

ENERGY TECHNOLOGY PROMOTION FOR A SUSTAINABLE DEVELOPMENT

Paula Abreu-Marques - European Commission, Directorate General XVII
Energy, Technology, Strategy-Dissemination-Promotion

1. SYNOPSIS

Presentation of European Union's initiatives for the promotion of innovative and environmentally sound energy technologies through the THERMIE programme, illustrating methods, activities and achievements.

2. INTRODUCTION

In the view of the challenges which Europe is facing today, the European Union has been pursuing fundamental objectives by promoting innovative energy technologies through the THERMIE programme (1990-1994). Building upon the results of the previous periods, the THERMIE programme is now being linked to the JOULE (research and development) programme integrated within the Fourth Framework Programme on Research and Technical Development (1995-1998). The prime objective is to improve energy security in the broadest sense and to reduce the environmental impacts of the production and use of energy, in particular the emissions of CO₂. Within this frame, the JOULE-THERMIE programme also aims to contribute to the achievements of other important EU objectives such as strengthening the technological basis of energy industry - with benefits for the economy, employment and export potential, support for SMEs, improving social and economic cohesion and contributing to co-operation with third countries.

3. METHODOLOGY

3.1. Promotion of clean and efficient energy technologies the thermie programme (1190-1994)

The European Union concentrated through the THERMIE Programme on three main areas of activity:

1. inancial Support for energy technology projects (innovative, dissemination and targeted projects);
2. ssociated Measures to promote the application and market penetration of energy technologies; carried out essentially by a European-wide network of nearly 50 'Organisations for the Promotion of Energy Technology (OPET);
3. C-ordination of promotional activities with Member States programmes and with other European Union programmes.

A total budget of some 700 MECU has been allocated to the THERMIE programme. 713 energy technology projects in the diverse field of Rational Use of Energy, Renewable Energies and Fossil Fuels could benefit from a support of some 573 MECU.

Table 1 THERMIE Projects 1990-1994: Number of projects and financial support including additional benefits (SME, objective 1, European co-operation)

Table 1:

THERMIE projects 1990-1994
Number of projects, financial support and additional benefits

	N° of projects	Support (MECU)	N° of projects		
			SME involved	EU-Co-operation	Objective 1-Regions
Rational Use of Energy	253	169,6	151	114	95
Renewable Energies	271	159,2	185	104	90
Solid Fuels	29	122,4	3	17	9
Hydrocarbons	160	121,9	81	63	10
Total	713	573,2	420 59%	298 43%	204 23%

Increasing concern over the environment has focused attention on the efficient use of energy. 253 projects promoting the rational use of energy in buildings, industry, the energy industry and transport have received 169.4 MECU of assistance between 1991-1994.

While almost all industrialised countries depend on fossil and nuclear fuels, economic and environmental reasons do exist for developing renewable energy sources. Between 1990-1994 THERMIE provided financial support to 271 renewable energy projects covering solar energy, energy from biomass and waste, geothermal energy and wind energy.

The THERMIE 'Action Plan for Renewable Energy Sources in Europe'1 puts a great emphasis on this approach by adopting concrete lines of action in order to achieve the target of substituting the equivalent of 15% of conventional primary energy demand in the EU.

Solid fuels such as coal, lignite and peat meet nearly 40% of the European Union's power generation requirements. Through THERMIE, 122.4 MECU have been allocated to 29 projects concerned with the clean and cost-effective exploitation of solid fuels.

Within the hydrocarbons sector, the key objectives of THERMIE have been to ensure the optimum use of known - but finite- reserves, to secure supplies at competitive prices and to improve transportation and storage. To date, 121.9 MECU has been directed to 160 hydrocarbon projects.

In the line with broader objectives set for the promotion of energy technologies, the THERMIE programme acknowledged priorities for SMEs, less developed regions of the EU (objective 1 regions) and for pan-European co-operation. SMEs, being recognised as primary engines of innovation and change, have been involved in 60% of the projects. 76% of the projects have several partners, 43% have involved contractors from different Member States, strengthening the economic and social cohesion within the Union. 30% of the projects were implemented in 'objective 1' regions, supporting forces for their development.

