-session, when an amendment tabled by our committee, for the inclusion in the 1979 budget of 3 m EUA of payment appropriations and 15 m EUA of commitment appropriations, was adopted. Unfortunately, because of the special circumstances surrounding the adoption of the 1979 budget, the amendment failed to obtain the Council's endorsement and has not been entered in the 1979 budget.

On the specific proposals contained in the Commission's communication to the Council, your rapporteur has the following observations to make:

(a) Legal status of the document

Here, as in many other cases, it would seem that the Commission has opted for the most facile solution which will enable it, and subsequently the Council, to make a show of good intentions without having to act on them by undertaking the effort of making implementing decisions. The European Parliament has already repeatedly condemned this procedure, which amounts to no more than a declaration of pious wishes that results neither in action nor any binding commitment. The document we are now considering clearly does not constitute one of the legal acts for which the Treaties provide; it does not even contain a proposal for a Council resolution.

This means that, on the basis of the Council's agreement in principle of 31 October 1978, the Community has been provided with some preliminary guidelines in the field of energy cooperation, which now require further action to put them into effect.

(b) The lack of a Community energy policy

Your rapporteur is very much alive to the obstacles facing the Community in any initiative to relaunch cooperation on energy with the LDCs. The failure of the North-South Dialogue means that a new approach must be sought, different from that of the global international negotiations on the new world economic order. To devise, in the matter of energy cooperation, such a new approach which would both deal with specific points and be internally consistent, while ensuring continuity of dialogue between the parties concerned, will certainly be difficult because it must reconcile exigencies which are almost contradictory.

The problem is further complicated by the patent lack of one of the necessary conditions for initiating a Community policy on energy cooperation, namely a Community policy on energy. This being so, it is clearly no easy task to formulate a policy of cooperation with the LDCs when the Community itself neither disposes of the data necessary to determine an order of priorities nor has the power to mould its own policies to the attainment of definite energy objectives.

(c) Inventory and coordination

We have already noted that, in the Commission's view, the first step would be to draw up an inventory of the LDCs' energy needs and energy potential, as well as of energy projects in preparation or under way.

The need for such an inventory is certainly unquestionable. What is at issue is the methods by which it should be compiled. Your rapporteur is pleased to find from information he has obtained from the Commission that it does not propose to draw up such an inventory by its own unaided efforts and from scratch. Such an undertaking would not only be costly in terms of time, manpower and finance, but wasteful, to the extent that much of the information required is already available from the Member States or from international organizations. In view of this, the Commission therefore proposes to collect these dispersed data and coordinate them in an inventory which it intends to make as comprehensive as possible, so that it can serve as a basic tool for a policy of energy cooperation with the LDCs.

After careful study of the Communication, your rapporteur was left wondering whether the Commission intended to confine itself to coordinating the national policies on energy cooperation with the LDCs, or whether it intended to formulate a policy for the Community as such. As it stands, the Commission's document provides no unequivocal answer to this question. From further information obtained from the Commission it would appear that what the Commission intends is to coordinate national policies at Community level and at the same time initiate strictly 'Community' action.

(d) Cooperation with associated and non-associated LDCs

Since the document concerns cooperation with the LDCs in general, your rapporteur, naturally enough, was concerned to discover what place was to be accorded within such a policy to LDCs having a special relation with the Community, and more particularly to the ACP.

In presenting its proposals for the framework for Community action in energy cooperation, the Commission says that 'a Community initiative for quick and effective implementation could be taken in the framework of the special relationship already established between the Community and certain countries, particularly at the time of the renewal of the Lomé Convention'.

This is certainly a praiseworthy intention and deserves our committee's support. As a matter of fact, the Joint Committee has already asked that the future ACP-EEC Convention should embrace cooperation in the energy field, and was followed in this by the ACP-EEC Consultative Assembly.

But the Community has yet to specify its intentions in this field. Are they merely that the Convention should contain a new article stating that within the framework of financial and technical cooperation a special place shall be assigned to the financing by the future EDF of projects in the energy sector? Were that to be so, it would represent little advance on the state of affairs existing under the present Convention (see Annexes 1 and 2). What is more, the final effect of such a move would be that, by granting priority to the financing of energy projects, the Community would be indirectly disadvantaging other development projects and programmes submitted by the ACPs.

