

# GEO ENeRGY

Promoting *R&D capability* in the service of European Industry

## ENeRG seeks to expand network - new secretariat established

On behalf of the Steering Committee of ENeRG, I wish to express our thanks to members for their constructive participation in the network.

During the five years ENeRG has been established, the network has been extended to 12 European countries with 26 member organisations, and has been recognised as a reliable and valuable voice for R&D organisations in the European upstream oil and gas sector.

### The network aims to:

- identify and match opportunities for new R&D programmes;
- explore opportunities for scientific and technical collaboration between member organisations;
- promote communication on R&D matters within European industry;



- develop and present the coordinated views of member organisations;
- inform and advise members on issues relating to R&D arising from EU activities;
- promote the transfer of European technologies and know-how to third parties.

Throughout ENeRG's lifetime, efforts have been concentrated upon the above objectives. However, over the past two years special emphasis has been placed on the 5th Framework

Programme where ENeRG, together with the FEE and EUROGIF, have played a significant role in taking the initiatives and making the necessary contacts with the decision-makers in Brussels and Strasbourg. This was achieved with considerable effort from all concerned, but particularly from the past presidents.

Nonetheless, we are making further improvements in our network, namely in communication with member organisations, and the further

expansion of the network to encompass all European countries. An extensive discussion within the network is currently underway regarding future activities to define the best steps to be taken in order to secure our goals.

As a first step to better co-ordinate our activities and improve member communication, the network has set up a secretariat (Email: [energ@cmpt.com](mailto:energ@cmpt.com))

Requests for information about ENeRG and its activities should be directed to the secretariat.

*Yannis Grigoriou, Public Petroleum Corporation of Greece, ENeRG President*

## ITALY'S PETROLEUM SECTOR OPENS UP NEW OPPORTUNITIES

The Italian petroleum sector is undergoing change due to technological and environmental factors that could lead to a potentially exciting future for the Italian hydrocarbon industry. Mr G Piro of EniTecnologie explains.

### Removal of ENI's monopoly in the Po Valley Region

In order to conform to European Union principles, Italy's most important oil and gas provinces, Po Valley and Northern Adriatic, have been opened to other oil companies. Since 1953, these areas have been exclusive to ENI.

By the end of 1997, the cumulative production in these provinces amounted to 165 million bbl of oil and 6 tcf of gas. To date, ENI has drilled more than 1,000 exploratory wells and discovered major oil and gas fields in the area. Such figures make the Po Valley attractive, offering oil and gas companies a serious alternative to exploring and producing from Northern Europe, despite the environmental issue - quite severe

in such a highly populated and well developed area - which can represent a potential obstacle for the further expansion of the oil industry.

With the aim of awarding licences, the Italian authorities have split the Po Valley into five provinces, and, at present ENI is deciding which area it wants to keep before other operators are allowed to submit applications. By the end of the first semester of 1998, the authorities will proceed with the application process. In order to help operators make their evaluation of the licences on offer, the data collected by AGIP is available at ENI's Milan office.

### New Favourable Royalty Regime

As Italy is a net importer of energy (more than 90% of oil and gas consumption) it is of strong national interest to maximise the exploitation of its potential fuel reserves.

In order to achieve this goal, the government has chosen to encourage exploration and production activities through favourable tax regimes. In fact, starting from 1996, by 25 November 1996 Legge 625, the overall royalty rates for both oil and gas onshore were cut from 9% to 7%, and for oil onshore from 8% to 4%. The gas offshore royalty rate has only been increased from 5% to 7%. Petroleum taxation in Italy is currently low in comparison with other European Nations.