Many of the major THERMIE projects are still in their early stage, so the long term impact can only be estimated. Due to this, a comprehensive ex-ante Cost-Benefit-Analysis² for the projects supported between 1990-1993 has predicted the following benefits underlining THERMIE's contribution to the challenges of sustainable development:

Table 2: THERMIE Projects 1990-1993: Energy savings/substitution and Emission reduction

Table 2:

THERMIE Projects 1990-1993

Energy Savings/substitution, Environmental impacts, Increase of GDP

1990-1993	THERMIE during life-time of installation	THERMIE + expected replication
Energy Savings/ Substitution	kTOE 10 906	kTOE 159 427
Emission Reduction	tons	tons
CO ₂	42 112 344	625 319 817
SO ₂	293 167	4 529 750
NO _x	170 316	2 088 219
VOC	44 906	378 219
CO	268 543	2 154 902

Moreover, the analysis anticipates an increase of 1,493 MECU in EU GDP as a result of the programme, with a complementary investment by EU enterprises in these technologies amounting to a total of 4,112 MECU.

Following the major present challenges Europe is facing today, THERMIE puts emphasis to be in line with the White Book on Growth, Competitiveness and Employment. A study³ presents early results of 50 representative terminated projects. It states that 85% of the projects prove to lead to significant competitive advantages. The investment induced by the implementation of project lead to a ratio 1 ECU of support - 7 ECU of investment. Moreover, employment creation and/or preservation can be claimed to the EU support of the project: 28 projects lead to the creation of 71 jobs, preservation of 68 jobs and were backed in addition on capacities in up-stream services equivalent to 54 man-years. Energy technologies being recognised in the White Paper as a key sector for sound and competitive development of European industry thus show their evidence.

The associated measures of THERMIE are designed to help technologies penetrate new market and achieve more widespread application. 50 organisations building the OPET network throughout the EU offer access to over 2000 experts helping to implement a great variety of support and promotional actions for energy technology. As well as

working within the EU, the OPET network has been instrumental in bringing THERMIE initiatives to Central and Eastern Europe leading to both environmental benefits and new business opportunities for European industry. 14 EC Energy Centres have been established in Central and Eastern Europe, ensuring close co-operation with other Union initiatives such as PHARE, TACIS, and the Internal Energy Co-operation Programme.

3.2. Clean and efficient energy technologies - Joule THERMIE (1994-1998)

The follow-up Programme for the Promotion of European Energy Technologies will be integrated in the specific non-nuclear energies RTD programme of the Fourth Framework Programme. This programme implements targets set by the Maastricht Treaty in order to meet scientific and technological needs of European economy. Joining research & development and demonstration in one programme, THERMIE will continue to cover a large part of the past activities in complementarity with other specific programmes and initiatives by the EU.

The main driving forces are:

- to ensure lasting and reliable energy services at affordable costs and conditions;
- reduction of the greenhouse effect and other environmental impacts,
- Economic development: competitiveness, growth and employment and strengthening the technological basis of industry;

967 ECU will be available for the Non-Nuclear Energy Programme, including 532 MECU for the demonstration part (THERMIE). The funding will continue to build the basis for project support, as well as other activities such as strategy, dissemination, preparatory, accompanying and support measures, concerted actions and technology stimulation for SMEs.

For 1995, this means a budget for demonstration projects of about 108 MECU to be allocated for the first Call for Proposals being closed in March 1995. The next call for proposals on the demonstration part will most probably be published 15 September 1995. For financial support of the support activities, the Call for Proposals will be open until December 1997, a first selection will however been done by mid 1995.

4. ENDNOTES

1. The Declaration of Madrid: 'An Action Plan for Renewable Energy Sources in Europe', Madrid, March 1994
2. Cost-Benefit-Analysis of THERMIE Projects 1990-1993, September 1994
3. MAIN Consultants: Study on the complementarity of the THERMIE programme with the objectives of the White Paper on Growth, Competitiveness and Employment, Draft Final Report, January 1995

