

# The rational use of energy and alternative sources

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## Introduction

This information note is the fourth in the series of notes prepared by the Commission of the European Communities to inform the largest possible audience about the work financed by the CEC in the field of demonstration projects for rational energy use and alternative sources. This information note covers the topic of solar energy demonstration projects.

## Solar energy demonstration projects The legal background

In June 1978 the Council of the European Communities adopted Regulation (EEC) No 1302/78 on the granting of financial support for projects to exploit alternative energy sources, followed in April 1979 by Council Regulation (EEC) No 728/79 on the implementation of the 1978 Regulation in the solar energy sector. These stipulate, *inter alia*, that:

1. The Community may grant financial support for demonstration projects to exploit alternative energy sources in the Community which by their nature may serve as examples and which prior studies and research have shown to offer prospects of industrial and commercial viability. For the purposes of the Regulation alternative energy sources means any potential source of energy, with the exception of nuclear energy and fossil fuels exploited by conventional means.
2. All projects must relate to the exploitation of alternative energy sources by means of new techniques or technologies which might encourage the establishment of other installations of the same type. With regard to solar energy in particular the Regulations state that:
  - (a) support shall be granted for projects for exploiting solar energy, in particular:
    - for installations for the heating of water, space heating and air conditioning of residential and industrial buildings and public premises;
    - for installations for the production of process heat, mechanical or electrical energy for the purposes of industrial or agricultural production or processing;
    - for biomass production and application for energy purposes.
  - (b) such support shall constitute only a minority share of the total financing of the project.  
Support may not in general exceed 40% of the total cost of the project and must remain within the set ceiling. Half of the support shall be repaid if the application is commercially exploited.  
The repayable part of the support shall be repaid over a maximum period of eight years, starting from the second

year of commercial exploitation of the project. Arrangements for repayment shall depend on the nature of the project and shall be laid down in the contracts to be concluded with the recipients.

3. Every project submitted for consideration by individuals or undertakings in the Community further to a call for submission of projects published in the *Official Journal of the European Communities* shall be examined by the Commission on the basis of the following information to be supplied by the applicants:
  - a detailed description of the project and the timetable for its execution;
  - a description of the preliminary work and research;
  - the importance of the project for reducing energy dependence and increasing diversification of supply;
  - the financial situation and technical capabilities of those responsible for the project;
  - the nature and extent of the technical and economic risks involved in the project;
  - the cost of the project, its potential economic viability and the proposed arrangements for financing it;
  - the extent to which the execution of the project may encourage the introduction of the technique, process or product in the Community;
  - the prospects for widespread application of the technique, process or product and the benefits thereby obtainable for the economy as a whole;
  - whether at an earlier stage of research and development the project has been given financial support by the Community or by Member States;
  - details of any other financial support for the project to be provided by, or expected from, Member States or the Community;
  - any other information which justifies the Community support requested;
  - how it is proposed to publicize the results.
4. The Commission shall decide whether to grant or refuse support for projects after consulting the Solar Energy Consultative Committee composed of representatives of the Member States.

## Solar projects at a glance

Call for projects	Projects submitted			Projects selected		
	Number	Total cost m ECU	Support requested m ECU	Number	Total cost m ECU	Support requested m ECU
First 15 July 1978 – 30 Sept. 1978	135	108	43	26	26.582	6.354
Second 30 January 1980 – 30 April 1980	105	99.232	37.586	36	38.406	13.229
Third 31 January 1980 – 30 April 1980	47	29.212	9.144	22	8.742	3.332

## 2. Projects submitted and selected

So far, three calls for demonstration projects to be submitted in the field of solar energy have been published.

(i) The first call for projects appeared on 15 July 1978 (OJ C 170). This was of a general nature and related to the whole of the solar energy sector.

In all, 135 proposals were submitted and these represented a total investment cost of 108 million ECU. The support requested amounted to 43 million ECU. Each project was reviewed by the Commission's departments, and 16 were selected, after the Solar Energy Consultative Committee had been consulted.

Further, an additional 10 projects were selected to be added to the list under consideration. Of the 135 projects received by the Commission, therefore, the latter selected 26 for Community financial support amounting to 6.35 million ECU.