There is a further clue to the Commission's intentions in that part of its document devoted to the financial instruments. There the Commission says that if the Community is to devote additional resources to energy cooperation with the LDCs 'while preserving for itself a large degree of autonomy in determining the use of such money, then the Community must equip itself with a specific provision in the Community budget for the purpose'.

Your rapporteur fully appreciates that such a mechanism would be justified and appropriate as regards cooperation with the non-associated LDCs. He has doubts, however, as to its compatibility with the principle of equal partnership on which the Convention between the EEC and the ACP States is based.

(e) Scope for developing the LDCs' energy output

The Commission's document defines a number of targets to be attained within the framework of cooperation between the LDCs and the Community in the energy field. These objectives are set out in both the sections dealing with the 'exploitation of potential resources' and those summarizing the 'operational part' of the programme.

Overall¹, your rapporteur finds these objectives acceptable, but feels bound to draw attention to the distance which separates the fixing of these 'idealized' targets and their actual realization. Both the Community and the LDCs will have to overcome a whole series of difficulties before the two can coincide.

¹ It does not seem very realistic to include the production of hydrogen, a technical development which is not yet perfected and will not be by the end of the century, among research lines likely to result in improving the LDCs' energy supply position.

One of the difficulties is due to the present state of the art of energy production as developed in Europe. It would appear there are few, if any, European industrial or research enterprises which can offer technologies for the production of energy in small quantities and on a decentralized pattern.

In the majority of the LDCs the development of energy production begins with small-scale projects of this type. The Commission itself, in fact, clearly points to the difficulty where it states in its document that 'a development effort aiming at specific application to the LDCs is therefore indispensable' and 'should concentrate particularly on small and medium-scale schemes adapted to the economic and social structure of the countries concerned'.

It is not for your rapporteur to pass judgment on the conduct of European industries which, as much for reasons of profitability as of prestige, did not see fit to develop technologies suited to the immediate energy needs of the developing countries. He can only state the facts and hope that injunctions, or incentives, from the Commission can bring about a change of heart.

And the facts are that at present the types of project envisaged by the Commission exist only as prototypes developed by European firms commissioned by public bodies. It is thus that a 10 kWh prototype solar power station was built by European firms in Egypt. Despite the interest of this project, the industrial-scale application of which is not expected in the foreseeable future, pilot experiments of this type cannot provide an immediate solution to the LDCs' energy problems.

If a solution is to be found, we must look beyond the stage of academic research and the resulting prototype applications. Rather than highly sophisticated and costly projects (one kWh of electricity from solar energy is 100 to 200 times more expensive than that from a conventional electrical power station), what is required for the development of energy production in LDCs are technologies suited to local economic and geographical conditions and existing infrastructures - technologies which can be immediately applied on an industrial scale, can offer a high degree of reliability and require a minimum of maintenance.

In your rapporteur's view two further conditions must be fulfilled if the proposed policy is to be successful. First, a strong impetus for the transfer of these technologies to the LDCs is required from the public sector; in the present context this means: from the Community within the

framework of cooperation with the LDCs. At the same time, increasing encouragement must be given to the development of these technologies in the LDCs themselves. Quite apart from all the technical, material and psychological benefits, the principal advantage of this solution is that it directly involves the economic circles of the LDCs in the development of their own energy output.

V. CONCLUSIONS

There is no doubt that the importance of the Communication lies chiefly in providing a starting point for a renewal of the debate on the need for international cooperation in the energy field; and in presenting it the Commission is doing no more than obeying the injunction of the European Council of Bremen (6 and 7 July 1978) and the desires of the Western Economic Summit in Bonn (16 and 17 July 1978).

