DOCUMENTI

IAI

THE ENERGY MARKETS

by Carlo Andrea Bollino and Vittorio D'Ermo

Paper presented at the Conference "Global Interdependence and the Future of the Middle East"
Rome, November 7-8, 1994

ISTITUTO AFFARI INTERNAZIONALI

IAI9429

THE ENERGY MARKETS

by

Carlo Andrea Bollino[1] and Vittorio D'Ermo[2]

Preliminary, October 1994

Paper prepared for the Conference: "**Global Interdipendence and the future of the Middle East**", IAI, Rome, Nov. 7-8 1994

---

[1] - ISPE and University LUISS, Rome

[2] - Italian Energy Economists Association, Rome

CONTENTS

1. Introduction

The purpose of this paper is to provide an adequately broad assessment of the likelihood of economic integration of Eastern Europe and Middle East and North-Africa areas in the "new global market".

Our perspective is deliberately focusing on the long-term, so as not to be biased and influenced by short term fluctuations of oil prices.

We shall focus primarily on the energy issues, thus we shall not deal with other issues, such as agricoltural development, manufacturing diversification, etc.

The paper begins (par. 2) with a broad quantitative overview of the main characteristics of the world energy market (flows, market shares, etc.) and a critical assessment of new trends and changes, in the oil and gas markets.

In par. 3 we assess the role of Middle Eastern and North-African producers in the world integration. In particular, we consider old and new problems associated with world oil price instability and oil industry integration, capability of investment financing; strategies of industrial development and diversification; its implications for competition in the international markets as "new entrants".

Following (par. 4), there is a deeper analysis of the East-West trade flows of energy and a broad assessment of the opportunity for energy integration; problems of investment financing and risks. In addition, we take into account the potential of Eastern countries for specialisation in international trade.

In par. 5 we offer some considerations and policy suggestions in order to promote the role of energy as a factor of integration, in terms of both East-West and North-South policies.

We will stress the importance of:
(i) - historical differences in stability of oil market (short-term, oligopolistic cartel) vs. gas market (long-term, reliable bilateral commitment);

(ii) - geographic and economic differences in future potential utilisation of gas and oil.

In particular, we shall attempt to justify the suggestion for a broader role of Gulf producers as gas suppliers, therefore abandoning their peculiar oil-cartel behavior. We propose new energy trade agreements and discuss issues of diversification in terms of worldwide sustainable growth.

In the conclusive par. 6 we offer some suggestions for a new cooperation framework, based on long term stability of terms of trade between energy and manufactures, which seems beneficial for Middle East, North Africa and Eastern Europe alike, as well as for the West, because it in based on a stable improvement of trade relations. In this context we claim a crucial role has to be played by oil and gas companies of the three areas (West, East, Middle East and North Africa), which shall be able to compete and grow in this new enlarged economic space.

2. The changing structure of world energy markets

2.1 A broad overview

After the 1986 events, the international oil price has moved along a falling trend to regain for oil its proper market share, which has been progressively eroded by other sources in the early 80's.

The energy market, therefore has largely changed, compared to the second oil crisis, which brought about massive commitment in energy policy, both in the USA and in Europe (see Table 1).

Furthermore, the Asian newly industrialized countries are gradually becoming the hinge of the world energy consumption, thus causing a further impact on the amounts of the world energy flows.

The environmental issue and, therefore, the quality of energy products have gained a huge space also as a result of events such as the Chernobyl accident.

Starting from 1989, the collapse of the USSR has further and, in certain respects, dramatically changed the energy framework all over the world and more specifically in Europe, where the role of the Eastern countries appears to be crucial in a medley of risks and opportunities.

Finally, there have been important reforms of institutional nature. The access to the market and the privatization process of public energy business in Europe have completely changed the frame of reference of energy investments in Europe, in the United States and in other economic and geographical areas.

In this new context, it has to be considered the change in the linkage between economic growth and development in the energy demand. Indeed, since the second half of the 80's, when there was a substantial increase in the GDP, energy conumption have started to increase at decreasing paces. This was the consequence of the greater importance acquired by the tertiary sector in western economies and of the less important role played by the industrial sectors in the composition of the value added. And, more generally, this was due to the greater importance acquired by the less energy-intensive sectors

importance acquired by the less energy-intensive sectors and of the lesser importance acquired by the most energy-intensive sector, as well as of the technological innovation and actions for the rational use of energy.

The energy intensity has even more decreased. In 1985, 0,433 toe were necessary to achieve 1000 dollars of value added (at 1985 prices). In 1992 0,414 toe were necessary, a decrease of almost 5 percent.

Even when the tendencies towards recession are over, no major recovery is expected in the growth rates of energy consumption which, therefore, should remain below the GDP growth rate (in relation to an ever more rational and efficient use of energy sources).

As to the role played by the various primary sources, in the new scenario, solid fuels and nuclear energy which played a maior role in the diversification process of the world energy balance, are showing a clear slackening due to a number of economic and environmental reasons (Table 2).

Renewable sources have a space of their own, which however will continue to be limited to segments of specialized markets, against the optimistic forecasts of the beginning of the 80's.

The role of oil, which a few years ago was still considered source to be reappraised, is getting stronger even though with new features.

In the OECD area and, more specifically, in the European one, the oil demand will keep increasing, even though at lower rates than those of the overall energy demand (Tables 6 and 7). As a matter of fact, the oil source will increase its specialization with a decrease in the composition of the barrel od consumption, which will cause a further decreased bearing of fuel oils and a corresponding upswing in light and medium fractions, i.e. gasolines and gas oils with characteristics ever more suitable to comply with the strict environmental standards set forth by the EEC norms.

All this will be a big challenge to the oil industry which shall have to implement a costly process of adjusting the downstream productive structure to new qualitative requirements.

In eastern European countries too, when the difficulties relating to readjustment and reorganization of the economic systems which have cut off the domestic markets by about 50 percent are overcome, a recovery phase should follow in the second half of the 90's.

Finally, in Asian countries that are rapidly undergoing industrialization, the demand for oil products will continue to be particularly brisk up to some 28 million barrels a day as of the year 2005.

At an international level, the oil contribution to total energy requirements of the year 2005 will be 4 billion toe (Table 8).

2.2 The oil market

Supply and the prospects for an upswing in production levels in many areas of the world, especially in developing countries, are extremely encouraging.

Europe's crude production, which played a primary role in the process of stabilization and, subsequently, decrease in international crude prices during the 80's, reaching some 5 million barrels a day, will still play a primary role.

As regards the former USSR, a supportive action by western Europe, in terms of finance and know-how, aimed at supporting the production level and enhance the huge energy resources of the Soviet Union, is absolutely necessary. This seems to be the way to face the recovery, in the medium term, of oil consumption in eastern Europe and, at the same time, continue to support the energy supplies of western Europe.

The production requested from OPEC to meet the world oil demand hit a 18 mb/d low in 1986 and subsequently increased to 24,7 million barrels a day in 1993 and 25 in 1994 (see Tables 3, 4 and 5). It should increase further to some 31 million barrels a day in the year 2000 and to 36,5 million barrels in the year 2005 (40 percent of the world supply) according to ENI, in line with main international energy analysts (Table 8). Again within OPEC the additional supply, compared to the current production levels, should come from Iraq, Iran and, above all, Saudi Arabia. The latter country should confirm its basically moderating role against strong

upwsings in prices to garantee a major role to oil even in the long term as well as to fight a surplus in the economic and financial bearing of the other countries in the Middle East (ENI, 1993 and 1994).

2.3 The gas market

Natural gas will also increase substantially and will see its markets expanded progressively, thus meeting the industrial demand first, then the one for non-industrial consumption and, finally, the one for thermo-electric uses.

At an international level, the share of natural gas as of the year 2005 should go up to 25 percent of the world energy requirements (against the 18% of the early 80's and the current 22 percent), a contribution equivalent to 2,6 billion toe.

In 1995 the OECD natural gas demand should reach 920 million toe against 850 in 1992 870 in 1993, and 900 in 1994. In Western Europe about 280 million toe are expected against the current 265 million, and a further substantial increase is expected in the subsequent years (Tables 6 and 7).

Even though the gas production role in western Europe, now totalling some 170 million toe, may not catch up with the increase in consumption, it will remain extremely important to guarantee a high safety margin to the supplies of this energy source in addition to the ones that may come from strategic storages. In absolute terms it shall have to increase up to ever 200 million toe, the equivalent of 55 percent of the requirements of this source as of the year 2005 (Table 7).

Meeting the demand that cannot be ensured by the European gas production will call for a change in quality to adequately supplement the supply with new projects and initiatives.

The natural gas penetration process shall have to be supported by the creation of new long-distance transport infrastructure: some of the projects now being studied shall have to be chosen in the medium and long term, which will not be so easy, to increase imports from North Europe, Africa, the Middle East and Eastern Europe.

3.The role of Middle East and North-Africa

3.1 The post 1986 developments in the oil market

The events of 1986, with Saudi Arabia's changes of behaviour where it no longer accepted the role of "swing-producer" in a maximization of petroleum prices strategy context, has brought about a severe change in the climate of international energy markets and in political and economic balance of North Africa and the Middle East.

Oil deriving from OPEC countries, and in particular, from the Middle East, has began not to be considered as a source to be substituted as quickly as possible by other sources of energy or with petroleum produced in areas considered safe from a political point of view.

The new levels of petroleum prices, the Chernobyl accident, the increasing attention to environment problems, with particular reference to carbon dioxide emissions, the high investment costs associated with the development of new sources of energy in an economic context characterised by noticeable problems, have brought about a reconsideration of energy choices, namely, the desertion of those energy programs more outstandingly anti-petroleum.

In reality, even if the tendency to petroleum specialization in OECD areas towards transport and petrochemicals has not failed, the process of substitution of petroleum products in other sectors (civil use, industry, thermo-electric production), is brought about no longer on the base of programmatic basis, but on the base of market opportunities, and thus, with growth rates noticeably lower than those in the early'80s.

The objetctive of "market share" has become a dominating element in the strategy of petroleum producing countries, thus even at times of crisis such as the Gulf crisis, the leader countries, starting from Saudi Arabia, ensure that an increase in prices will not compromise the recovery of the of petroleum on the energy worldwide markets.

In 1985 the share of OPEC production for the fulfilment of worldwide demand (excluding planned economy countries) fell from 50% from the early '80s to less than 40%; during the following years this percentage increased to nearly 45% (Table 3).

In parallel, the role of the Middle Eastern countries and North Africa, between 1981 and 1985, fell from 38% to 26% of worldwide production (excluding Easter European countries and China). These countries were also losing their influence within the OPEC context, to which the majority of them adhere, then subsequently recovered in a more consistent function in the entity of their productive capacity and reserves. In 1993 and 1994 the production of this area was, in fact, equal to around 45% of worldwide production, excluding Eastern countries and China, and around 75% of the OPEC production.

Worldwide crude petroleum production
(Millions b/g)

	Middle East	North Africa	Other OPEC Countries	OPEC	WORLD excluding Eastern Europe and China)
1981	15.1	1.9	5.4	22.4	44.7
1985	9.6	1.6	4.6	15.8	42.7
1992	15.9	2.3	6.2	24.4	53.9
1993	16.8	2.4	5.8	25.0	55.3
1994	16.9	2.3	5.8	25.0	56.0

The country of major prominence, in the new scenario, is Saudi Arabia, which after having declined in 1985 to a minimum productive level of 3,2 million b/g, began to produce, over 8 million b/g, starting from the fourth quarter of 1990, when due to wartime events vanished the contribution of Iraq and Kuwait (Table 4).

Iran, after the most acute phase of the komeinist revolution, is in the relaunch phase; with 3,5 million b/g it occupies second place in the

classification of the productive countries of the Middle East in the Gulf area, followed by United Arab Emirates, Kuwait and Qatar (Mabro 1990).