Relatively few projects were chosen, as only limited budgetary resources were available.

(ii) Two calls for projects were published in 1980. Like the preceding one, the call published on 30 January concerned demonstration projects in the general solar energy field.

In all, 105 projects with a total investment of 99 million ECU were submitted to the Commission, the financial support requested being about 37 million ECU.

The Commission consulted the Solar Energy Consultative Committee and selected 36 projects, and a sum of 13.2 million ECU was allocated for support.

(iii) The other call, published on 31 January, was devoted specially to swimming pools. The aim here is to establish a network of solar-heated swimming pools in the Member States. The scheme is of particular interest, since solar energy is an ideal source of low-temperature heat (provided by relatively simple collectors) for this sector - normally a large consumer of oil.

The Commission received 47 proposals relating to 96 swimming pools, the total investment value being 17.7 million ECU. A working party of government experts was set up to sift the entries, and the Commission, having consulted the Solar Energy Consultative Committee selected 22 proposals (60 swimming pools). The financial support involved was 3.3 million ECU.

## The first call for tenders The contractors

### Solar thermal

A multi-stage flash desalination plant with solar energy as the main energy source  
Oñ Lampedusa Island, Italy (SE/09/1979)

Agip SpA  
Piazzale Enrico Mattei  
Rome, Italy

A dual-purpose solar energy system for drying agricultural by-products to be used for sheep feeding; and for electricity generation on a remote farm on Sardinia (SE/14/1979)

Università degli  
Studi di Sassari  
Istituto di Meccanica Agraria  
Via Enrico de Nicola  
Sassari, Italy

## How the money was allocated

	Thermal		Photovoltaic		Biomass		Total	
	m ECU	No of projects	m ECU	No of projects	m ECU	No of projects	m ECU	No of projects
First call for projects	4.990	19	0.332	3	1.032	4	6.354	26
Second call for projects	4.964	25	0.086	1	8.179	10	13.229	36
Third call for projects (swimming pools)	3.332	22	—	—	—	—	3.332	22
Total	13.286	66	0.418	4	9.211	14	22.915	84

The use of solar energy in a sports centre at Uchaud: the solar energy is used for space heating, and heating of water in the showers (SE/61/1979)

Mairie d'Uchaud  
Uchaud, France

Solar heating of swimming pools in Germany (SE/126/1979)

Bundesinstitut  
für Sportwissenschaft  
Hertzstraße 1  
Köln 40 (Lövenich),  
Federal Republic of Germany

Solar space and water heating in a building complex in Chabrières (Hautes Alpes) (SE/68/1979)

Société Européenne  
de Propulsion  
Tour Roussel-Nobel  
Cedex No 392080  
Paris, La Défense, France

Solar energy for the heating of tap water in a calf-breeding farm at Kootwijkerbroek (The Netherlands) (SE/123/1979)

IMAG  
Mansholtlaan 10-12  
Wageningen,  
The Netherlands

Solar heating to maintain a desirable reaction temperature for the production of methane from pig arisings. Project located on a pig farm at Schijndel, The Netherlands (SE/125/1979)

IMAG  
Mansholtlaan 10-12  
Wageningen,  
The Netherlands



Facade mounted collectors in Fleurus, Belgium (SE/131/79)

The use of solar energy for the heating of sanitary in a building at Fleurus, Belgium (SE/131/1979)

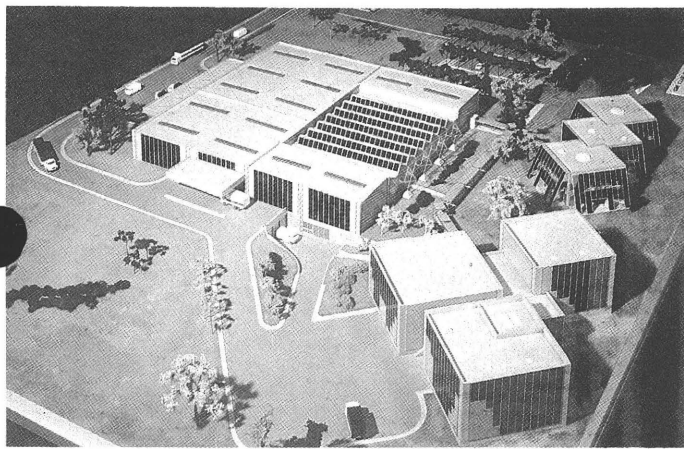
Glaverbel SA  
Chaussée de la Hulpe 166  
1170 Brussels, Belgium