In view of the gloomy prognostications on our future energy supply situation it is high time to face the problem resolutely at the international level. The interests both of the LDCs and of the industrialized countries are at stake. An important and responsible part in this falls to the Community. Its role must not be restricted to participation in the discussions now proceeding at various international levels. Such participation is certainly necessary, particularly where laying down the main lines of international cooperation is concerned, but it is equally important that, simultaneously with these preliminary initiatives, the Community gives effective practical expression to its desire to contribute to the energy development of the LDC's. The Commission's current proposals, approved by the Council on 31 October 1978, cannot, obviously, be seen as more than a first tentative step in this direction. The European Parliament, for its part, can only urge the Commission to submit as soon as possible, those more detailed proposals on specific aspects (including the matter of management arrangements and personnel requirements) in the light of the discussions which will take place in the Council and the Parliament which are promised at the conclusion of its document.

The World Development Report released by the World Bank in August 1978 states:

'To realize the projected energy supplies in developing countries will require concerted action on several fronts: first, technical assistance to help build the institutional capability to plan and implement comprehensive energy development programs; second, a variety of measures, particularly by the developing countries, to establish a favorable investment climate for attracting domestic

and foreign capital and know-how to this sector, ensuring that investments appear not only profitable but secure; and third, a substantial increase in financial and technical assistance from international lending institutions which will help to mobilize the necessary capital from other public and private sources. The special characteristics of petroleum exploration and development call for very close cooperation between official and private organizations to bring this about.'

This is also the spirit of the Commission's proposals which, when adopted, will represent no more - let it be stressed again - than general guidelines for the Community. The decisive step is still needed - the determination to give them reality, not in a bureaucratic manner, but by assigning to energy cooperation its rightful place in the policy on research and development and in industrial policy.

EDF aid for energy

Under the first EDFs, aid to the energy sector was rather limited and was generally bracketed with infrastructure or industrialization. Expenditure on the 19 Yaoundé Convention countries in this area up to the start of the Lomé Convention (February 1975) amounted to some 38 million units of account, including surveys.

Most of this went on building electricity lines in Rwanda and Zaire. The biggest single commitment was 19.4m u.a. to Zaire to cover a 500 km network feeding power from the immense Inga dam to Kinshasa, to the ports of Bomo and Matadi and into the national grid. In Rwanda it has been more a question of constructing a national grid. From 1962 on, 15.4 m u.a. went into this, to provide power from a station built under earlier cooperation schemes and to finance studies on new stations at Mukungwa and on the Ruzizi. The Rwandan projects were part of a regional cooperation scheme that had then been running for 10 years and also involved Zaire and Burundi, the idea being that these Great Lakes countries share a natural watershed - the basin of the Nile and Zaire rivers - suitable for hydro-electric development.

Further EDF aid went to power stations in Cameroon, Burundi and Mali (a study for the Sélingué dam), the Cameroon investments being coordinated with European Investment Bank capital (7.5m u.a.) for three dam schemes.

Otherwise, aid to the energy sector under the first three EDFs covered such smaller operations as providing power plants for factories (oil-pressing in Niger, textiles in Upper Volta, various factories supplied by the Garoua power station in Cameroon), miscellaneous infrastructure schemes (e.g. electricity for a tourist complex in Mauritania) and some back-up for farm projects (e.g. power for irrigation pumps in Togo).

Up to 1975, EDF expenditure in the energy infrastructure and production category is listed as follows:

	('000 EUA)
Burundi	425 EDF 2
Cameroon	724 EDF 2
Mali	24 EDF 2
Niger	398 EDFs 1 + 3
Rwanda	15,386 EDFs 2 + 3
Upper Volta	1,373 EDF 2
Zaire	19,400 EDFs 2 + 3
	<hr/>
	37,731

Quoted from 'The Courier', No. 51, September-October 1978

Under EDF 4, launched after the oil crisis, energy projects have taken on a new importance and been wider spread among the ACP countries. An independent report estimates that by the end of last year, more EDF 4 funds had gone to industrialization than to any other sector, primarily to increase energy supplies. The new schemes involve both conventional and non-conventional energy; the second category is of particular interest and these projects are described in the separate article which follows.