The war against Kuwait, which began in the summer of 1990, and the following military defeat in the end of the 80's, had skimmed a productive level equal to more or less 3 million b/g acquiring also a role of leadership, today divided between Saudi Arabia, Iran and Emirates (EIU, 1990).

The productive deficit of Iraq, which is not able to export until it abides to the decisions of the United Nations, it has been, as far as today, compensated by the other Middle-Eastern countries but, in a perspective of a further expansion of worldwide petroleum demand, there is without doubt a space for this country's production (Jandet 1993).

The productive leadership of North Africa concerns Lybia with around 1,5 million b/g, followed by Algeria with around 1,3 b/g (including NGL) and Egypt with 0,9 million b/g. Let us stress that oil and products exports from these countries to Europe enhance the strergthening of a privileged two-way relationship. Lybia exports mainly to Italy (26 mtoe), Germany (12 mtoe), Spain (6.5 mtoe) and France (3 mtoe). Algeria exports mainly to Germany (8 mtoe), Italy (6.5 mtoe), Netherlands (5 mtoe), France (4 mtoe).

3.2 Old problems: price instability

It is obvious that both exogenous and endogenous factors have influenced the cyclical development of the oil market, namely of oil prices, since the origin of the oil industry growth.

Among the exogenous factors, there are cyclical fluctuation of world economy and especially of industrial countries and political crisis. Exogenous factors consist primarily the effect of economic growth or recession on industrial production, and the impact of the latter on energy consumption in general and on the demand for oil in particular. Given the general level of prosperity of the industrial economies, the oil industry should not forget that the availability of oil at convenient and reasonable prices is a key component of the economic health of the industrial countries. Hence,

it is crucially important for long-term stability that no artificial constraints are imposed on the price of oil, that may destroy the confidence in the market. The aim is therefore not to correct or interfere with the market, but to create conditions whereby the market will generate less fluctuation of prices around a long-term equilibrium.

Among the endogenous factors, there are investment cycles, both in upstream and downstream capacity, which have sparkled subsequent waves of bottlenecks and excess capacity. It has to be stressed that the oil industry is characterized by large discontinuities in investment decisions both upstream and downstream, which are difficult to manage in order to achieve a smooth and consistent expansion. Quite to the contrary, not only expansion of supply is dificult to match with increase in demand, but it very well may, and in fact frequently does, behave counter-cyclically with respect to the general economic cycle.

The international oil and gas industries must cope with investment plans that are characterized by very high fixed costs and large financial needs. It is also characterized by risky returns, and therefore companies prefer to rely on cash flows rather than borrowing in large amuonts. The intrinsic difficulties of the world oil market which impair the possibility of fine tuning demand and supply and prevent producing countries to act as swing producers either individually or collectively, necessarily lead to wide price fluctuations.

During the 60's, the first reaction of the multinational oil companies has been a strategy of vertical integration in order to absorb crude price fluctuations with expanded control of final consumer markets.

Subsequently, starting with the 1973 shock, the emerging role of producing countries has determined a new situation of disintegration, new strategic behaviors played by the new entrants, new endogenous factors determined by the investment policies of producing countries companies.

Efficiency in the oil market in the interests of both the consumers and the producing countries has always motivated the search for greater stability and

predictability of oil prices.

However, this has not been the case in the last twenty years. After the first energy crisis the oil prices, in constant 1973 dollars, jumped from a level of 2 $/bbl to 9 $/bbl. Then from to 1974 to 1979 we had a period of stability in oil prices, fluctuating around the level of 9 $/bbl.

From 1980 to 1985, we had another period of stability but with prices this time fluctuating around a level of 16 $/bbl. From 1986 to 1992 another virtually stables period, but with depressed prices around 7 $/bbl.

The oil industry reacted to this situation with considerable discontinuities in investment decisions, which did not allow a smooth expansion consistent with the aim of an overall balance of demand and supply. On the contrary, supply availability has recently behaved counter cyclically with respect to the general economic cycle. In the early 90's demand has been depressed by the recession in the industrial countries, and supply, most notably non-OPEC supply, has been increased by the simultaneous coming on-stream of several new discoveries, determined by a previous high investment cycle of the oil industry.

Looking et the development of oil prices from the early days to the present there has been only one extended period of time, of around 25 years, of stable and sustainable prices, and that was when the market was dominated by vertically integrated companies.

A possible explanation is that vertical integration is conducive of closer coordination of investment and production decisions in the different phases of the industry, as well as the fact that aggressive competition does not pay in the oil industry. Especially, at the final consumer level, where product quality and product differentiation and service reliability are key factors, rather than price.

In the past, crude oil production was controlled by the international companies, which fine-tuned oil production with expected refining and marketing needs. Again, vertical integration was never complete, and a degree of competition always existed; however it was understood that producing much beyond

their internal needs and long term supply contracts was in essence a self-defeating proposition. When feasible, non-integrated producers always attempted to integrate vertically. Thus, competition was not among crudes, but for market share at the market level, and with quality much more than price.

In conclusion, the weakness in oil prices of the early 90's (after Gulf crisis) is mostly linked to the fact that the oil which is cheapest to produce is not marketed through vertically integrated structures. Existing vertically integrated companies have developed alternative sources of crude, which are generally more expensive to produce. Clearly equity production maximizing behaviour results frequently in a preference for acquiring the producing country's share of the crude which is produced by the vertically integrated companies. Non-integrated producers have to compete hardly in order to keep selling large quantities of crude (Colitti, 1992).

3.3 New problems: oil industry reintegration

The post 1986 strategic behavior of producing countries resulted, from a macroeconomic view point, in more stable development of oil prices and, from a microeconomic view point, in the beginning of a new process of integration in the oil industry.

Recall that lack of integration shows up most utterly in the risk associated with downstream operations, which have very rarely been profitable taken in isolation. Traditionally, a credible threat strategy in order to discourage competition has been to keep final prices low using up part of the upstream profits. Whence the strive for equity crude: only companies which had enough equity crudes and used them well could survive.

The differential increase of world demand may facilitate a downstream integration of oil producers. Much of the demand increase will come not in the industrial countries, whose refining and marketing structure are already very mature. Most of the demand increase will happen in "new countries" in which both the refining system and marketing are still very much under development and more open to competition.

The final challenge is therefore to re-integrate the oil industry. Notice that producing countries, which obtained control of the oil reserves but not of the oil market in the 70's, are now moving in the right direction, i.e. toward reintegration. Why? Perhaps, as they are unable to resist competition from non OPEC oil.

The attempts of OPEC producers to reintegrate has been accepted by consumer countries benign neglect, being very unlikely that OPEC countries could succeed in building a quasi-monopolistic position (similar to the upstream one).

The slow increase or stability of the oil market in the next ten years will harden life for the indipendent refiner, especially because there is pressure to invest into sophisticating plant by the combined pressures of market and environmental regulations. Only companies with equity oil can survive in this market, and above all the strongest equity producers, i.e., the producing countries.

Among the strategic issues for oil industry reintegration (in accordance with Colitti, 1988), we stress:

(i) need to mantain competitive pricing in line with international markets;

(ii) shutting down refining capacity is not a solution. At best it may be irrelevant, first, because plants dismissed can be taken over by newcomers attempting to integrate downstream; second, because it would simply leave room for more imports, weakening European ability to maintain product self sufficiency in emergency;

(iii) on a general level, to re-integrate the industry may reduce the elements of uncertainty and of volatility arising from imbalance of supply and demand of products. Europe may get the additional advantage of increased security, at least for the quantities the producers would market through their newly acquired refineries and distribution networks.

Recently, many oil producers have already pursued integration, and some of them sell a very large share of their oil in the form of products. The quantitative aspect of the integration is not negligible.

Since 1992, some producing countries which have been developing a reintegration policy, acquiring 2 million barrels per day of refining capacity in Europe, America and the Far East. If we add imports and processing in third parties refineries, the presence of these countries in consumer's market totals over 3 million barrels per day, about 6% of the world consumption, their share being slightly above 10% in both Europe and the USA.

Adding to these figures the products exported from these countries (presumably from export refineries, usually in joint venture with some multinational) we would obtain over 5 million barrels per day, about 24% of their total crude oil production.

The main difficulty to integration is that there is a very high entry barrier to downstream oil.

Refining and distribution networks already exist practically everywhere, and it may not be all that easy to find other bankrupt companies like the ones bought in the past by the Kuwaitis, the Saudis or the Libyans.

In addition, the traditional role of oil companies of the producing countries as primary producers necessarily confines them to one area of the industry. Their indipendence from the parent Government is limited, as the technical arm for the implementations of policies decided elsewhere. These companies are ready for a kind of "privatization", i. e. to become more and more like other oil majors, well balanced in industrial and marketing structure.

Thus we en envisage a new process of integration, where strategic movements must take place in both directions: crude-short companies gaining access upstream, and national companies acquiring assets downstream. This could happen in the next 3-5 years of relatively low prices, when financial contraints inhibit the possibility to simultaneously increase upstream capacity and expand downstream refining and marketing.

This would clearly be the only way to rebuild the integrated structure of the oil industry. In fact, although many oil companies have tried to make up for the oil they lost in the early 70's, they are still far from being the old vertically-integrated oil companies they used to be.

In conclusion, the virtuous interaction between macro and micro stability efforts can be the leading theme for future worldwide stability of the oil market. Primary importance will be given to joint ventures between oil multinationals and producing countries companies in order to develop low cost reserves and efficient and high quality products and services in consuming countries.

3.4 Future scenarios

When the worldwide petroleum demand will increase from the current 67 to 83 million b/g in 2005, the Middle East and North Africa will be called to supply an increasing contribution for its fulfilment considering the entity of the resources and the extraction costs lower than those in other areas.

In this respect, one of the primary goals of the coming years will be to establish a new international order, which will aim to a full integration of these countries in the world economy. In this way will become feasible to overcome the era of contradictions and to avoid the political restraints which inevitably result in incorrect allocation of resources (D'Alancon 1994).

This new order requires the estabilishment of a mutually cooperative behavior between industrialized consumer countries and Middle-Eastern and North-African energy producers.

This view is supported by the current U.S. administration attitude, which privileges low oil prices (and higher imports) to spur economic growth. Also considering environmental protection of both U.S. marine coasts and internal land, it seems unlikely the pursuance of the previous administration strategy of higher energy prices and higher domestic production.

In this scenario we envisage a further role for North-Africa as supplier of oil to Europe, while Middle East consolidates its position of stable and politically reliable supplier of oil in the world market, also to the U.S and the far East.

Looking ahead, it is important to stress that stable order of the relationships between North-African countries and Middle Eastern countries is also required by the fast development of worldwide natural gas demand.

In addition, the clear linkage between gas development and environmental issues supports the view that the European strategy will continue to expand gas requirements, there by calling for increasing competition between traditional energy suppliers (North Sea, Russia) and the new emerging suppliers of North-Africa and Middle East.

Let us recall at this point that gas is the fastest growing source of energy, previously as an alternative to petroleum, today increasing it role autonomously.

The elements favourable are the high qualitative characteristic and the low environment impact, together with the possibility of resorting to very efficient technological solutions from energy point of view, for example, the combined cycles for the production of electricity.

Starting from the initial uses, not very distant from production centres, in relationship with the high transport costs, natural gas has followed a development cycle which set off from industry and then extended to civil use and to thermo-electric production.

All this has required, in areas such as Europe and Japan, an ever increasing resort to import.

In the European case, apart from ex Ussr, the most important supplier is currently North-Africa (35 billion c.m.), while imports from Middle Eastern countries are still negligible.

Middle East is exporting some liquefied natural gas to Japan (about 5 billion c.m.).

Algeria occupies already a role of great importance with overall exports of around 36 billion mc which interest Belgium, France, Italy, Spain; more limited is presently the role of Libya with exports of a little less than 2 billion mc mostly to Spain.