Solar energy in a wine plant: the application of solar energy for the production of heat to warm water used in the cleaning of bottles (SE/15/1979)

Adelkam SpA  
Via Giuseppe Piazzi, 15  
90141 Palermo, Italy

The application of solar energy in horticulture: solar energy will be used to heat the specially designed greenhouses, thereby reducing the use of fuel oil (SE/4/1979)

Azienda Floreale Diem  
di Wolfgang Bock  
Via D. Doria, 23  
18030 Camporosso,  
Imperia, Italy



Heating and air conditioning in a group of industrial buildings (SE/160/1981)

The use of 360 m<sup>2</sup> of solar collectors to pre-heat water in an industrial plant at Arnhem (SE/167/1981)

Erika bv  
Velperweg 76  
6824 BM Arnhem,  
The Netherlands

Solar energy in housing. A programme of 480 residential buildings (social dwellings) in towns throughout the Piedmont (SE/228/1981)

Union Piemontese per lo  
Sviluppo Edilizio (UPSE)  
Corso Stati Uniti, 41  
Turin, Italy

A solar-heated house in the Ardennes (SE/149/1981)

Monsieur J. Mambour  
Heiligenfeld  
Route de Lischert  
Metzert-Ottart, Belgium

## Photovoltaic

The interconnection of a 5 kW photovoltaic solar system with the low-voltage electrical utility grid (SE/146/1981)

Rijksuniversiteit  
Gent St Pieters  
Nieuwstraat 25  
Gent, Belgium  
De Stadsbedrijven EGW  
(Stad Gent)  
Graaf van Vlaanderenplein 30  
Gent, Belgium

## Biomass

Total energy plant based on the gasification of agricultural waste and straw for a gas engine of approximately 2 000 kW (SE/159/1981)

Vicon nv  
PO Box 1  
2150 AA Nieuw Vennepe,  
The Netherlands

Multi-source energy system with a net production of 7200 MWh per year, based on renewable energies including a biogas system; wind mills; straw-and-wood-chip-fired boiler; heat pump system; solar collectors with short-term and seasonal storage. This multi-source system will supply a district heating system of a rural community of 250 homes (SE/177/1981)

Båring Asperup Cooperative  
5466 Asperup, Denmark

Biogas system based on anaerobic fermentation of animal manure and other organic wastes for the gas supply of a rural community with 300 inhabitants. The net production is estimated at  $13.5 \times 10^9$  GJ/year (SE/231/1981)

Revninge  
Andelsenergiselskab  
Revninge Bygade 87  
5300 Revninge, Denmark

A biomass digester system for electricity and heat production. A chicken farm of 150 000 egg-producing hens should produce sufficient arisings a day to yield approximately 900 m<sup>3</sup> of gas. This fuel will be used to heat and cool the hen houses, heat greenhouses and refrigerate the storage facilities (SE/226/1981)

Azienda Zooagricola  
il Prato SpA  
Via Silki, 13  
Sassari, Sardinia, Italy

The use of biomass on a Scottish chicken farm (SE/220/1981)

D. B. Marshall  
(Newbridge) Ltd  
Newbridge, Midlothian,  
United Kingdom

Biogas production by anaerobic digestion in a farm. Combined production of electricity and heat (70 kWe, 100 000 kcal/hour) with a gas engine (SE/200/1981)

AMN - Ansaldo Meccanico-  
Nucleare SpA  
Via G. D'Annunzio, 113  
16121 Genoa, Italy

Short rotation forestry for energy Phase II (SE/205/1981)

Bord Na Mona  
Lower Baggot Street  
Dublin, Ireland

A pig farm for the production of biomass; the production of process heat from an anaerobic digestion; the conversion of the biogas into heat and electric power (SE/234/1981)