Conventional energy projects under EDF 4 include the following commitments (as of 1 May 1978); several also include irrigation schemes:

	('000 EUA)
Burundi/Rwanda/Zaire	1,200 Ruzizi II HEP scheme (study)
Ghana	8,980 Kpong Dam (see box)
Kenya	26,340 Upper Tana Reservoir scheme
Malawi	8,500 Nkula II HEP project
Mali	19,157 Sélingué Dam
Rwanda	20,000 Mukungwa HEP station
	3,900 Kigoma-Mururu HT line
Sierra Leone/Liberia	2,369 Mano River HEP scheme (study)
Western Samoa	2,353 Magiagi Dam
	487 Upola HEP project (studies)
Zaire	155 HEP for tea processing (study)

Alternative energy for the ACP countries

The recent oil crisis and the prospects of an energy crisis in the next 20-50 years clearly make it necessary to analyze the solutions that could effectively be applied to the developing countries, either individually or collectively.

In this context, the new, so-called 'alternative' forms of energy can no longer be ignored.

It may be useful to start with an outline of the Community's means of action in the developing countries and see what the Commission has actually achieved in the energy sector.

Under the Lomé Convention, the Commission is able to promote new techniques for which pure and applied research has been completed, which meet genuine needs in the ACP countries and which are adapted or easily adaptable to conditions there. They must also be reasonable economic propositions and of clear social interest. In cases of this kind, the EDF can and must provide aid:

- either via financing for projects, part of which involves techniques that are new but sufficiently well-developed for the risks to be limited;

- or as a means of industrial cooperation, as defined in the Lomé Convention (in particular, in the articles on the transfer of technology, the promotion of its adaptation to conditions in the developing countries, and the development of ACP research, adaptation of technology and industrial training).

This is a field where EEC-ACP cooperation can be particularly fruitful to all concerned and it should be tackled in a dynamic and effective manner. The criteria for implementation of EDF projects in the narrower context of alternative forms of energy in the ACP countries, and particularly in arid regions which generally have no supplies of conventional fuel, become clearer every day.

Generally speaking, each project involved in financial and technical cooperation is examined with a view to detecting any possibility of including solar energy equipment, wind power or energy-saving techniques. The last point is often neglected - wrongly, since the rational management of existing installations and improved energy efficiency could save up to 50% of the fuel currently consumed.

The projects in which alternative energy systems have been used involve agricultural irrigation, water supplies, telecommunications, housing, electricity supplies and, generally, any projects where a fairly low power output (1 50 kW) is called for. The Commission's role here is only to advise the national authorities in charge of the projects, the final decision as to the suitability and choice of the suggested equipment always rests with the ACP countries.

In view of the EDF's project assessment rulings, the choice of solution always depends on the technico-economic and social aspects. However, the Commission is willing to accept a certain obvious risk attached to using techniques that have not been fully tested in the field.

Special attention is paid to rural development projects. The advantage of using alternative energy (e.g. solar energy or wind power, is that it is well suited to village communities, which are usually scattered and do not need large amounts of energy.

So far, the EDF has run the following schemes involving alternative forms of energy:

- Mauritania - project to irrigate small rice-growing areas in the Senegal valley. Installation of a 10 kW solar pump with heat storage for 10 hours out of 24 to irrigate an area of 20 ha. Cost: 475,000 EUA. Scheduled to come into operation in December 1978.
- Malawi - project to construct and equip the Mangochi and Nsahje district hospitals. Solar energy to be used to heat water in the sanitary blocks. Cost: 100,000 EUA. Scheduled to come into operation at the end of 1979.
- Togo - two solar pumps with 0.9 kW photovoltaic cells to be installed on boreholes as part of a village hydro programme. Cost: 80,000 EUA. Scheduled to come into operation at end 1979.
- Comoros - ongoing study on supplying electricity by combination of photovoltaic cells and aerogenerator - some 300 W power.
- Barbados - projected study of air conditioning for an agricultural research centre included in the indicative programme.
- Niger - water-heating scheme for rural housing planned in the Badiguischeri department.
- Upper Volta - solar power station at Dori to produce 370 kWh per day planned as part of a project to supply electricity to secondary centres. Cost: 1,000,000 EUA. Scheduled to come into operation in 1981.

- Upper Volta - ongoing feasibility study on using molasses from the Banfora sugar works (production of alcohol as a substitute fuel for firewood).