### Prospects of big reserves in Southern Italy

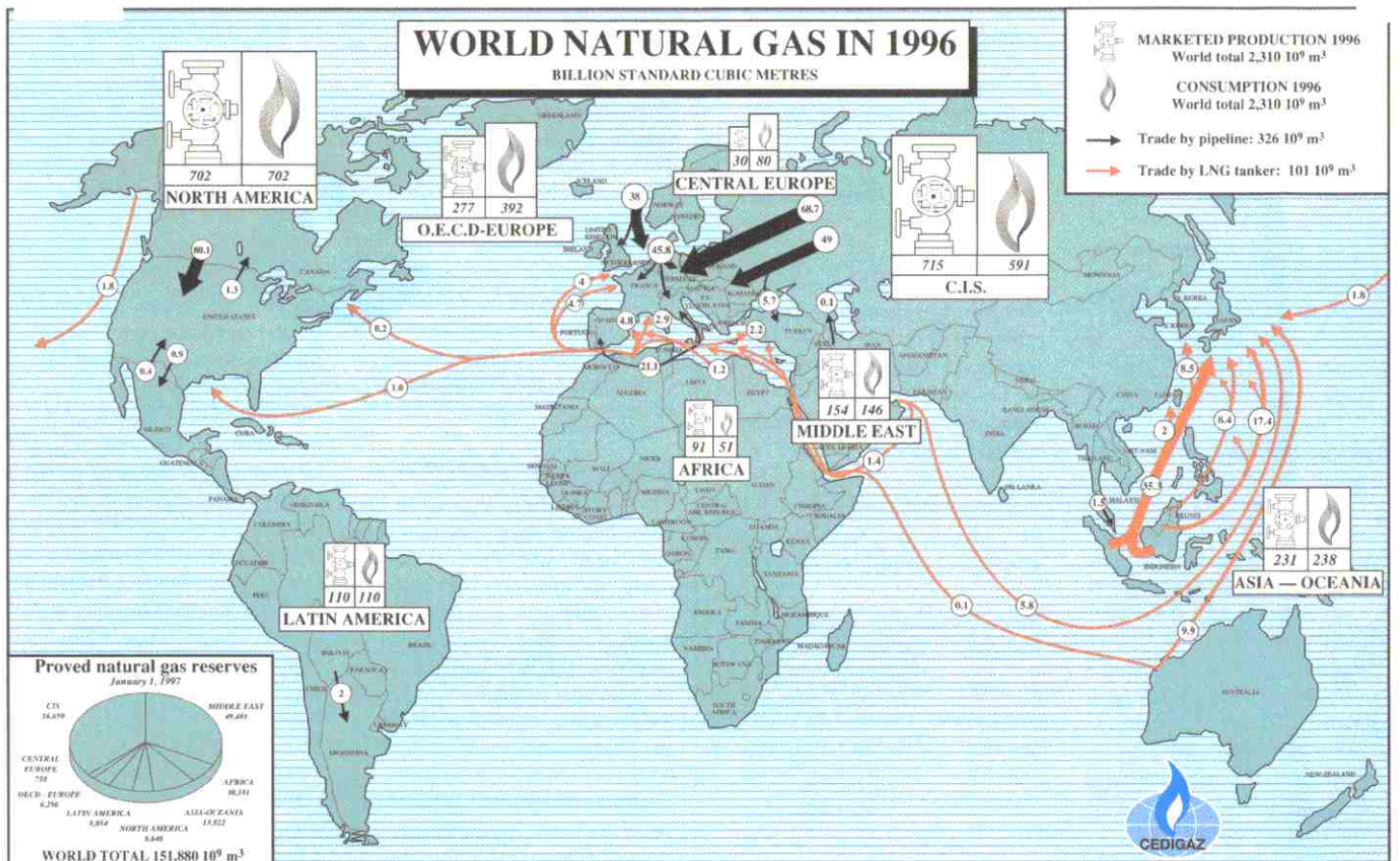
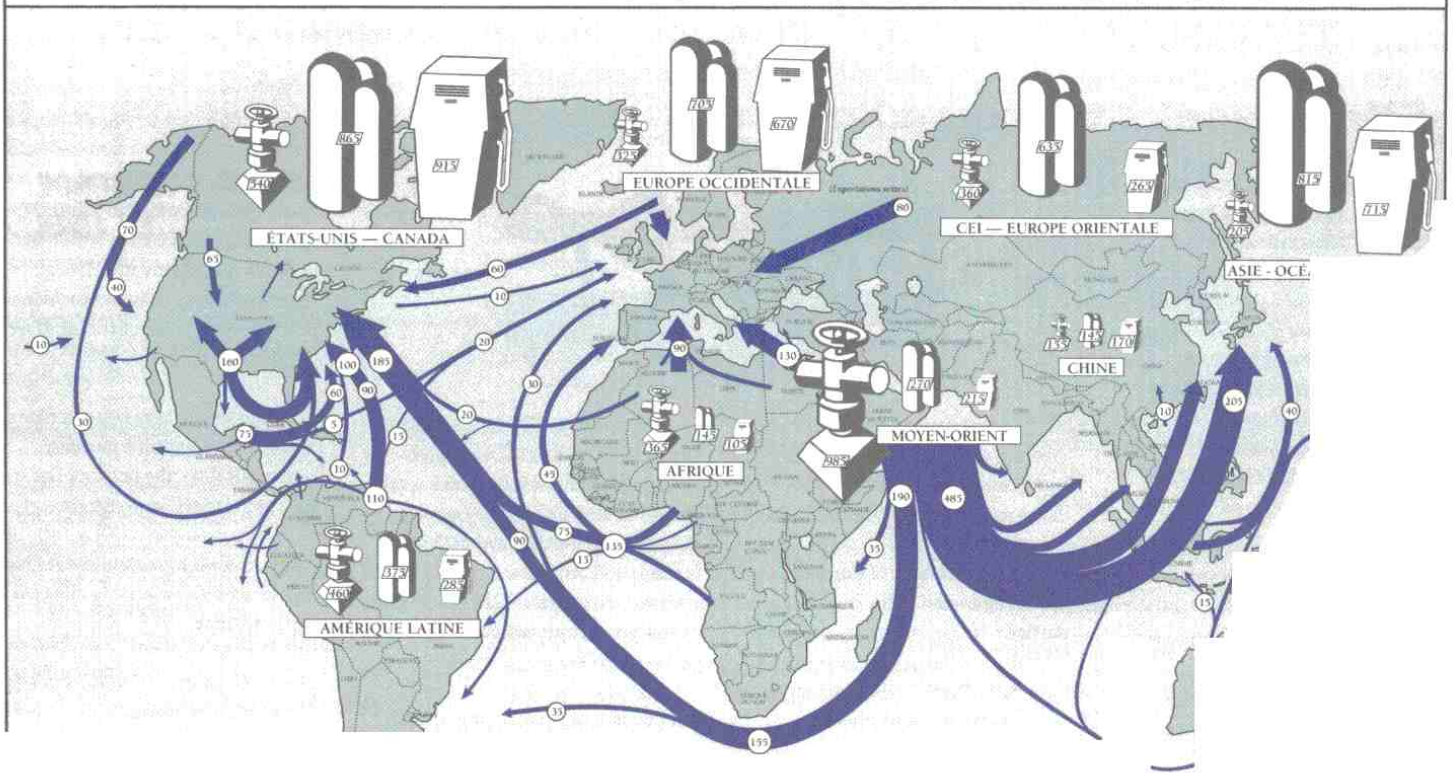
Over the past few years, Southern Italy has attracted the attention of many oil companies, both major and independent. Amongst the South of Italy hydrocarbon provinces, the Val d'Agri area, in the Southern Appenines province, has become a hot zone for oil and gas businesses. The Monte Alpi oil fields (which are thought to contain as much as 10-20 billion bbl of oil) could represent the largest onshore find in Europe,