In view of a further and perhaps compulsory enlargement of the gas share in the european energy requirement, the export flows of natural gas from North-Africa are bound to increase substantially.

Once completed the large projects in progress for the doubling of the gas pipeline that connects Algeria to Italy and the one which will connect Algeria to Spain, it will be necessary to consider projects yet more ambitious which will have to involve organically the Northern side of Africa, stretching from Algeria to Egypt, the Middle Eastern countries and Asean Republics of the Former Soviet Union, where important exploitable and to be exploited reserves exist.

4. The energy outlook in Eastern Europe and former USSR

4.1 Economic transition and energy outlook

From 1988 through 1990, with the onset of economic and political transformation, energy output in the area declined by more than 160 million toe. Energy production in the former Soviet Union, which accounts for some 80 percent of the total, slipped from 1664 million toe in 1988 to 1631.3 million in 1990, and 1432 in 1993 (Tables 1 and 9).

The swift and sweeping transformation of Eastern Europe and the Soviet Union requires far-ranging reflection on the strategic options of Western Europe, which until now have focused on completing the process of economic and political unification and integration. For most western industries, the opening of the Eastern economies is above all a chance to expand their potential markets (Arbatov 1991 and Zecchini 1993).

In the energy sector, this historic trasformation represents primarily an opportunity to promote integration and collaboration between:

- the producer countries, i.e. the former soviet republics, that lack the financial and technological resources needed for more efficient exploitation of their energy resources both in economic terms and in terms of environmental impact (Garibba 1991);

- the Eastern European countries, that need to improve efficiency of their energy sistems, and to diversy relationships whit western neighbours (Cooper-Shipper 1992);

- the European energy-importing countries that, in the wake of the political upheaval in the soviet bloc and the Gulf conflict, have a stake in consolidating more stable energy supplies in the Eastern European area. The need to diversify sources of supply and the change to diminish energy dependency on the Middle East, however, does nothing to diminish the need to strengthen and enhance cooperation with the Middle East area.

The prospect of increased energy output, hence increased exports to western markets, is still largely potential, given the enormous structural difficulties of the former USSR system (D'Ermo 1991).

The downswing gained momentum in 1991 and 1992, as the reform impetus burgeoned in the soviet territories themselves. Estimates indicate a further cut in energy production between 1992 and 1990 of 12 percent in the former Soviet Union and 24 percent in the other countries of Eastern Europe, a contraction of a total of 232 million toe (Sagers 1992).

Energy output in the entire area came to 1614 million toe in 1992 and 1494 in 1993. Significantly, the decrease in output volume cut across all fuel types. In the former Soviet territories oil production fell from 627 million toe in 1988 to some 572 million in 1990 and 390 million in 1993. The oil production decline has affected almost all the oil producing republics of the former USSR. It is the Russian Federation, however, that has experienced the worst disruption. This Republic in fact accounted for around 90 percent of total Soviet output (Myamoto 1992 and Khartukov 1993).

Soviet natural gas output also started to declined in 1992, to 630 million toe, after years of continuous expansion (Bianchi-Cassi 1994).

A further fall in output occured in 1993: the total production cut should amount to 130 million toe with reference to 1992. The decrease of "soviet" oil output should be on the order of 12 percent or some 60 mtoe.

Former USSR output of natural gas also fell in 1993 by about 6 percent. Anyway, for natural gas, unlike the other energy sources, problems on the demand side are bigger than those relating to production. The pre-eminent role of gas in the energy production of the former Soviet Union has not been shaken in the least. Indeed, as a result of the severe crisis that has swept the oil sector, the incidence of gas in total energy production has increased. In 1992 gas share was no less than 44%, compared with 37 percent in 1988. There has been a corresponding reduction in the incidence of oil from 37 to 32 percent and of coal from 20 to 18.

In other Eastern countries, whose output is comparatively modest, energy production relies chiefly coal (over 70 percent); only 6 percent of output is accounted for by oil and 13 percent by natural gas (Chandler et.al. 1990).

4.2 Supply and demand prospects

The situation described so far presents both a risk and an opportunity for Western and Eastern Europe (Bollino-Manca 1993). The risk for the West, obviously, is the possible loss of some significant portion of the energy supplies drawn from the former soviet bloc. This would be a blow to Western European energy strategy, which centers on supply diversification to ease the dependency on Middle Eastern sources. For the Republics of the former Soviet Union, the energy crisis involves an industry of prime strategic importance, not just for domestic requirements but above all because energy exports are the chief source of hard currency.

The opportunity consists in the possibility of enhanced cooperation with the coutries of the East in tecnology and the investment needed to revive production with a view to overall integration of the eastern and western energy systems. Such cooperation cannot be understood as temporary, i.e. a transitory state of affairs corresponding to the profound crisis in the East (Gros 1992).

Even in 1990 the European energy sector as a whole, i.e. West and East together, was not self-sufficient. The output surplus of the East was not large enough to cover Wester Europe's energy deficit.

The danger of a gap between energy production and consumption cannot be ignored as the process of economic transformation and development takes hold in the East. For if economic and industrial restructuring, with a relative de emphasis on energy-intensive heavy industry and a more market-oriented energy pricing policy, will presumably decrease consumption, higher living standards through economic development should work in the opposite direction. Higher living standards could significantly increase future energy demand.

Economic growth, in all likelihood, will require more energy, in general and specifically different mix in favour of higher quality products, at

least in some sectors, which might threaten the balance between production and consumption even in the former Soviet territories. The ex-Soviet economy will not be able to afford to increase production to meet growing domestic energy demand while simultaneously providing energy for export. All this spotlights the inefficient use of energy resources on the part of the Eastern European economies and the need to promote and support energy saving.

In the former Soviet Union and Eastern European countries, because of the strong links between energy and the economy, energy conservation will likely have a big impact on economic reform. Greater efficiency, in fact, will reduce energy demand and thus the amount of capital required to increase energy production, and could also generate increasing hard currency earnings through exports.

Western European support, both financial and in technological know-how, will certainly prove indispensable in raising both output levels and the efficiecy of the energy sector in the East. This is the way to deal with the predictable increase in East European energy consumption in the medium term while still assuring supplies to the West.

Unquestionably there is a great deal of room for improvement in the energy efficiency of the Eastern economies. Per capita energy use is very high, especially in relation to average income. In 1990, during a sharp contraction of economic activity, energy consumption came to over 4 toe per capita, compared with 3 toe in Western Europe.

The gap in the energy intensity of the economy, i.e. energy consumption per unit of value added, is even wider. The energy intensity of the economies of Eastern Europe is three times that of Western Europe, twice that of the United States, and five times that of Japan. The differences can be traced to the following factors:

- the structure of the East European economy, based on the development of highly energy-intensive heavy industry; manufacturing accounts for over 40 percent of total energy consumption, compared with 34 percent in Western Europe;

- inefficient energy use, with a pricing system that provides no incentive for energy saving in final use. Domestic energy prices, in fact, are not tied either to real production costs or to world market prices. Thus, the distorted pricing system has hardly provided a basis for sound decisions about the efficient use of productive factors.

Even a glance at the data on sectoral energy consumption (Table 8) shows as much. In 1990, the last year for which official statistics are available, the transportation sector used over 175 million toe, barely a third less than the 263.7 million toe used in Western Europe despite the massive disproportion in automobiles, the East having just 69 cars for every thousand inhabitants compared with 370 in the West.

Household energy use is more than 25 percent greater in the East. Certainly climate is a major factor in this sphere, but at the same time one can hardly ignore the higher living standards of the West, which imply higher absolute energy consumption but lower energy intensity in terms of GNP.

In order to provide some quantitative assessment, let us remind the reader that the hypothetical equalization of energy intensity in Eastern Europe and FSU to Western intensity would result in a energy consumption reduction of about 156 and 530 mtoe, respectively, or a 65% and 40% reduction with respect to 1992 levels of consumption of the two regions.

This combined reduction in Eastern Europe and FSU could free resources, evaluated at current oil prices, in the order 80 bil US $ per year, or 5% of current GNP of the two regions.

4.3 Future role of energy in the East

Recent research on the economic specialization of Eastern European countries has shown, whith abundant empirical evidence, that integration between Western and Eastern Europe is paved by several difficulties (Bollino-Padoan 1993 and 1994).

In fact, from the analysis of the distribution of comparative advantages in the former Soviet Union,

the countries of Central and Eastern Europe, and the main European Community member states according to Pavitt's classification, we find that Poland and Hungary present a comparative advantage in agricoltural products and traditional manufactures and Czech and Slovakia Republics also in scale-intensive industries. All four countries enjoy a comparative advantage in the resource-intensive and energy-intensive sectors, while the former Soviet Union presents comparative advantages only in the two latter sectors.

In all the countries of Eastern Europe the relative importance of agriculture, energy, and resource-intensive sectors suggests that an improvement in the terms of trade would benefit growth. Accordingly, a real devaluation in an effect to make manufacturers more competitive in world markets could have adverse effects on long-term growth. It would be more appropriate, rather, to seek to improve competitivenes in the manufacturing sector by increasing the pace of technological innovation, which can be achieved by technology imports. From this standpoint, a crucial role could be played by western foreign direct investment, an issue to which we shall return. In some cases, moreover -Czechoslovakia an example - the possibility of an enlargement of markets will be important insofar as it allows exploiting the comparative advantage associated with economies of scale.

The previous discussion suggests that the elements of a strategy aimed at securing a successful process of integration of Eastern Europe will have to include proper consideration for labour-abundant and technology-starving regions in Easter Europe wich are unable to bear the adjustment costs in the short run, and resource-abundant regions in the East wich are eager to trade their underground wealth for industrial diversification and economic development in the long run (Arndt 1994).

This strategy, however, should consider two main problems:

(i) Eastern European countries should further strengthen their comparative advantages in the sectors (traditional, agricultural, resource intensive, energy intensive) where these lie. To this purpose they should first try to increase the acquisition of tecnology from the industrialized

economies. As far as this point is concerned we support the view, often suggested in the literature, that diffusion of technology in Eastern Europe, must be based on a robust flow of western foreign direct investment for which the appropriate incentives must be generated. Evidence already exists that western direct investment flowing into Eastern Europe is concentrated in those sectors in which the host countries enjoy a comparative advantage.

To strengthen this trend by making investment location more profitable a crucial role will be played by domestic stabilization programmes in Eastern Europe, the success of which, in turn, is not marginally influenced by the attitude that the European Community will assume towards enlargement.

(ii) In order to attract foreign investment and acquire foreign technology, Eastern countries have to stabilize their economic and institutional environment.

For instance, Eastern European countries should stabilize their terms of trade with long-term structural policies, clearly much more far sighted, and therefore wisely complementary, with respect to the existing exchange rate stabilization plans. We envisage that an active policy aimed at exploiting the comparative advantage in the energy sector in the former USSR should be started.

In any case, it seems worthwhile to pursue this line of reasoning, perhaps broadening the view to possible second best intervention, which we may call a trade diversion argument revisited. Therefore, let us consider the problem of policy intervention in favour of energy trade developments between the European Community and Eastern Europe, notably the CIS.

Clearly, at the prevailing international market conditions, the equilibrium level of energy imported by the European Community from the CIS reflects the diversification strategy of the European Community, as a function of price, uncertainty and risk associated with the region, and future expectations of new developments. In turn, new capacity development in the CIS is a function, among others, of future expectations on price and demand potential of the European Community.

Thus, in conclusion, we consider crucial for the process of economic integration to implement an active industrial policy intervention to develop natural resources, such as energy, and related resource intensive activities. Of course, a revisited infant-industry argument may be invoked to justify, at least in the short-term, the nurturing of the revamping effort of the former Soviet oil and gas industry.