Ing. Walter Feilhauer  
Ing. Büro  
Schauerheim 60  
8630 Neustadt/Aisch,  
Federal Republic of Germany

The combined production of electricity and heat (24.6 kWe) from biomass (sugar cane) (SE/194/1981)

Société d'Énergie  
Électrique de l'Est  
97400 Saint-Denis  
Ile de la Réunion, France

Biogas demonstrations on seven farms using different biomass arisings (SE/145/1981)

Association Internationale de  
Développement Rural (AIDR)  
Rue du Commerce 20, Boîte 9  
1040 Brussels, Belgium

Production of biomass from solar energy in plastic greenhouses (SE/240/1981)

Commissariat à l'Énergie  
Atomique  
Services d'Études  
et de Recherches  
sur l'Environnement, BP 1  
13115 Saint-Paul-lès-  
Durance, France

## The third call for tenders

The Community is, within its solar energy demonstration programme, funding a network of solar-heated swimming pools in the Member States of the Community. This particular demonstration programme was the result of the call for tenders published in the *Official Journal* of 31 January 1980. On all pools selected for partial funding a coordinated measuring programme will be carried out over a period of two years. Of the 22 projects originally selected for support, two did not result in the signature of a contract.

Solar heating of an indoor swimming pool on the university campus (SE/P/3/1981)

Université Catholique  
de Louvain  
Place de l'Université 1  
Louvain-la-Neuve, Belgium

Solar heating of the 'De Thermen' indoor swimming pool (SE/P/4/1981)

Gemeentebestuur van  
Alphen aan den Rijn  
Burgemeester Visserpark 30  
Alphen aan den Rijn,  
The Netherlands

Performance monitoring of solar heating of the Topsham outdoor public swimming pool (SE/P/13/1981)

University of Exeter  
Northcote House,  
The Queens Drive  
Exeter EX4 4QL, Devon  
United Kingdom

Solar heating of the outdoor swimming pool in the Chevetogne Sports Centre (SE/P/17/1981)

Province de Namur  
Gouvernement Provincial  
Place Saint Aubain  
Namur, Belgium

Solar heating of three outdoor swimming pools in different locations: Heraklion (Crete), Ilisia (Athens), Xanthi (Thrace, Northern Greece) (SE/P/18/1981)

General Secretariat for Sports  
Presidency of the Government  
25 Panepistimiou Street  
Athens, Greece

Solar heating of the indoor and outdoor pool of the Via Galliano public swimming centre (SE/P/19/1981)

Commune di Verona  
Verona, Italy

Solar heating of four indoor and four outdoor swimming pools in different locations (SE/P/20/1981)