explaining the number of industrial activities in the area. Besides AGIP - the major long-term player in the area - other companies involved include Enterprise, BG Rimi, Fina, Mobil, Lasmo, Texaco, Edison and Elf.

The first development phase of the Monti Alpi oil field is ongoing with a production level set at 7,500 bopd and 5 Mmcfgd from wells hooked into the Val d'Agri Oil Centre. Within this year the centre capacity will be expanded to 46,000 bopd. The construction of a 140km pipeline connecting the Val d'Agri Oil Centre with the Taranto refinery is on schedule, despite the fact that both environmental issues and time consuming bureaucratic procedures with the local authority could lead to delays. When this development phase is completed, production could rise to 100,000 - 150,000 bopd.

Referring to other Southern Italy hydrocarbon provinces, both oil and gas offshore fields were discovered in the Southern

## PÉTROLE DANS LE MONDE EN 1996



# THE ATLAS INITIATIVE: ENERGY TECHNOLOGY - THE NEXT STEPS

Energy technology is an area determined and influenced by a wide range of factors such as level of innovation, cost-effectiveness, environmental constraints, and consumer requirements and behaviour. Hence, decision-makers are confronted with the need for objective and comprehensive information in order to underpin the definition of clear strategies for the future of energy technology development.

For this purpose, the European Union established a specific strategy area for the non-nuclear energy programme Joule-Thermie. This strategy area provides support for activities aimed at gaining more insight into the complexity of the energy technology environment and integrating all energy-related dimensions.

The ATLAS initiative was such an activity, undertaken by a team of national energy agencies throughout Europe.

ENeRG members NITG-TNO and Rogaland Research carried out the oil and gas technology part of the study. The ATLAS initiative has led to the development of a comprehensive catalogue of state-of-the-art-energy technology and its prospects in line with market and consumer requirements. The catalogue provides information in a standardised way for the key technology modules in each of the six technology sectors. It involves:

- market status of the technology or processes;
- contribution to EU-level policy objectives;
- technical and non-technical status of the technology;
- current and future RTD needs.

*For the oil and gas technology sector five technology modules were identified for which the above information standard has been specified.*

1. Geophysics and Exploration Geology and Basin Modelling.
2. Reservoir Modelling and Production Forecasting.
3. Drilling, Logging, Testing and Completion.
4. Production Systems.
5. Storage and Transport systems: Natural Gas and Liquefied Natural Gas Distribution and Conversion.

The ATLAS project with its "bottom up" approach studied the current and future markets for more than 50 innovative energy technologies. It showed not only that these markets are growing, but also that European energy technology suppliers are well placed to compete in the global energy markets of the future.

For several of the technologies, there are still some important technological challenges to be overcome, whilst for many the priorities lie in finding ways to reduce costs and overcome institutional and market barriers. All of the technologies studied offer potential benefits in terms of improved services, reduced environmental pollution, wealth creation, and/or improved security of energy supplies.

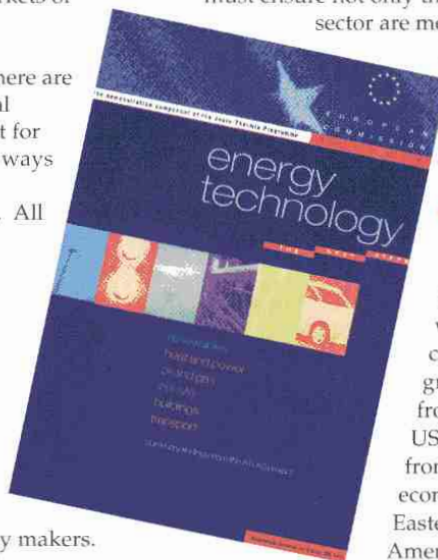
Some of the most important conclusions from the ATLAS study are summarised below, together with an indication of the key implications for EU policy makers.

- The cost of many of the innovative energy technologies has fallen substantially during the last few years, and this trend is set to continue. However, further RTD and innovation is still needed to improve performance and reduce manufacturing costs. In addition, innovation is also needed to overcome the market barriers that make these technologies appear uncompetitive to final users. Future work on demonstrating innovative energy technologies in the EU should therefore take all three aspects into account.
- Feedback from users to the RTD teams is important, and can be greatly assisted by well-chosen and well-managed demonstration projects. Due to the high costs of demonstrating to global markets, such activities may be most cost-effectively managed at EU level. This is particularly the case when neither Member States nor private players are able to afford the technical and financial risks involved, or where the European dimension provides clear added value to the technology innovation.