5. Energy as a fuel of integration: a trilateral view

5.1 New policies for integration

We would like to consider the implications of a new integration pattern between Europe and Eastern Europe, on the one hand, and between Europe and Middle-East and North-Africa, on the other hand, for the adequacy of trade development and economic growth. Obviously, both problems of integration rely on energy as a strategic factor, given its traditional importance for economic political and social implications in these areas (IAEA et al. 1993).

Let us consider the problem from Eastern Europe view point.

The existence of capital market imperfections induce a higher saving rate with respect to situations without such imperfections, because life cycle consumption-smoothing is limited. Given the relationship of equality between the saving rate and the growth rate times the capital-output ratio which holds for a closed economy with liquidity constraint, at the beginning of the transition process, Eastern Europe may suffer from a reduction in the saving rate.

This is so because Eastern Europe, with, the existing obsolete capital stock, may experience a consequent reduction in productivity generated by the incipient opening-up of trade (Marengo 1989).

Thus, the typical Eastern economy is caught in the trap of insufficient saving to maintain the previous high level of capital-output ratio, which may feed back into a lower growth rate, which generates even lower saving. Therefore, relaxing such liquidity constraint will allow a more efficient intertemporal resource allocation, i.e. larger possibilities to borrow against higher future income streams, providing a positive influence on growth (Bollino-Padoan 1994).

Let us consider the problem from Middle East and North-African emerging countries.

Unfavourable terms of trade and uncertainty associated with wide crude price fluctuations are

likely to depress the potential savings rate and the potential capital-output ratio, because of the uncertainty associated with capital intensive investment in those regions.

In both cases, turning to a macroeconomic viewpoint, the discussion of the relationship between liquidity constraint and savings highlights the difficulties of attracting foreign capital when low productivity and low growth potential tend to shift resources to finance import of consumption goods, therefore conflicting with the balance of payment constraint. Once more, removal of capital market imperfections, within the country, may allow a better resource allocation internationally, paving the way for foreign direct investment.

A policy aimed at reducing market imperfections, such as excessive uncertainty associated with specific commodity export earnings and investment projects, is to reinforce the role of insurance played by international institutions (D'Autreband-Gros 1992).

There are two related examples, already widely used in the past at the international level: the first is a compensatory fund which can stabilize export earnings of natural resources such as energy resources (oil and gas); the second is a super-insurance fund which provides collateral guarantee for investment in sectors characterized by high risk and long term profitability.

As far as the compensatory fund is concerned let us recall that the need for a special or complementary facility to assist developing countries with liquidity for shortfalls in their commodity export earnings has been under deliberation in UNCTAD literally since its first session in 1964 and was revamped in 1982, while the International Monetary Fund (IMF) also used such a scheme at the end of the 1970s. The rationale was to alleviate the problem of export shortfall which may impair growth capability of LDCs.

Among the justifications set forth in the past of international organizations such as UNCTAD and the IMF, it suffices to indicate that under this scheme drawings from the facility were to be used to finance commodity-related activities intended to stabilize the commodity sector and eradicate the root causes of instability, such as short-term income support in individual commodity sectors and structural adjustment in cases of chronic oversupply or undersupply. Access to the facility was seen as conditional on the elaboration of commodity development programmes in which the intended uses of the resources would be specified and mutually agreed upon between the applicant country and the facility.

Obviously, whith such a volatile historical price record, oil is unlikely to be considered a commodity deserving a compensatory financing facility: funds of any amount would be dried up in a short period of time in case of crisis, without real benefits and possibily with the undesired consequence of rewarding speculative behaviour.

5.2 East-West policies

A different approach, still aiming at stabilizing terms of trade between the European Community and Eastern Europe, could be based on the idea of long-term indexation of the prices of energy exported from, say, CIS to the European Community to a basket of prices of manufactures exported from the European Community to CIS.

Let us stress that according to this project, the players would not be simply an exporting country and a financial fund managed by an international institution (as in the IMF experience), but there shall come into play three actors; an oil exporting country, a manufacturer's exporting country and a financial fund, managed by an international institution.

More generally, we envisage groups of countries and groups of transnational corporations

engaging in long-term mutual relationships under the auspices of a international Institution. tn this way, we reccomend a possible solution of the traditional conflict between bilateral and multilateral aid.

In this case, it is obvious that in every commercial contract negotiated under this rule, whether we consider a gas supply, whose price is indexed to that of manufactures exported from the European Community to CIS or an industrial good supply, whose price is indexed to the gas price exported from CIS to the European Community, there is a built - in stabilizing mechanism in real terms.

The operational details are not important, here it suffices to establish the principle that even if only a fraction of CIS oil exports could be transacted under this scheme this would represent a sizeable amount. In fact, recall that before the crisis Soviet oil export level was around 2 milion barrels/day, and equivalent to $13 billion (at an approximate today's price of $18/barrel), while actual exports have declined by almost 30%, mainly as a consequence of declining productive capacity lacking adequate capital investment.

Thus, consider the possibility of restoring productive capacity to previous levels, arranging, say, 15% of total revenues under this long term indexation scheme: it shall generate approximately an annual flow of $2 billion in real terms, available for development of long-term trade relationship. This is not negligible if it compared to the total of $6 billion envisaged each year by the plan of the G7 and the international institution whose total amounts to $18 billion in 3 years.

Former Soviet Union oil export and revenues

	Annual flows
Oil, exports in million barrels/day (before crisis)	2,0
Oil revenues valued at $18/barrel	$13,0 billion
Long-term contract indexation: (15% of total revenues	$ 2,0 billion
memo:	
G-7 plus international institutions' stabilization plan, per year	$ 6,0 billion

Notice that according to this scheme, the role of a compensatory fund managed by an international institution would be no different from that of an insurance fund, therefore requiring less financial resources than a trade financing facility. In principle, in the best of circumstances, there is no cost to the fund (or to the developed countries' governments wich would have to back it), it the indexation of trade flows is full. Otherwise, any financing requirement to cover the residual risks could be met with an escrow account (with the banking sector) or a governement contingent fund (set aside in the government budget of financing countries).

As far as the super insurance fund is concerned, the previous discussion is equally valid in this case, if the fund is aimed at fostering investment in capital-intensive industries, say, the energy exploration and production, or refining and distribution. In fact, the amount of financial resouces required to cover the burden of high risk and deferred profitability associated with such investment projects could be optimally drawn from a super - insurance fund backed by international institutions or by all governments of involved countries. Obviously, once the fraction of total risk associated with the intrinsic

characteristics of energy market uncertainty is covered, financing of investment will flow fron private enterprises and banking institutions according to prevailing international financial markets conditions.

In conclusion, we would like to stress that a strategic policy designed to foster market developments in Eastern Europe's energy sector could be beneficial for the whole process of integration, if it is able to stabilize East-West terms of trade. Starting from where there are comparative advantages makes sense: energy endowments in the CIS may very well represent the fuel for the whole integration process.

Backed by a stabilization or an insurance-type scheme, direct investment may start to flow to CIS energy sector. The result will be an optimal allocation of resources to the energy sector, higher productive capacity and higher energy exports revenues. These will, in turn, finance capital investment and, therefore, a positive contribution to the growth rate of the Eastern European economies' output shall be achieved via increased availability of foreign capital and technology for the Eastern countries.

5.3 North-South policies

The role of North Africa and Middle East as suppliers for the energy requirements of Western Europe is currently of great importance after difficult periods during previous energy crises. Imports of crude oil and other oil products are respectively equal to about 22% and 39% of the total imports of Western Europe, corresponding to 300 million ton and to a value of 80 billion of dollars at 1992 prices.

WESTERN EUROPE OIL IMPORTS IN 1992
(Million toe)

NORTH AFRICA	113,6
MIDDLE EAST	197,4
FORMER SOVIET UNION	78,8
OTHER COUNTRIES	118,0
TOTAL IMPORTS	507,8

WESTERN EUROPE NATURAL GAS IMPORTS IN 1992
(via pipeline and liquified natural gas,
excluding inter-area movements)
(Billion cubic metres)

FORMER SOVIET UNION	62,9	WEST E. COUNTRIES	PIPE
ALGERIA	14,7	ITALIA	PIPE
ALGERIA	4,6	BELGIO	)
"	9,2	FRANCIA	(
"	0,6	ITALIA	) LNG
"	3,9	SPAGNA	(
LIBYA	1,8	SPAGNA	)
TOTAL (LIBYA+ALGERIA)	34,8		
TOTAL	97,7		

Imports of natural gas from North Africa are, in turn, equal to more than 35% of imported gas toward Europe from external areas, which means the equivalent amount of 30 million Tep.

This share is bound to grow considerably, given the trend of demand and the prospects of supply

On the other hand, the prospects of growth of energy flows do not find support in the economic and political situation of North-South relationships; even if times are ripe for Arab producing countries to dismiss the old reputation of short-sigthed and oligopolistic cartel in the oil market, and to privilege a new behavior of reliable and committed long term supplier both in the oil and gas markets.

Especially Saudi Arabia decided for a complete change, due to the Gulf war, concerning strategies in order to utilize the oil resources of the country in the way to avoid distortions toward the development of energy sources with higher production costs, even if the lack of a strategy of economic developement is quite evident.

The return to a higher level of integration of the oil industry, which is now appearing in the producing countries, is a very important factor in the equilibrium of both oil and gas markets, but is not sufficient to modify the balance between North and South.

The flows of resources from the North to South did not give rise, until now, to the development of the South area, which is fragmented and restrained by enourmous disproportions between countries which are endowed of energy resources and others where lack of resources is coupled with high demographic pressure.

This kind of obstacles and even others, like the increasing ideological - religious differences, do not allow the possibility to exploit the opportunities given by the energetic sector, exacerbating the attention to oil prices, considered the only relevant factor of the economic development of the South.

In order to allow the growth and the innovative set-up of the relation between North and South, it is necessary that the energy sector would act as an engine for the development of the economic relationship between the two areas and for an higher economic integration of the South area (Valmont 1993).

Despite the recent improvements on the way to stable peace in Israel-Arab conflict, further developments are needed for the creation of a wide market area in order to allow the removing of the barriers that now hinder capital and labour movement in North Africa and in Middle East, which constitute an area characterized by sever inequalities which substantially reduce potential growth (Mc Dowell 1992).

The problem of the security of energy supplies to Europe must stop to be perceived in a precarious context which depends on unilateral decisions but within a system of cooperation and economic integration (Nonnemann 1992).

This relationship requires, for example, that some conditions would be established so that energy enterprises and others industrial enterprises might identify projects leaving to market rules the evaluation of profitability.

The experience of the European Energy Charter which is in its first implementation stage, seems to be particularly interesting even for North Africa and Middle East countries. The basic idea of this treaty is to achieve a design of behavioural norms and rules between all member countries, which would guarantee substantial equality in treatment for companies and profitability for their investments based on market rules.

These principles are of great importance if we consider that in the year 2000 the development of the productive capacities of oil and, especially of natural gas, will ask for huge investments which would not be sustainable by producer countries alone.

In order to avoid a vicious circle between poor confidence, lack of investments - increase of oil prices and lack of confidence, is therefore necessary to a change in the relations between North South bypassing the approach followed so far.

In this new North-South relations it will be necessary to consider the problem of development of a more equilibrated structure of the energy system in the producing countries. Infact, the existing system was specialised either to satisfy domestic needs or to develop export activities toward Northern countries.

From this point of view, the building of new infrastructures for the delivery of natural gas might allow a great opportunity for new cooperation initiatives, not only between North and South, but even between Southern countries as, for example, for the trasportion of Algerian gas toward Tunisia and Morocco.

6. Conclusions: A new cooperation framework

In conclusion, given an estimate of potential world investment in exploration and infrastructure development of hydrocarbons worth 180 bil US $ per year in the next decade, we consider feasible for Middle East and North Africa and Eastern Europe to attract a share between 25 and 30%, or 45-60 bil US $.

Given an estimate of about 2200 bil US $ for the GNP combined of the three regions, this means about 2-3 % of their GNP.