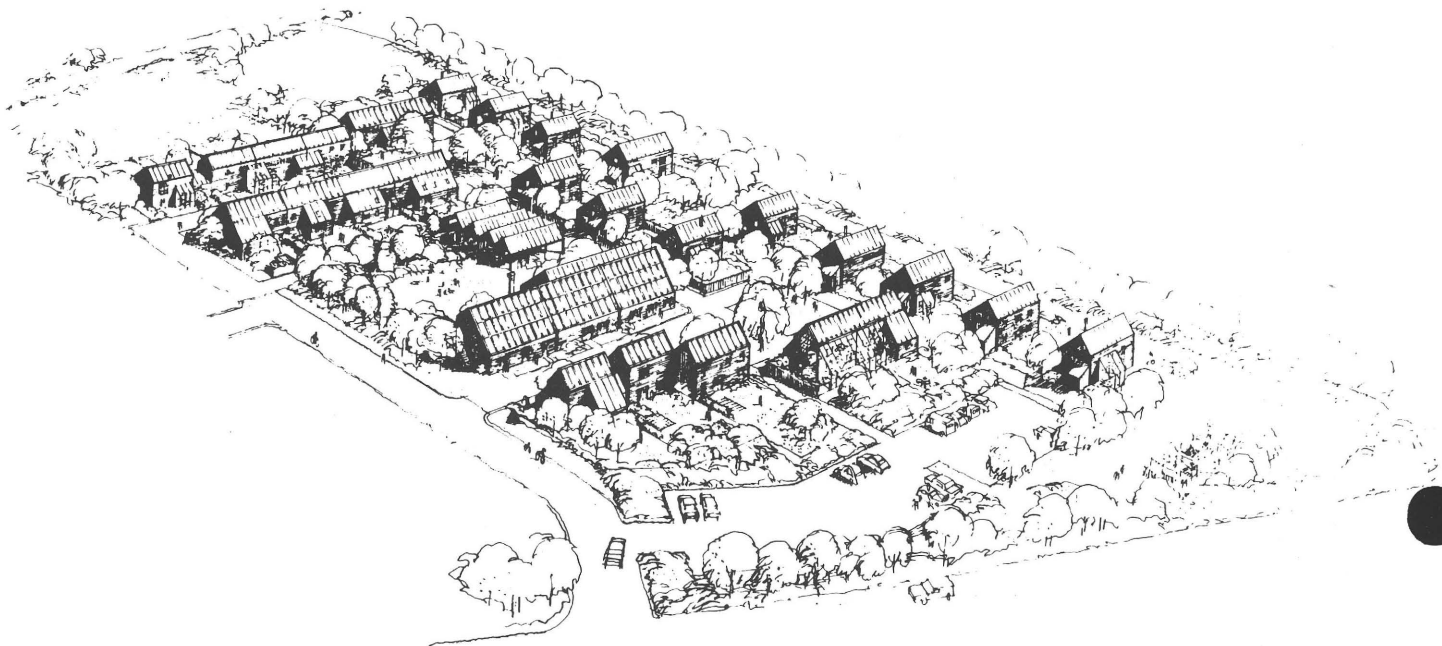
Robinsons Developments Ltd  
Winnal Industrial Estate  
Winchester, Hants SO23 8LH  
United Kingdom

Solar heating of the school's indoor swimming pool (SE/P/22/1981)

The Provost and Fellows of  
Eton College  
Eton College, Windsor,  
Berkshire, United Kingdom