- In order to minimise the creation of market barriers, improved coherence is needed between policies in the energy sector and policies in those sectors where energy technologies are used. This implies that all policy makers at EU and Member State levels must ensure not only that the needs of their sector are met, but also that the

free market for reliable and affordable energy technologies is not restricted.

- European suppliers of new energy technologies are highly successful in world markets, but competition is growing, not only from suppliers in the USA and Japan, but also from the new emerging economies in Asia, Eastern Europe and Latin America.



There is, therefore, an ongoing need for initiatives and programmes at EU and Member State levels to support European producers of energy technologies, including the many SMEs involved.

These conclusions confirm that innovative energy technologies have a major role to play in meeting the energy policy objectives of the EU, including security of energy supplies, environmental sustainability and industrial competitiveness.

Moreover, these technologies have the potential to play a role not only in the EU itself but also in a global context, and the ATLAS study provides decision makers with the information to help ensure that this potential is maximised.

*The ATLAS catalogue 'Energy technology - The Next Steps' can be obtained from the European Commission, Directorate General for Energy (DGXVII), Fax: +32 2 295 0577. Web site: <http://europa.eu.int/en/comm/dg17/dg17home.htm>*

# WATER SHUT-OFFS IN GAS WELLS BY POLYMER INJECTION

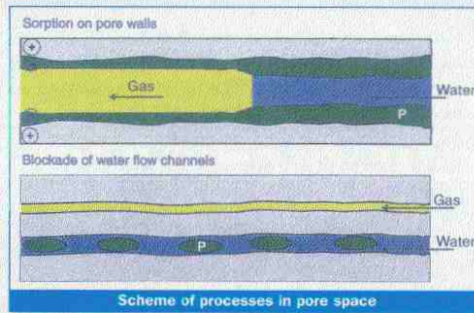
Considerable volumes of water result as a by-product during production from gas fields, particularly in the course of the depletion phase. As the water production increases, production rates and the gas recovery factor decrease, eventually forcing the closure of the wells. The injection of polymers provides a suitable means of reducing the water influx.

In a project undertaken by DBI Gas and Umwelttechnik GmbH, Technische Universität Clausthal and the Institut Français du Pétrole, with funding from the EC's THERMIE programme, several gas storages and fields were treated, based on lab and model developments.

The tests aimed to compare different water control technologies for various reservoir conditions.

*The project objectives were to achieve the following:*

- control of water influx into gas and water producing wells without the influence of gas flow;
- increase of the recovery factor of gas fields and gas storages;
- reduction in technical expenditure on gas production;
- reduction in associated water production which is detrimental to the environment.



For selected gas producing wells under various geological, geochemical and thermodynamic conditions, the most promising chemical systems were selected, the treatment procedures together with treatment volumes and pressures were planned and the field tests carried out.

Prior to and after the treatment, the production rate, water cut and wellhead pressures were determined in order to analyse and appraise each test.

The decrease of water cut in the well, the improved gas injectability and productivity as well as the duration of water shut-off were used as criteria for the comparison of technologies.

*Upon completion of the project, the following conclusions were drawn.*

1. Polymer treatments in gas wells were able to correct, at least temporarily, the flow conditions and reservoir properties by selectively controlling the water flow.
2. For low permeability formations, or for layers with a wide scattering of permeabilities, polymer adsorption technologies are preferred because of minor risks of plugging gas bearing zones.
3. The polymers which performed most efficiently in the treated wells were found to be anionic terpolymers and cationic copolymers.
4. The gas injectability following the polymer treatment was essentially improved in all storage wells.
5. The polymer caused a reduction of the water cut and an increase in the gas production. In the storage wells, water production was delayed. In gas producing wells, water bearing layers were selectively blocked.

The results provide a basis for future treatments in gas wells where profile modifications could be implemented successfully.

*Further information on this project is available in Flag Brochure No. 224, available free of charge from Lisa Rattray, CMPT. Fax: +44 (0)870 608 3480. Email: l.rattray@cmpt.com*