Obviously, in order to materialize such flow of resources, an appropriate policy should be implemented.

Our proposal is to design a policy which can change existing conditions and therefore may improve upon existing trade economic and political relations.

Consider a cooperation agreement, perhaps in the context of the new European Energy Charter (Waterloos 1991) and the new Euro-Arab dialogue, which is centered around three principles:

(i) strengthening the causal relationship between world oil price stability and oil industry reintegration. This should increase the importance of long term contracts between Europe and Middle East.

(ii) Long - term stabilization of technology transfer costs from Western Europe to Eastern Europe. This entails some form of stabilization of energy price exported from the CIS to the EC to the export price of manufactures of the EC to the CIS. It is obvious that the partial stabilisation of the relative price energy and manufactures may contribute to halt the negative impact of deteriorating terms of trade on growth rate.

In this view Middle East acts with a primary role in the world market.

(iii) Adequate financial support to finalized projects among local companies and international companies to ensure reorganization of the energy sector within Middle East, North African and Eastern European countries as regards production and transport as well as transformation and efficient usesof energy sources.

There will be four positive consequences of this scheme. First, the reduction in uncertainty world wide will spur foreign investment for exploration and production of energy (oil and gas), and for new manufacturing activities. Both Middle East and Eastern Europe would benefit from this new flow of private investment.

This view is reflected in the theoretical literature on strategic motivation of foreign investment. Firms will not only seek to exploit existing cost advantages, but will attempt to actively modify their market power, through acquisitions, mergers and defensive investments to prevent new entrants. Therefore, a long-term commitment (such as the mechanism of real energy price stabilization sketched above) may reinforce the firms' perception of new strategic opportunities, characterized by a reduction in uncertainty and risk. A follow - the-leader approach (in order to avoid exclusion from the new market), could probably result in a massive investment flow of western firms. The final result will undoubtedly be an increase in productive capacity in the energy sector.

Second, there will be trade creation because stable energy export revenues will allow the former USSR countries to increase their level of manufactured imports from the West.

Third, the diversification of European Community energy imports will presumably increase the share of these regions as a stable and reliable supplier. This means that a new geographical diversification pattern of European Community energy imports may result in significant changes in competition among energy suppliers. On the one hand, an increasing importance of Eastern area as an energy exporter could

conflict with the Middle Eastern area, generating higher variability and instability. On the other hand, a more balanced market influence of these regions may result in higher competition and lower rental cost for the European Community consumer. Most likely, the final outcome will depend on the relative degree of specialization of each supplying area in different energy sources.

Fourth, the relative mix of European Community imports between oil and gas will probably shift in favour of the latter, given future trends in EC energy demand. It is in this sense that we envisage a virtuous scenario of stable market relationship, where European Community additional gas requirements will be satisfied still in the competitive framework by new emerging suppliers, from the New East (Middle East, Russia and other Caucasian and transcaucasian Republics) as well as from North Africa. At the same time, oil requirements will continue to be predominantly satisfied by the Middle East which strengthens its world stable leading position in the oil market.

This scenario has two implications; first it will improve the environmental situation in Europe and, second it will also leave more oil available worldwide to satisfy the emerging needs of developing countries.

In this scenario, a sustainable development of LDC's industrial base will become more and more feasible, because the fierce competition between LDCs and industrialized countries for a scarce resource, the existing oil, will be relaxed. Furthermore, it is rather superfluous to add that higher growth potential for LDCs may feed back into world trade and industrialized countries' output growth. In this sense, the diverted development of gas resulting from a club - type agreement between the European Community and new suppliers may be beneficial for the world market as a whole.

In order to stress the importance of cooperation and price stability, remind that uncertainty and volatility undermine the economic foundations of both oil and gas exploration and gas transportation

projects that are needed in order to bring to the market some of the largest known reserves in the world, that are at present either totally locked in the ground or substantially under-utilized.

On this issue some expect that the currently prevailing ties between the price of gas and the price of crude oil will progressively become eroded, until an indipendent gas pricing mechanism will emerge. Oil and gas are competitors on the civil industrial thermoelectric markets, and a price premium for gas may exist and possibly widen somewhat because of environmental concerns and regulations. Others think that it is impossible to envisage a situation whereby the two prices are substantially independent of each other. No reasonable and prudent gas company will become involved in trasportation projects costing billion of dollars simply on the presumption that the price of gas will loose its ties with that of petroleum products.

Due to the discontinuities and the long lead times in gas projects, we therefore face the risk of further wide fluctuations in the price of crude. This is so because gas transportation projects are obviously competing worldwide with crude eploration investments, benchmarked by expected profitability of new reserves.

In fact, if gas transportation projects are not undertaken, demand for oil will increase faster than expected, and gas will not be available in sufficient quantities when the oil market will become tight pushing crude prices upward. All other things being equal, this will mean that crude prices will have to increase more than they would in the alternative case in which gas transportation facilities are put in place. Hence, there is a resonance effect between the gas and the oil market, which tends to widen the fluctuations in the price of crude, which drives the price of gas.

Hence, if we want stability we must also make a special effort to devise new, more flexible contractual relations between gas producers and consumers, allowing key transportation projects to be undertaken especially with current soft crude prices.

B I B L I O G R A F I A

ARBATOV A. (1991), "Political and Economic Changes in the URSS: Energy Implications", **The Energy Journal**, Vol. 12, N. 3.

ARNDT H.W. (1994), The Political Economy of Reciprocity, **Banca Nazionale del lavoro, Quarterly Review**, Vol. XLVIII, N. 190, Sept., pp. 259-270.

BIANCHI A. - CASSI P. (1994), "Il Metano nei Paesi ex Satelliti Sovietici", **Energia e Materie prime**, Sett.-Dic.

BOLLINO C.A. - PADOAN P.C. (1993), "Il Circolo Virtuoso", **Il Mulino**, Bologna.

BOLLINO C.A. - MANCA S. (1993), "Il Settore Energetico nella Nuova Europa", in: **Bollino-Padoan.**

BOLLINO C.A. - PADOAN P.C. (1994), "Growth and Specialization in an Enlarged Europe: is a Virtuous Circle possible?", in: **H.M. Scobie (ed.), The European Single, Market**, Chapman-Hall, London.

BP, Statistical Review of World Energy, various issues.

CEDIGAZ "Le Gas Naturel dans le Monde", various iusses.

CHANDLER W.U. - MAKAROV A.A. - DADI Z. (1990), "Energia per l'Unione Sovietica, l'Europa orientale e la Cina", **Le Scienze**, N. 267, Nov. 1990.

COLITTI M. (1988), "Restructuring of the Petroleum Industry in Europe, Including Privatization Trends", **Global Business Forum**, Mar. 1988.

COLITTI M. (1992), "The Oil Industry: Loss of Control?", Oxford, **Energy Seminar**, Sept. 92.

COOPER R.C. - SHIPPER L. (1992), "The Efficiency of Energy Use in the USSR - an International Perspective", **Energy**, Vol. 17, N.1, Jan.

D'ALANCON F. (1994), "The EC Looks to a New Middle East", **Journal of Palestine Studies XXIII**, N. 2 winter 1994

D'AUTREBANDE B. - GROS D. (1992), "International Trade of Former Republics in the Long Run: an Analysis based on the Gravity Approach", **CEPS Working Document**, N. 71.

D'ERMO V. (1991), "Energy Challenges facing New Europe", **OPEC Bulletin**, Vol. 22. N. 10.

ENI (1993), "Quadro di Riferimento Econbomico ed Energetico", Rome.

ENI (1994), "Congiuntura Economica ed Energetica", Rome.

GARRIBBA S.F. (1991), "Energy Technology and Opportunities for East-West cooperation", **Economia delle Fonti diEnergia**, N.44.

GROS D. (1992), "Policy Issues for the EC and Central ad Eastern Europe", **CEPS Working Document**, N. 70.

ICE (1991), "Rapporto sul Commercio Estero", Rome.

I.A.E.A., I.I.A.S.A., O.P.E.C., U.N.I.D.O., (1993), "Energy in the 21 st Century: New Challenges and Goals" **OPEC Review.**

INTERNATIONAL CONFERENCE ON THE EUROPEAN ENERGY CHARTER (the HAGUE, Dic. 13-14, 1991), Concluding Document.

JANDET N. (1993), "Un Golfe pour Trois Reves", **L'Harmattan.**

KHARTUKHOV M. (1993), "Ex Soviet Union: Oil Exporter or Importer?", in **Revue de l'Energie**, N. 451, Juil.-Aug. 93.

MABRO R. (1990), "Political Dimensions of the Gulf Crisis", Oxford, **Institute for Energy Studies.**

MARENGO P.C. (1989), "Sviluppi della Cooperazione Economica fra l'Italia e l'Unione Sovietica", in **Le Società Miste Italia-URSS**", ed. **Il Sole 24 Ore.**

Mc. DOWALL D. (1992), "Europe and the Arabs", **The European Community and the Arab Economies.**

MIYAMOTO A. (1992), "How Shall We Regard FSU'S Oil Situation in Chaotic State?", in **Energy Japan**, N. 116

NONNEMAN G. (1992), 2The Middle East and Europe and Integrated Communities Approach", **Federal Trust for Education and Research**, Feb. 92.

OECD-FOREIGN TRADE by COMMODITIES, various iusses

OECD-ANNUAL ENERGY BALANCES, annate various iusses.

PETROLEUM ECONOMIST (1991), "Energy Charter Charts Changes", Nov.

PLANECON, ENERGY OUTLOOK (1990-91-92).

SAGERS M.J. (1992), "Energy Situation Update for 1991 for the Former USSR", **PlanEcon Energy Outlook**, March.

THE ECONOMIST INTELLIGENCE UNIT (1990), "The Gulf Crisis: its Global Economic Impact - Containment or Conflict", **The Economist Intelligence Unit**, 17 Ott. 1990

TOKSOZ M. (1993), "Pockets of Influence - the EC's Faltering Impact on the Arab Economies", **The European Community and the Arab Economies.**

VAILLAUD P. (1993), "Le Hidrocarbures dans les Pays de l'Est", **Revue de l'Energie**, N. 452, Sept.-Oct.

VALMONT A. (1993) "Economie et Strategie dans le Monde Arabe et Musulman", **Eman.**

WATERLOOS C. (1991), "La Carta Europea dell'Energia e il Mercato Energetico Europeo", **Energia**, N. 4, Apr.

ZECCHINI S. (1993), "Contributo presentato alla **"Annual Russian Oil Conference"**, London, feb.