- Cameroon - project to create irrigated areas in the Logone and Chari departments could involve a 5 kW solar pump to irrigate 10 ha of rice crops. Cost: 311,000 EUA. Scheduled to come into operation at end 1979.

Another approach to these development problems is directly supplied by those ACP states which decide to allocate part of what the EDF gives them to alternative energy research and application schemes. For example, a request from the Niger government on experimenting with solar motors and pumps is being covered by EDF 4 and stage one of this involves two medium (5 & 10 kW) solar pumps being installed on irrigated cropland. The operation will cost 550,000 EUA and is scheduled to be functioning in September 1979.

It is worth noting that this project in Niger involves the active participation of ONERSOL, which will be responsible for manufacturing the collector plates and supervising the assembly of the whole installation.

Later on, the EDF will be providing 550,000 EUA to perfect a solar motor designed by ONERSOL.

There is one other means of action, mainly intended to help with the development of rural areas and warranting particular attention in implementation of the Lomé Convention. It is the system of micro-projects which is so eminently suitable for the schemes involving alternative energy.

Experience has shown that small, isolated projects can be of considerable importance for development because:

- they enable the basic community to find solutions for its particular problems which large projects often overlook;

- they encourage the local population to take part in the design and execution of development schemes;

- small projects are easy to adapt and therefore lend themselves to gradual extension;

- they involve a considerable percentage of the local labour force, goods and national services.

We feel that the system of micro projects, which can cover a variety of types of schemes, should make it easier for rural communities to adopt alternative sources of energy. If progress is to be made in this particularly useful direction the authorities responsible must be genuinely concerned with contributing to a joint effort.

This sort of approach can also be envisaged as part of cooperation with NGOs and of financial and technical aid with non-associated developing countries. In these cases the projects submitted to the Commission are often more difficult to work out because cooperation with the people involved is much less comprehensive than with the ACP authorities. The Commission has nevertheless agreed to provide partial financing for three solar pumps (photovoltaic cells) which were successfully installed in Mali in June 1977 as part of an NGO hydro/rural development scheme. The cost is 115,000 EUA, 50% of which is being financed by the Community.

Other similar schemes are planned for Senegal (two 1 kW solar pumps), Mali (five 1 kW solar pumps and water and electricity supplies to one hospital). Chad and Rwanda (production of methane by anaerobic fermentation).

These are modest results, doubtless because of a failure to recognize the genuine possibilities which alternative forms of energy can now offer.

However, the enthusiastic interest in the projects which we have financed over the last few months shows that there is a change in the air. It is a good time to have a look at what has been done so far and check that we are going about promoting these new kinds of energy in the right way.

Quoted from 'The Courier', No. 51, September-October 1978.

OPINION OF THE COMMITTEE ON ENERGY AND RESEARCH

Draftsman: Mr Tom NORMANTON

On 25 January 1979 the Committee on Energy and Research appointed Mr Tom NORMANTON, draftsman, of the opinion.

At its meeting of 1 March 1979 the committee considered the draft opinion and adopted it unanimously.

Present: Mrs Walz, chairman; Mr Flämig, vice-chairman; Mr Normanton, vice-chairman and draftsman; Mr Veronesi, vice-chairman; Lord Bessborough, Mr Edwards, Mr Lamberts, Mr Leonardi and Mr Ripamonti.

I. BACKGROUND

1. The idea that the Community should cooperate with developing countries to develop their energy potential was mooted by Commissioner Brunner at the Council of Energy Ministers held in Brussels on 30 May 1978, and was taken up by the European Council at its meeting in Bremen on 6/7 July 1978. The Western Economic Summit held in Bonn on 16/17 July 1978 also stressed the need to improve and coordinate aid in the energy sector to developing countries.

2. Most observers have come to the conclusion that the world oil supply situation will become more difficult after 1985. Oil prices will probably rise as supply fails to keep pace with demand. At the same time the population of the world and more particularly of the third world will increase. At present the 4,000 million inhabitants of the world consume some 6,300 million tonnes oil equivalent. According to estimates quoted by the Commission, by the beginning of the next century the world population of some 6,500 million will consume some 17,000 m t.o.e. Of that 6,500 million, about 4,000 million will live in developing countries, 3,000 million of these in non-oil producing developing countries. By the beginning of the next century the energy consumption of oil importing developing countries could reach 1,400 - 2,000 m t.o.e. per year (compared with 420 m t.o.e. in 1972). These figures demonstrate the need to face up to a potentially explosive situation.