A solar-heated drying tunnel for fruit and vegetables (SE/188/1981)	Université de Perpignan Avenue de Villeneuve Perpignan, France	The use of solar energy in individual houses (SE/163/1981)	The Helix-Raymont Passive Solar-Partnership Mortimer Hill Mortimer, Reading RG7 3PG Berkshire, United Kingdom
Flat-plate solar collectors and a concrete heat storage system for space and hot-water heating of ten dwellings in Capelle a/d IJssel (SE/154/1981)	Bouwcentrum/Techno Weena 700 3000 AG Rotterdam, The Netherlands	Heating and air conditioning in a group of industrial buildings (workshops, offices, etc.) (SE/160/1981)	Pernod 120 avenue Foch 94015 Creteil, France
Passive solar systems consisting of collectors, conservatory and a sun boiler (5m <sup>2</sup> flat-plate collectors per dwelling) for space and hot-water heating of 10 dwellings in Capelle a/d IJssel (SE/155/1981)	Bouwcentrum/Techno Weena 700 3000 AG Rotterdam, The Netherlands	The use of solar heat for the concentration of oil emulsions in the metal machinery industry (SE/185/1981)	La Metalli Industriale SpA Borgo Pinti, 97-99 50121 Florence, Italy
Solar energy system with evacuated tube collectors (460 m <sup>2</sup> ) of heating, air conditioning and hot-water preparation in the Textile Machinery Research Centre at Pordenone, Italy (SE/156/1981)	CERIMATES (Centro Ricerche Macchine Tessile) Via Udine, 105 33170 Pordenone, Italy	The use of solar energy (967000 Kwh/a) for brick drying in Venusio, Italy (SE/227/1981)	Valdadige SpA Via Quattro Spade, 16 Verona, Italy
Solar process heat-generation plant with concentrating trough collectors (1 728 m <sup>2</sup> ) for the production of one tonne of steam per hour at 6 bars (SE/176/1981)	AGIPNUCLEARE, Via Brenta, 29 Milan, Italy MAN - Neue Technologie Dachemerstraße 667 Munich, Federal Republic of Germany	The use of solar energy in social dwellings (SE/186/1981)	Istituto Autonomo per le Case Popolari della Provincia di Genova Via Bernardo Castello, 3 16121 Genoa, Italy
Solar heating for the textile industry: a solar process heat-generation system with concentrating trough collectors (ca 100 m <sup>2</sup> ) for the production of 120 t of steam per year at medium pressure (5 to 10 bar) (SE/182/1981)	Tecnotessile - Centro di Ricerche SpA Via Valentini 14 50047 Prato, Italy	High-performance solar collectors for industrial heat (SE/222/1981)	AMN - Ansaldo Meccanico- Nucleare SpA Via G. D'Annunzio, 113 16121 Genoa, Italy
A passive solar system with a conservatory and flat-plate solar collectors for space and water heating in a hotel (SE/183/1981)	Hotel Banghion 18, Omonia Square Athens, Greece	Solar air captors integrated into a building (SE/151/1981)	SCIC 4 Place Raoul Dautry 75015 Paris, France
Advanced solar collectors (evacuated tube collectors, ca 250 m <sup>2</sup> ) which are incorporated in the water heating system of a factory canteen. The solar system will replace oil/gas-fired boilers during the summer months and provide preheat in other seasons of the year (SE/235/1981)	GEC Power Engineering Ltd Cambridge Road Whetstone, Leicester LE8 3LH United Kingdom	Solar energy in a housing application (SE/179/1981)	Polytechnic of Central London 309 Regent Street London W1R 8AL, United Kingdom
A centralized solar energy system with flat-plate collectors (637 m <sup>2</sup> ) and heat accumulators for the space and water heating of 27 single-family houses and a communal building in Beder (SE/237/1981)	Bofælleskabet Sol og Vind I/S Byagervej 217 8330 Beder, Denmark	The use of solar energy in an Etruscan baths complex (SE/207/1981)	Terme Etrusche di Musignano Corso G. Matteotti, 17 01011 Canino (Viterbo), Italy
		Rosefields and Rowheath solar water heating projects. The use of solar energy in housing (SE/199/1981)	Bournville Village Trust Oak Tree Lane Bournville, Birmingham B 30 1UB, United Kingdom
		Three solar houses with air collectors for heating (SE/216/1981)	Polytechnic of Central London 309 Regent Street London, United Kingdom Peterborough Development Corporation Tonthill Close Peterborough, United Kingdom



An architect's impression of the 27 house estate in Beder, Denmark (SE/237/81)



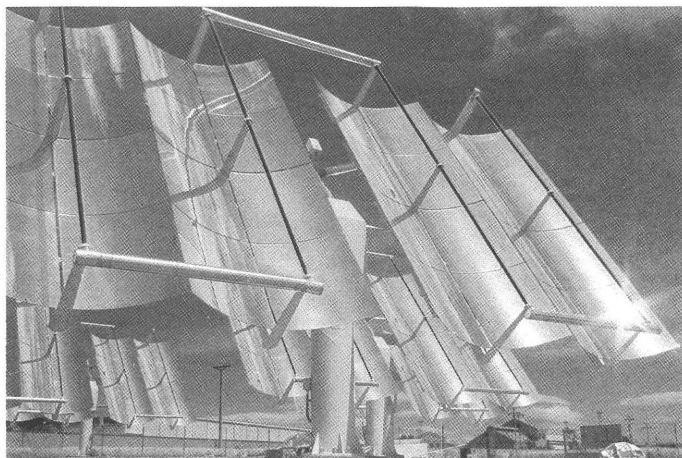
Short rotation forestry in Mayo, Ireland. 400 hectares (1 000 acres) of coppice will be planted over a five-year period (SE/100/79)

The use of solar energy in a first school (for children from the ages of 5 to 11). The solar energy is used for space heating and the system is an excellent teaching aid to impress upon the children the need for the rational use of energy. The school selected is the Tidcombe Lane First School in Tiverton, Devon (SE/43/1979)

Devon County Council  
County Hall  
Topsham Road  
Exeter, Devon,  
United Kingdom

The solar heating of a sports centre at Butgenbach, Belgium (SE/23/1979)

Régie des Bâtiments  
Ministère des Travaux Publics  
Rue de la Loi 155  
1040 Brussels, Belgium