Table 1

WORLD PRIMARY ENERGY CONSUMPTION
(mtoe)

	1970	1973	1980	1985	1990	1992	1993(*)	93/92
URSS								
– carbone	287.0	302.9	320.5	295.5	288.6	250.7	223	–10.9
– petrolio	257.0	321.2	444.3	439.6	407.0	322.2	264	–18.2
– gas	158.0	196.2	313.5	458.2	572.1	555.0	552	–0.6
– idrogeo	32.0	32.6	46.0	51.0	48.9	48.0	50	4.2
– nucleo	9.4	2.7	16.3	37.3	47.2	40.0	37	–7.5
TOT.	743.4	855.6	1140.7	1281.6	1363.9	1215.9	1126	–7.4
EUR.OR.(s.URSS)								
– carbone	0.0	218.3	254.1	277.9	160.5	139.3	132	–5.0
– petrolio	0.0	86.3	122.4	106.8	83.8	62.3	62	–1.7
– gas	0.0	40.5	69.7	75.6	86.7	65.0	65	–0.4
– idrogeo	0.0	7.1	13.4	13.0	17.3	12.0	12	0.0
– nucleo	0.0	0.1	5.0	10.8	15.8	15.0	15	0.0
TOT.	0.0	352.4	464.6	484.1	344.0	294.1	286	–2.8
PVS								
– carbone	299,8	327,9	484.6	660.3	823,6	860.8	878	2.0
– petrolio	313.6	405.7	635.1	696.5	857,1	935.7	987	5.5
– gas	45.4	60.6	119.0	175.3	256.2	284.4	300	5.4
– idrogeo	43.9	55.2	101.7	137.9	175.0	185.2	195	5.3
– nucleo	0.3	0,5	3.8	14.5	23.9	24.3	26	7.0
TOT.	703.0	849,7	1344.3	1684.5	2135,7	2290.4	2386	4.2
OCSE								
– carbone	720,1	713,7	835.4	930.5	1031.4	999.3	982	–1.7
– petrolio	1562.4	1874.7	1803,0	1580,4	1727.5	1753,0	1761	0.5
– gas	606.4	692.7	726.8	701,5	786.1	844,0	880	4.3
– idrogeo	185.1	201,6	237,9	257,9	258,9	256.1	263	2.6
– nucleo	16.3	42.2	134.3	270.6	364,2	389.2	402	3.3
TOT.	3090.4	3524.3	3737.4	3740.9	4168.1	4241.6	4288	1.1
EUROPA OCC.								
– carbone	287.8	263.6	280.9	293.2	355.0	320.0	291	–9.0
– petrolio	590.3	705.6	652.4	552.3	608.0	630.0	626	–0.6
– gas	63.2	121.0	176.9	191.5	229.3	245.0	262	6.9
– idrogeo	69.2	72.4	88.1	94.4	95.2	95.7	98	2.0
– nucleo	9.9	16.5	47.9	130.6	166.1	175.1	179	2.0
TOT.	1020.8	1179.1	1246.3	1262.1	1453.6	1465.3	1456	–0.7
MONDO								
– carbone	1517.9	1562.5	1894.6	2164.2	2304.1	2250.1	2216	–1.5
– petrolio	2201.1	2687.9	3004.8	2823.3	3075.4	3073.7	3073	–0.0
– gas	340.8	389.9	1229.0	1410.6	1681.1	1748.4	1796	2.8
– idrogeo	268.0	296.4	399.1	459.8	500.1	501.2	520	3.7
– nucleo	17.6	45.6	159.5	333.2	451.1	468.5	480	2.5
TOT.	4845.4	5582.3	6687.0	7191.0	8011.7	8041.9	8085	0.5
							8085	

(*) Valutazioni preliminari

WORLD PRIMARY ENERGY CONSUMPTION
(percentage share)

	1970	1973	1980	1985	1990	1992	1993
URSS							
– carbone	38,6	35,4	28,1	23,1	21,2	20.6	19,8
– petrolio	34.6	37,5	39,0	34,3	29,8	26.5	23,4
– gas	21.3	22.9	27,5	35,8	41,9	45.6	49,0
– idrogeo	4,3	3.8	4,0	4,0	3,6	3.9	4,4
– nucleo	1,3	0.3	1,4	2,9	3,5	3.3	3.3
TOT.	100,0	100.0	100,0	100,0	100,0	100.0	100,0
EUR.OR.(s.URSS)							
– carbone	–	62.0	54,7	57,4	46.6	47.4	46,3
– petrolio	–	24,5	26.3	22,1	24,4	21.4	21,6
– gas	–	11,5	15,0	15,6	19,4	22.1	22,7
– idrogeo	–	2.0	2,9	2,7	5.0	4.1	4,2
– nucleo	–	0.0	1,1	2,2	4.6	5,1	5,2
TOT.	–	100.0	100.0	100,0	100,0	100,0	100,0
PVS							
– carbone	42.6	38.6	36,0	39,2	38,6	37.6	36.8
– petrolio	44,6	47.8	47,2	41,3	40,1	40,9	41.4
– gas	6.5	7,1	8,9	10,4	12,0	12.4	12.6
– idrogeo	6,2	6,5	7,6	8,2	8,2	8,1	8,2
– nucleo	0,0	0.1	0,3	0,9	1,1	1,1	1,1
TOT.	100,0	100,0	100,0	100,0	100,0	100,0	100,0
OCSE							
– carbone	23,3	20,2	22,4	24,9	24,7	23,6	22.9
– petrolio	50.6	53.2	48.2	42.2	41.4	41,3	41.1
– gas	19.6	19.7	19,4	18,8	18.9	19.9	20.5
– idrogeo	6.0	5.7	6.4	6.9	6.2	6.0	6.1
– nucleo	0,5	1.2	3.6	7.2	8.7	9.2	9.4
TOT.	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EUROPA OCC.							
– carbone	28.2	22.4	22.5	23.2	24.4	21.8	20.0
– petrolio	57.9	59.8	52.4	43.8	41,8	43.0	43.0
– gas	6.2	10.3	14.2	15.2	15,8	16.7	18.0
– idrogeo	6.8	6.1	7,1	7,5	6.5	6,5	6.7
– nucleo	1.0	1.4	3.8	10.3	11.4	11.9	12.3
TOT.	100,0	100,0	100,0	100,0	100,0	100,0	100,0
MONDO							
– carbone	31.3	28.0	28.3	30.1	28.6	28.0	27.4
– petrolio	45.4	48.1	44,9	39,3	38,4	38.2	38.0
– gas	17,4	17.7	18.4	19,6	21,0	21.7	22.2
– idrogeo	5.5	5.3	6,0	6,4	6,2	6.2	6,4
– nucleo	0.4	0.8	2,4	4,6	5.6	5.8	5,9
TOT.	100.0	100.0	100,0	100,0	100,0	100.0	100.0

WORLD OIL PRODUCTION
(mb/d)

PERIODO	PAESI INDUSTRIALI ED IN VIA DI SVILUPPO									EX U.R.S.S.	EX URSS EST EUR. CINA	TOTALE MONDO
	OPEC	NGL'S OPEC (1)	STATI UNITI	MES-SICO	MARE DEL NORD	ALTRI (3)	TOTALE NON OPEC	NGL'S NON OPEC	TOTALE			
1981	22.392	1.144	8.561	2.313	2.342	5.654	18.869	2.300	44.705	11.800	14.231	58.936
1982	18.163	1.187	8.670	2.746	2.672	5.809	19.899	2.279	41.529	11.920	14.353	55.882
1983	17.336	1.198	8.674	2.688	2.944	6.362	20.669	2.412	41.615	11.875	14.388	56.003
1984	17.272	1.265	8.728	2.764	3.285	6.920	21.697	2.450	42.684	11.869	14.465	57.149
1985	15.763	1.344	8.932	2.725	3.394	7.529	22.581	2.580	42.268	11.329	14.160	56.428
1986	18.001	1.627	8.728	2.425	3.573	7.769	22.495	2.741	44.865	12.300	15.307	60.172
1987	17.677	1.603	8.298	2.540	3.634	8.065	22.537	2.729	44.547	12.472	15.510	60.057
1988	19.581	1.679	8.091	2.521	3.554	8.581	22.747	2.710	46.717	12.897	15.589	62.306
1989	21.765	1.922	7.633	2.512	3.432	8.936	22.513	2.710	48.909	12.146	15.247	64.157
1990	23.000	2.068	7.287	2.526	3.646	9.329	22.788	2.732	50.588	11.614	14.817	65.405
1991	23.249	2.141	7.372	2.675	3.820	9.752	23.619	2.887	51.896	10.354	13.420	65.316
1992	24.407	2.191	7.153	2.677	4.096	10.298	24.224	3.117	53.938	9.076	12.003	65.942
1993	24.982	2.283	6.842	2.659	4.442	10.911	24.854	3.152	55.272	7.820	10.730	66.002
1991 II	22.488	2.130	7.372	2.689	3.461	9.661	23.183	2.900	50.701	10.517	13.586	64.287
III	23.557	2.160	7.310	2.674	3.751	9.689	23.424	2.900	52.041	10.167	13.227	65.268
IV	24.033	2.160	7.329	2.672	4.081	9.981	24.062	2.900	53.156	10.000	13.042	66.198
1992 I	24.127	2.187	7.350	2.710	4.004	10.425	24.490	3.100	53.903	9.700	12.562	66.465
II	23.735	2.190	7.202	2.672	3.776	10.361	24.010	3.100	53.035	9.367	12.133	65.169
III	24.472	2.190	7.014	2.678	4.162	10.178	24.032	3.100	53.794	8.794	11.824	65.618
IV	25.293	2.197	7.046	2.647	4.444	10.227	24.365	3.167	55.021	8.444	11.494	66.515
1993 I	25.268	2.263	6.980	2.617	4.212	10.796	24.605	3.200	55.337	8.230	11.113	66.450
II	24.637	2.290	6.831	2.674	4.154	10.841	24.500	3.150	54.576	7.971	10.897	65.474
III	25.080	2.290	6.696	2.650	4.429	10.945	24.720	3.140	55.230	7.625	10.505	65.735
IV	24.943	2.290	6.862	2.697	4.973	11.061	25.593	3.120	55.946	7.453	10.403	66.350
1994 I	25.095	2.290	6.769	2.748	4.782	11.453	25.753	3.120	56.258	7.223	10.143	66.401
II	25.053	2.290	6.649	2.700	4.891	11.328	25.568	3.120	56.031	7.147	10.140	66.171
1992 LUG	24.155	2.190	7.096	2.662	4.117	10.175	24.050	3.100	53.495	8.944	11.967	65.462
AGO	24.510	2.190	6.928	2.686	4.109	10.183	23.906	3.100	53.706	8.794	11.804	65.510
SET	24.750	2.190	7.019	2.687	4.260	10.175	24.141	3.100	54.181	8.644	11.701	65.882
OTT	25.200	2.190	7.065	2.654	4.386	10.291	24.396	3.150	54.936	8.544	11.607	66.543
NOV	25.290	2.190	7.014	2.638	4.484	10.147	24.283	3.150	54.913	8.444	11.487	66.400
DIC	25.390	2.210	7.060	2.650	4.463	10.242	24.415	3.200	55.215	8.344	11.387	66.602
1993 GEN	25.420	2.250	7.008	2.604	4.097	10.734	24.443	3.200	55.313	8.249	11.109	66.422
FEB	25.525	2.280	6.957	2.611	4.279	10.845	24.692	3.200	55.697	8.249	11.124	66.821
MAR	24.860	2.260	6.976	2.635	4.259	10.810	24.680	3.200	55.000	8.191	11.106	66.106
APR	24.510	2.290	6.904	2.674	4.308	10.803	24.689	3.150	54.639	8.121	11.021	65.660
MAG	24.675	2.290	6.833	2.673	4.269	10.832	24.607	3.150	54.722	7.971	10.901	65.623
GIU	24.725	2.290	6.756	2.675	3.885	10.887	24.203	3.150	54.368	7.820	10.770	65.138
LUG	25.070	2.290	6.681	2.649	4.600	10.870	24.800	3.150	55.310	7.680	10.600	65.910
AGO	25.050	2.290	6.732	2.650	4.368	11.011	24.761	3.150	55.251	7.630	10.420	65.671
SET	25.120	2.290	6.676	2.650	4.320	10.953	24.599	3.120	55.129	7.565	10.495	65.624
OTT	25.040	2.290	6.816	2.731	4.875	10.966	25.388	3.120	55.838	7.520	10.470	66.308
NOV	24.720	2.290	6.888	2.680	5.019	11.194	25.781	3.120	55.911	7.440	10.390	66.301
DIC	25.070	2.290	6.883	2.680	5.024	11.023	25.610	3.120	56.090	7.400	10.350	66.440
1994 GEN	25.100	2.290	6.872	2.745	4.796	11.482	25.895	3.120	56.405	7.290	10.210	66.615
FEB	25.055	2.290	6.735	2.750	4.700	11.620	25.805	3.120	56.270	7.240	10.160	66.430
MAR	25.130	2.290	6.700	2.750	4.850	11.258	25.558	3.120	56.098	7.140	10.060	66.158
APR	24.900	2.290	6.634	2.699	4.808	11.404	25.545	3.120	55.855	7.080	10.050	65.905
MAG	25.070	2.290	6.680	2.700	4.933	11.236	25.549	3.120	56.029	7.180	10.190	66.219
GIU	25.190	2.290	6.632	2.700	4.933	11.345	25.610	3.120	56.210	7.180	10.180	66.390
(2) LUG	24.980	2.350	6.592	2.730	4.693	11.475	25.490	3.310	56.130	6.980	10.000	66.130