II. THE COMMISSION'S PROPOSAL

3. The present communication is more a discussion document than a formal proposal for action. It briefly outlines the problems and emphasises the need for cooperation rather than confrontation as all energy importing countries, industrialised and developing, may in the future be competitors in an inadequate energy market.

4. The Commission also suggests possible areas of cooperation between the Community and developing countries. The first requirement would be the establishment of an inventory of energy resources in interested developing countries. This would involve collating data, carrying out geological surveys, prospecting and identifying fossil fuels, uranium, natural gas, wind and solar potential, hydro-electric potential, possible geothermal sources and land suitable for biomass production.

5. The second phase would be operational, and would involve the exploitation of potential resources; the development of conventional energy sources, the encouragement of more rational use of energy, research into means of transporting energy including possibly hydrogen, the application of new or renewable energy sources and, possibly, the use of nuclear energy in most advanced developing countries.
6. The Commission document analyses the possible contribution of various renewable energy sources, particularly solar energy, including biomass. For climatic reasons this is of particular interest to most developing countries.
7. A small section is also devoted to personnel training which would be of the greatest importance for developing countries.
8. As a framework for Community action the Commission suggests the following:
 - (i) Cooperation could take place through the North/South Dialogue being conducted in the various organisations and agencies of the United Nations;
 - (ii) The Community could act effectively through the Convention at present being negotiated, which will be a successor to the Lomé Convention. The Community already has close links with ACP countries and energy cooperation could fit into this framework.
 - (iii) The possibility of energy cooperation being introduced into the Euro/Arab Dialogue could be considered. There may be scope for tripartite coordination programmes in the energy field involving the Community, Arab countries and developing countries, as happens already in the case of co-financing operations in African countries.
9. The Commission sees the need for Community action to encourage European investment to develop energy potential in LDCs and the need for specific protection for investment in projects of mutual interest, particularly in mineral prospection and exploitation.

10. The Community should have its own financial resources, possibly an allocation of 10 million EUA in the Budget earmarked for cooperation in the energy field with developing countries. This would, of course, be used in close cooperation with the EDF and the funds made available by the EIB.

11. In an annex to the Commission's proposal the possible contribution of the Joint Research Centre is outlined.

III. COMMENTS ON THE COMMISSION'S PROPOSAL

12. The Committee on Energy and Research sees the need for cooperation with developing countries in the energy field. The optimum use of the world energy resources is in the interests of all energy consumers. To a great extent energy forms a world market, and if more energy is made available in the developing countries, as a consequence more energy will be available for Europe. The consequences of increased competition for energy would almost certainly include price increases, increased balance of payments deficits and tension between producers and consumers as well as between consumers themselves. In order to obviate such a situation, cooperation and long-term planning are required.

13. Of particular importance is the development of renewable energy sources which are frequently of particular interest to developing countries. The climatic situation of many developing countries gives them a marked advantage over Europe as far as solar energy is concerned. Moreover, low population density in many of the ACP states, and an emphasis on light rather than heavy industry makes the use of renewable energy sources even more attractive. However, cooperation must not be limited merely to renewable energy sources as all energy reserves should be exploited, though intermediate-technology, readily available, cheap, reliable, low-maintenance energy techniques would appear to be of greatest benefit to developing countries. Such techniques would have the additional advantage of creating employment. These technologies must, however, be appropriate for and acceptable to the countries concerned. The Committee also stresses the importance of a regional approach to energy development in the Third World.

14. As distances between points of production and consumption of energy are often considerable in developing countries, the Committee on Energy and Research wishes to point out the importance of energy transmission techniques, including the possible use of hydrogen in the future.

15. The Community, with its tradition of technological research, could play a vital rôle in the development of techniques such as the use of biomass, wind and solar energy. These sources may have more direct applications in developing countries, yet the technological and research skills at present available in the Community should be used to develop the required techniques.