Solar process heat generation plant to produce 1 ton steam/h at 90°C (SE/176/81)

### Photovoltaic

A 30 kW photovoltaic converter for heating and cooling and for water pumping to be used on a remote farm (SE/17/1979)

Officine Galileo  
Campi Bisenzio  
Località Tomerello  
Florence, Italy

An 'electric' car equipped with batteries powered by electricity from photovoltaic cells (SE/28/179)

Katholieke Universiteit  
Leuven  
Departement Elektrotechniek  
Afdeling ESAT  
Kardinal Mercierlaan 94  
Heverlee, Belgium

The use of electricity generated by photovoltaic cells to drive a 900 W water pump which supplies a micro-irrigation system at Bourriot-Bergonce (Landes) (SE/77/1979)

Société Nationale  
Elf Aquitaine SA  
7, rue Nélaton  
Paris, France

### Biomass

Production by gasification of flax (SE/54/1979)

Coopérative Agricole  
Linière du Plessis-Belleville  
60330 Plessis-Belleville,  
France

Short rotation forestry to produce biomass for the generation of electricity. The work within the framework of this contract will be done mainly in the counties of Offaly and Mayo. Phase I (SE/100/1979)

Bord Na Mona  
Lower Baggot Street  
Dublin, Ireland

The use of solar energy in several agricultural applications at the Institute of Bonafous, Chieri, near Turin, Piedmont, Italy (SE/111/1979)

SES  
Sistemi Energia Sud  
Via Cuneo, 20  
Turin, Italy

Although 26 projects were selected by the Commission for support, eight of those projects did not result in the signature of a contract.

### The second call for tenders

#### Solar thermal

Solar energy in an administrative building in Hoeillaert (Belgium). A system for space heating and sanitary warm-water production using solar energy in conjunction with heat pumps (SE/152/1981)

UNERG SA  
Chaussée d'Ixelles 133  
Brussels, Belgium



'De Thermes' solar heated swimming pool, Alphen aan den Rijn, The Netherlands (SE/P/4/81)

Solar heating of the Badespen outdoor swimming pool (SE/P/23/1981)	Albertslund Kommune Rådhuset Albertslund, Denmark	Solar heating of a public indoor swimming pool (SE/P/32/81)	Comune di Ronciglione Ronciglione (Viterbo), Italy
Solar heating of the Ringsend indoor swimming pool (SE/P/25/1981)	Electricity Supply Board 27, Lower Fitzwilliam Street Dublin, Ireland	Solar heating of 24 indoor and outdoor swimming pools located throughout France (SE/P/33/1981)	Commissariat à l'Énergie Solaire 208, rue Raymond Losserand Paris, France
Solar heating of a public outdoor swimming pool (SE/P/26/1981)	Horsens Kommune Rådhuset Horsens, Denmark	Solar heating of the indoor swimming pool at the Sports Centre, Torvecchia (SE/P/35/1981)	Ente Provincia di Roma Rome, Italy
Solar heating of a public indoor swimming pool (SE/P/29/1981)	Stichting Sportfondsenbad Amersfoort Bisschopsweg 175 Amersfoort, The Netherlands	Solar heating of five outdoor swimming pools in different locations (Stadtsteinach, Unna, Ahaus, Ihringen, Ülzen) (SE/126/1979 - SE/P/41/1981)	Bundesinstitut für Sportwissenschaft Hertzstraße 1 Köln (Lövenich), Federal Republic of Germany
Solar heating of a public outdoor swimming pool (SE/P/30/1981)	Stichting Zwembad Gouderak Beukendaal 27 Gouderak, The Netherlands	Solar heating of the Frères Cervi public indoor swimming pool (SE/P/43/1981)	Comune di Urbino Via Pucinotti Urbino, Italy
Solar heating of the indoor swimming pool at the Mostacciano (Rome) Sports Centre (SE/P/31/1981)	Agip Petroli SpA Via Laurentina, 449 Rome, Italy	Solar heating of the F. Scandone public indoor swimming pool (SE/P/46/1981)	Comuni di Napoli Naples, Italy

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For more information write to: Commission of the European Communities  
Directorate-General for Energy  
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