(1) INCLUDE I CONDENSATI
(2) VALUTAZIONI PRELIMINARI
(3) DAL GENNAIO 1993 L'ECUADOR FA PARTE DEGLI ALTRI PAESI

FONTE : PETROLEUM INTELLIGENCE WEEKLY E IEA - OIL MARKET REPORT

OPEC OIL PRODUCTION
(mb/d)

PERIODO	ARABIA SAUD.	IRAN	IRAQ	KUWAIT	U.E.A. (1)	QATAR	ZONA NEUTRA (2)	VENEZ.	NIGER.	LIBIA	INDON.	ALGER.	GABON	ECUAD.	TOTAL OPEC (3)(5
1981	9.625	1.317	.897	.941	1.500	.405	.375	1.999	1.448	1.113	1.604	.808	.151	.211	22.39
1982	6.309	1.958	.925	.670	1.155	.328	.315	1.784	1.299	1.146	1.209	.702	.154	.209	18.16
1983	4.918	2.425	1.004	.921	1.147	.294	.310	1.684	1.239	1.075	1.252	.675	.157	.236	17.30
1984	4.446	2.187	1.202	.913	1.146	.399	.410	1.718	1.394	1.073	1.341	.638	.152	.253	17.27
1985	3.212	2.192	1.432	.846	1.143	.305	.358	1.555	1.474	1.056	1.127	.632	.153	.277	15.76
1986	4.862	1.879	1.687	1.238	1.342	.332	.360	1.579	1.432	1.032	1.218	.600	.162	.277	18.00
1987	4.008	2.279	2.077	1.158	1.448	.307	.391	1.542	1.290	.971	1.189	.635	.156	.225	17.67
1988	5.004	2.233	2.612	1.254	1.504	.315	.317	1.661	1.388	1.017	1.158	.633	.175	.309	19.58
1989	4.946	2.862	2.821	1.600	1.880	.391	.400	1.712	1.637	1.096	1.217	.695	.220	.287	21.76
1990	6.283	3.079	2.012	1.077	2.068	.385	.292	2.097	1.779	1.350	1.248	.765	.278	.285	23.00
1991	8.117	3.333	.271	.126	2.387	.378	.123	2.329	1.885	1.487	1.437	.800	.282	.291	23.24
1992	8.271	3.429	.383	.856	2.279	.395	.335	2.294	1.904	1.475	1.382	.787	.297	.318	24.40
1993	8.054	3.650	.600	1.694	2.190	.413	.356	2.341	1.925	1.377	1.327	.760	.295	.000	24.98
1991 II	7.633	3.300	.300	.008	2.367	.390	.033	2.300	1.883	1.450	1.467	.800	.275	.282	22.48
III	8.367	3.367	.350	.140	2.297	.390	.160	2.300	1.883	1.483	1.450	.800	.275	.295	23.55
IV	8.367	3.367	.350	.340	2.412	.357	.287	2.367	1.875	1.550	1.383	.800	.285	.295	24.03
1992 I	8.417	3.450	.350	.497	2.337	.350	.293	2.267	1.858	1.500	1.425	.800	.282	.302	24.12
II	8.100	3.250	.383	.767	2.242	.375	.328	2.217	1.850	1.450	1.367	.787	.305	.315	23.73
III	8.242	3.400	.400	.978	2.267	.417	.317	2.300	1.925	1.450	1.367	.780	.303	.327	24.47
IV	8.325	3.617	.400	1.183	2.270	.440	.403	2.392	1.983	1.500	1.370	.780	.300	.330	25.29
1993 I	8.233	3.700	.600	1.550	2.240	.427	.360	2.340	1.977	1.418	1.347	.777	.300	.000	25.26
II	8.033	3.600	.600	1.558	2.187	.407	.305	2.317	1.890	1.350	1.320	.770	.300	.000	24.63
III	8.100	3.650	.600	1.817	2.163	.410	.370	2.347	1.890	1.363	1.330	.750	.290	.000	25.08
IV	7.850	3.650	.600	1.850	2.170	.410	.390	2.360	1.943	1.377	1.310	.743	.290	.000	24.94
1994 I	7.900	3.600	.600	1.807	2.178	.405	.385	2.450	2.033	1.370	1.330	.740	.297	.000	25.09
II	7.907	3.567	.600	1.850	2.183	.413	.367	2.453	1.937	1.370	1.330	.740	.337	.000	25.03
1992 LUG	8.200	3.300	.400	.930	2.250	.400	.300	2.250	1.900	1.450	1.370	.780	.305	.320	24.15
AGO	8.250	3.450	.400	.980	2.280	.425	.300	2.300	1.925	1.425	1.360	.780	.305	.330	24.5
SET	8.275	3.450	.400	1.025	2.270	.425	.350	2.350	1.950	1.475	1.370	.780	.300	.330	24.75
OTT	8.325	3.650	.400	1.100	2.270	.440	.360	2.400	1.975	1.500	1.370	.780	.300	.330	25.20
NOV	8.300	3.650	.400	1.175	2.270	.440	.400	2.400	1.975	1.500	1.370	.780	.300	.330	25.25
DIC	8.350	3.550	.400	1.275	2.270	.440	.450	2.375	2.000	1.500	1.370	.780	.300	.330	25.39
1993 GEN	8.300	3.650	.600	1.475	2.245	.450	.400	2.370	2.000	1.480	1.370	.780	.300	.000	25.4
FEB	8.250	3.750	.600	1.675	2.255	.430	.380	2.350	1.980	1.425	1.350	.780	.300	.000	25.5
MAR	8.150	3.700	.600	1.500	2.220	.400	.300	2.300	1.950	1.350	1.320	.770	.300	.000	24.6
APR	8.100	3.500	.600	1.500	2.200	.400	.290	2.300	1.900	1.350	1.300	.770	.300	.000	24.5
MAG	8.000	3.650	.600	1.550	2.180	.420	.325	2.300	1.900	1.350	1.330	.770	.300	.000	24.6
GIU	8.000	3.650	.600	1.625	2.180	.400	.300	2.350	1.870	1.350	1.330	.770	.300	.000	24.7
LUG	8.050	3.800	.600	1.750	2.160	.410	.380	2.350	1.850	1.350	1.330	.750	.290	.000	25.0
AGO	8.150	3.500	.600	1.850	2.160	.410	.390	2.350	1.900	1.370	1.330	.750	.290	.000	25.0
SET	8.100	3.650	.600	1.850	2.170	.410	.340	2.340	1.920	1.370	1.330	.750	.290	.000	25.1
OTT	7.950	3.700	.600	1.850	2.170	.410	.390	2.360	1.880	1.390	1.300	.750	.290	.000	25.0
NOV	7.800	3.550	.600	1.850	2.170	.410	.380	2.360	1.900	1.370	1.300	.740	.290	.000	24.7
DIC	7.800	3.700	.600	1.850	2.170	.410	.400	2.360	2.050	1.370	1.330	.740	.290	.000	25.0
1994 GEN	7.900	3.600	.600	1.800	2.170	.410	.390	2.450	2.050	1.370	1.330	.740	.290	.000	25.1
FEB	7.900	3.550	.600	1.810	2.195	.395	.375	2.450	2.050	1.370	1.330	.740	.290	.000	25.0
MAR	7.900	3.650	.600	1.810	2.170	.410	.390	2.450	2.000	1.370	1.330	.740	.310	.000	25.1
APR	7.920	3.500	.600	1.830	2.170	.410	.340	2.440	1.920	1.370	1.330	.740	.330	.000	24.9
MAG	7.900	3.550	.600	1.860	2.180	.410	.380	2.460	1.950	1.370	1.330	.740	.340	.000	25.0
GIU	7.900	3.650	.600	1.860	2.200	.420	.380	2.460	1.940	1.370	1.330	.740	.340	.000	25.1
(4) LUG	7.900	3.550	.600	1.850	2.170	.440	.390	2.460	1.840	1.370	1.330	.740	.340	.000	24.9

(1) COMPRENDE ABU DHABI, DUBAI, SHARJAH.
(2) DIVISA IN PARTI UGUALI TRA ARABIA SAUDITA E KUWAIT
(3) ESCLUDE I CONDENSATI
(4) VALUTAZIONI PRELIMINARI
(5) DAL GENNAIO 1993 L'ECUADOR NON FA PIU' PARTE DELL'OPEC
FONTE: PETROLEUM INTELLIGENCE WEEKLY

OPEC PRODUCTIVE QUOTA AGREEMENT
(mb/d)

ACCORDO	A.SAUD.	IRAN	IRAQ (1)	KUWAIT	U.E.A.	QATAR	VENEZ.	NIGERIA	LIBIA	INDON.	ALGER.	GABON	ECUADOR	OPEC (2)
3/83	5.000	2.400	1.200	1.050	1.100	.300	1.675	1.300	1.100	1.300	.725	.150	.200	17.500
10/84	4.353	2.300	1.200	.900	.950	.280	1.555	1.300	.990	1.189	.663	.137	.183	16.000
8/86	4.353	2.300	.000	.900	.950	.280	1.555	1.300	.990	1.189	.663	.137	.183	14.800
10/86	4.353	2.317	.000	.921	.950	.300	1.574	1.304	.999	1.193	.669	.160	.221	14.961
12/86	4.353	2.317	.000	.999	.950	.300	1.574	1.304	.999	1.193	.669	.160	.221	15.039
1/87	4.133	2.255	1.466	.948	.902	.285	1.495	1.238	.948	1.133	.635	.152	.210	15.800
6/87	4.343	2.369	1.540	.996	.948	.299	1.571	1.301	.996	1.190	.667	.159	.221	16.600
12/87	4.343	2.369	.000	.996	.948	.299	1.571	1.301	.996	1.190	.667	.159	.221	15.060
6/88	4.343	2.369	.000	.996	.948	.299	1.571	1.301	.996	1.190	.667	.159	.221	15.060
11/88	4.524	2.640	2.640	1.037	.988	.312	1.636	1.355	1.037	1.240	.695	.166	.230	18.500
6/89	4.769	2.783	2.783	1.093	1.041	.329	1.724	1.428	1.093	1.307	.733	.175	.242	19.500
9/89	5.023	2.932	2.932	1.148	1.087	.349	1.804	1.497	1.148	1.374	.779	.185	.246	20.500
11/89	5.380	3.140	3.140	1.500	1.095	.371	1.945	1.611	1.233	1.374	.827	.197	.273	22.086
7/90	5.380	3.140	3.140	1.500	1.500	.371	1.945	1.611	1.233	1.374	.827	.197	.273	22.491
3/91	8.034	3.217	.000	.000	2.320	.399	2.235	1.840	1.425	1.443	.827	.285	.273	22.298
9/91(3)														23.650
11/91(3)														23.650
2/92	7.887	3.184	.505	.812	2.244	.377	2.147	1.751	1.395	1.374	.760	.273	.273	22.982
5/92(4)	7.887	3.184	.505	.812	2.244	.377	2.147	1.751	1.395	1.374	.760	.273	.273	22.982
9/92(3)(4)														24.200
11/92	8.395	3.490	.500	1.500	2.260	.380	2.360	1.857	1.409	1.374	.764	.293	(5)	24.582
2/93	8.000	3.340	.400	1.600	2.161	.364	2.257	1.780	1.350	1.317	.732	.281	(5)	23.582
6/93	8.000	3.340	.400	1.600	2.161	.364	2.257	1.780	1.350	1.317	.732	.281	(5)	23.582
9/93	8.000	3.600	.400	2.000	2.161	.378	2.359	1.865	1.390	1.330	.750	.287	(5)	24.520
3/94	8.000	3.600	.400	2.000	2.161	.378	2.359	1.865	1.390	1.330	.750	.287	(5)	24.520
6/94(6)	8.000	3.600	.400	2.000	2.161	.378	2.359	1.865	1.390	1.330	.750	.287	(5)	24.520