16. One of the most significant deficiencies inhibiting development in the Third World is lack of suitable management expertise. The Committee on Energy and Research accordingly feels that the Commission should investigate the means by which future managers in the Third World, and especially in the ACP countries, could be trained in appropriate management techniques, particularly in the field of energy production and distribution.

17. Many European companies have had close contact with developing countries over many years, and have built up a considerable body of experience, in the field of energy as in other aspects of industry. These firms are aware of the needs of the Third World, and of the means by which these needs may best be met. If the Commission were to tap this reserve of experience, it would certainly be to the benefit of the developing countries. The Committee on Energy and Research believes that this could be done if such firms, perhaps indirectly through Chambers of Commerce, were involved in the dialogue between the Community and its ACP partners.

18. Developing countries form a growing market for the Community. Inter-dependence between developed and developing countries is increasing. If European industry is to break out of the present depression it will need markets in the developing countries. Prosperous markets can only come about with an increasingly prosperous economy which, in turn, implies the existence of adequate energy resources. It is in the interests of European industry to encourage cooperation with developing countries in the field of energy.

19. The Committee on Energy and Research recognises the importance of the role that the Joint Research Centre plays in the field of research generally. Its work on solar energy and hydrogen could be of particular importance to developing countries. The Joint Research Centre, and in particular the Ispra establishment, could also perform a valuable function as far as training is concerned. The JRC is engaged in work on remote sensing from space, and this could be of assistance to the development of agriculture in the Third World. In an annex to the Commission's communication, however, it is suggested that the Centre act as consultants for developing countries. At its meeting of 1 March 1979 the Committee was reassured by a representative of the JRC that the term 'consultancy' did not mean that the Centre would act as consultants as is normally meant by this term. Instead it was intended that the JRC would make its technical expertise available to developing countries when required. The Committee fully agrees with this use of the Centre, while doubting its suitability as a consultant in the more usual meaning of that word.

20. According to Commission representatives, a more detailed estimate of the budgetary implications of cooperation with developing countries in the energy field will be provided by the Commission in the near future, when proposals on specific aspects of such cooperation will be drawn up.

IV. CONCLUSIONS

21. The Committee on Energy and Research

- Warns again that demand for energy will almost certainly exceed supply, particularly after the end of this century, as known hydrocarbon reserves are depleted;
- Stresses the need for cooperation with developing countries in the field of energy, as a means towards achieving the optimum exploitation of the world's energy resources;
- Emphasises the importance of establishing a complete inventory of energy resources in interested developing countries;
- Is of the opinion that developing countries should initially concentrate on developing intermediate technology which is of more direct relevance to their economic needs and will further energy techniques which are inexpensive, reliable and readily available, with the additional advantage of creating employment;
- Feels that special emphasis should be given to the development of renewable forms of energy, which would be of particular utility to developing countries, while not excluding cooperation aimed at exploiting non-renewable forms of energy;
- Draws attention to the importance for developing countries of energy transmission techniques, including the possible use of hydrogen in the future;
- Recognises the valuable contribution that Community technological research could make in this field;
- Calls on the Commission to examine the means by which the Community can assist the Third World, and especially ACP countries, in the provision of appropriate management training courses, particularly in the field of energy production and distribution;
- Points out that many firms operating in the field of energy and energy technology have built up a considerable body of experience which could be of benefit to developing countries; consequently calls on the Commission to take advantage of this experience perhaps by involving Chambers of Commerce in the dialogue between the Community and the ACP countries in the field of energy as well as where trade and industry are concerned;

- Is aware of the importance to Community industry of prosperous and developing markets in the Third World, and points out that, without adequate energy supplies, such markets cannot develop;
 - Believes that the JRC could have an important role to play in the field of energy research and development and in the provision of technical and scientific training, as well as through its work on remote sensing from space and by making its technical expertise available to developing countries when required;
 - Approves the Commission's communication 'Cooperation with developing countries in the field of energy' and is pleased to note that more detailed proposals on specific areas of cooperation, as well as estimates of the financial implications for the Community of action in this field, will be presented in the near future.
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