QUOTE PERCENTUALI

ACCORDO	A.SAUD.	IRAN	IRAQ (1)	KUWAIT	U.E.A.	QATAR	VENEZ.	NIGERIA	LIBIA	INDON.	ALGER.	GABON	ECUADOR	OPEC (2)
3/83	28.6	13.7	6.9	6.0	6.3	1.7	9.6	7.4	6.3	7.4	4.1	.9	1.1	100.0
10/84	27.2	14.4	7.5	5.6	5.9	1.8	9.7	8.1	6.2	7.4	4.1	.9	1.1	100.0
8/86	29.4	15.5		6.1	6.4	1.9	10.5	8.8	6.7	8.0	4.5	.9	1.2	100.0
10/86	29.1	15.5		6.2	6.3	2.0	10.5	8.7	6.7	8.0	4.5	1.1	1.5	100.0
12/86	28.9	15.4		6.6	6.3	2.0	10.5	8.7	6.6	7.9	4.4	1.1	1.5	100.0
1/87	26.2	14.3	9.3	6.0	5.7	1.8	9.5	7.8	6.0	7.2	4.0	1.0	1.3	100.0
6/87	26.2	14.3	9.3	6.0	5.7	1.8	9.5	7.8	6.0	7.2	4.0	1.0	1.3	100.0
12/87	28.8	15.7		6.6	6.3	2.0	10.4	8.6	6.6	7.9	4.4	1.1	1.5	100.0
6/88	28.8	15.7		6.6	6.3	2.0	10.4	8.6	6.6	7.9	4.4	1.1	1.5	100.0
11/88	24.5	14.3	14.3	5.6	5.3	1.7	8.8	7.3	5.6	6.7	3.8	.9	1.2	100.0
6/89	24.5	14.3	14.3	5.6	5.3	1.7	8.8	7.3	5.6	6.7	3.8	.9	1.2	100.0
9/89	24.5	14.3	14.3	5.6	5.3	1.7	8.8	7.3	5.6	6.7	3.8	.9	1.2	100.0
11/89	24.4	14.2	14.2	6.8	5.0	1.7	8.8	7.3	5.6	6.2	3.7	.9	1.2	100.0
7/90	23.9	14.0	14.0	6.7	6.7	1.6	8.6	7.2	5.5	6.1	3.7	.9	1.2	100.0
3/91	36.0	14.4			10.4	1.8	10.0	8.3	6.4	6.5	3.7	1.3	1.2	100.0
9/91(3)														100.0
11/91(3)														100.0
2/92	34.3	13.9	2.2	3.5	9.8	1.6	9.3	7.6	6.1	6.0	3.3	1.2	1.2	100.0
5/92(4)	34.3	13.9	2.2	3.5	9.8	1.6	9.3	7.6	6.1	6.0	3.3	1.2	1.2	100.0
9/92(3)(4)														100.0
11/92	34.2	14.2	2.0	6.1	9.2	1.5	9.6	7.6	5.7	5.6	3.1	1.2	(5)	100.0
2/93	33.9	14.2	1.7	6.8	9.2	1.5	9.6	7.5	5.7	5.6	3.1	1.2	(5)	100.0
6/93	33.9	14.2	1.7	6.8	9.2	1.5	9.6	7.5	5.7	5.6	3.1	1.2	(5)	100.0
9/93	32.6	14.7	1.6	8.2	8.8	1.5	9.6	7.6	5.7	5.4	3.1	1.2	(5)	100.0
3/94	32.6	14.7	1.6	8.2	8.8	1.5	9.6	7.6	5.7	5.4	3.1	1.2	(5)	100.0
6/94(6)	32.6	14.7	1.6	8.2	8.8	1.5	9.6	7.6	5.7	5.4	3.1	1.2	(5)	100.0

(1) E' escluso dalle quote ufficiali concordate nell'ago., ott. e dic.'86, dic.'87 e giu.'88.
(2) Il totale OPEC non include la Zona Neutra (circa 0.3 mil. di b/g).
(3) Non sono state stabilite ripartizioni del tetto produttivo in quote.
(4) Il Kuwait e' lasciato libero di aumentare la produzione in relazione alla riattivazione della propria capacita' produttiva
(5) L'Ecuador dal 1 genn.1993 non fa' piu' parte dell'OPEC
(6) Valido fino al dicembre 1994
FONTE: Comunicati OPEC

EVOLUZIONE DELLA DOMANDA DI ENERGIA IN FONTI PRIMARIE NELL'OECD
(Milioni di tep)
TOTAL PRIMARY ENERGY REQUIREMENTS IN OECD COUNTRIES
(Million toe)

	CONSUNTIVI /ACTUAL									PREVISIONI /FORECAST						
SOURCES	1985	1986	1987	1988	1989	1990 (1)	1991	1992	1993 (*)	1994	1995	1996	1997	1998	2000	2005
SOLID FUELS	829.7	808.7	843.6	902.1	873.3	1031.3	1042.7	1026.7	1011	1018	1021	1027	1034	1040	1048	1089
NATURAL GAS	702.1	681.4	717.0	740.8	773.2	786.2	828.0	839.4	878	898	917	935	956	973	1009	1106
OIL	1591.7	1647.9	1686.3	1726.9	1741.8	1766.8	1765.4	1790.7	1812	1830	1851	1878	1901	1914	1941	1990
(OIL: M. b/d)	(34.3)	(35.4)	(36.3)	(37.5)	(37.8)	(37.9)	(38.2)	(38.9)	(39.1)	(39.8)	(40.0)	(40.5)	(41.0)	(41.4)	(42.0)	(42.8)
HYDRO - GEO ELECTRICITY(2)	259.8	259.1	258.3	262.8	253.9	264.0	271.0	284.8	278	285	292	300	308	314	328	360
NUCLEAR ELECTRICITY	270.8	293.1	311.8	338.0	347.8	364.2	383.8	389.8	405	409	415	417	422	426	431	433
TOTAL	3753.7	3788.2	3897.0	4030.4	4090.0	4212.3	4290.9	4320.4	4384	4438	4497	4557	4620	4668	4757	4981
	Indicatori energetici /Energy indicators															
NUCLEAR GENERATING CAPACITY (Gross GWe) (3)	216.8	230.9	251.9	265.5	270.9	280.8	280.8	283	288	290	294	295	298	301	305	307
ENERGY INTENSITY (4)	0.424	0.416	0.415	0.411	0.404	0.406	0.411	0.407	0.408	0.403	0.399	0.394	0.389	0.382	0.368	0.344
OIL INTENSITY (4)	0.180	0.181	0.177	0.178	0.172	0.170	0.169	0.169	0.169	0.166	0.164	0.163	0.160	0.157	0.151	0.138
ENERGY/GDP ELASTICITY (5)	0.5	0.3	0.8	0.8	0.5	0.2	4.2	0.4	1.2	0.5	0.8	0.5	0.5	0.4	0.4	0.4
	Variazione percentuale m.a. /Percent changes															
	85/84	86/85	87/86	88/87	89/88	(1) 90/89	91/90	92/91	93/92	94/93	95/94	96/95	97/96	98/97	00/98	05/2000
SOLID FUELS	4.5	-2.5	4.1	2.0	1.2	-1.1	1.1	-1.5	-1.5	0.5	0.5	0.5	0.7	0.6	0.4	0.4
NATURAL GAS	0.7	-2.9	5.2	3.3	4.4	0.3	5.3	1.4	4.6	2.1	2.3	2.0	2.2	1.8	1.8	1.9
OIL	-1.6	3.5	1.1	3.6	0.8	0.2	-0.1	1.9	0.7	1.0	1.1	1.5	1.2	0.7	0.7	0.5
HYDRO - GEO ELECTRICITY(2)	-1.4	-0.2	-0.3	1.7	-3.3	2.6	2.7	-2.3	4.8	2.8	2.5	2.5	2.6	2.2	2.1	1.9
NUCLEAR ELECTRICITY	18.8	8.3	8.4	8.4	2.9	4.4	5.4	1.6	4.0	1.0	1.4	0.5	1.2	0.9	0.8	0.1
TOTAL	1.6	0.9	2.9	3.4	1.5	0.4	1.8	0.7	1.5	1.2	1.3	1.3	1.4	1.0	0.9	0.8
INDUSTRIAL PRODUCTION (6)	2.7	1.1	3.8	5.2	3.0	1.2	-0.9	-0.5	-0.1	2.7	3.6	2.8	4.0	3.0	3.1	2.4
GDP (7)	3.3	2.8	3.2	4.3	3.2	2.1	0.4	1.8	1.2	2.3	2.4	2.8	2.9	2.7	2.7	2.3

Note: (*) Valutazioni preliminari. /Estimates
(1) Dal 1990 nuova serie con la Germania unificata /*Since 1990 including United Germany.*
(2) Include le importazioni nette di elettricità /*Includes electricity net imports*
(3) Consuntivi tratti da: Nucleonics Week; (nel 1990 sono state chiuse le 6 centrali della ex Germania est), previsioni: Nukem e CEE per il decommissionin /*Actual data: Nucleonics Week; (in 1990 5 East Germany nuclear power plants were closed); forecast: Nukem and EEC EEC for decommissioning*
(4) tep *1000 $ di PIL a prezzi e cambi costanti 1985. /*toe*1000 GDP in 1985 US $*
(5) Rapporto tra i tassi di variazione della domanda di energia e del PIL. /*Ratio between percent changes.*
(6) Consuntivi tratti da: WEFA - World Economic Outlook. /*Actual data: WEFA - World Economic Outlook*
(7) Consuntivi tratti da: OECD Main Economic Indicators /*Actual data: OECD Main Economic Indicators*

Fonte: OECD - Annual Energy Balances; Petrolio: BP - Statistical Review; per il 1993 OECD - Quarterly Energy Balances e letteratura specializzata; Previsioni: ENI - Stuen./*OECD - Annual Energy Balances; Oil: BP Statistical Review; 1993 OECD - Quarterly Energy Balances; Forecast: ENI - Stuen*

Table 7

EVOLUZIONE DELLA DOMANDA DI ENERGIA IN FONTI PRIMARIE NELL'EUROPA OCCIDENTALE
(Milioni di tep)
TOTAL PRIMARY ENERGY REQUIREMENTS IN EUROPE
(Million toe)

	CONSUNTIVI/*ACTUAL*									PREVISIONI /*FORECAST*						
SOURCES	1985	1986	1987	1988	1989	1990 (1)	1991	1992	1993 (*)	1994	1995	1996	1997	1998	2000	2005
SOLID FUELS	292.8	289.0	292.4	285.7	290.9	354.8	340.7	319.1	295	290	298	299	290	290	292	290
NATURAL GAS	192.1	194.8	207.4	203.2	214.3	229.4	247.1	245.1	262	271	282	294	308	318	344	378
OIL	565.8	586.9	586.2	594.4	597.7	623.0	637.0	647.2	648	648	660	664	668	672	682	692
(OIL: M. b/d)	(11.9)	(12.2)	(12.8)	(12.8)	(12.8)	(13.0)	(13.4)	(13.6)	(13.7)	(13.7)	(13.9)	(14.0)	(14.1)	(14.2)	(14.3)	(14.5)
HYDRO-GEO ELECTRICITY (2)	99.6	94.7	100.4	111.4	97.5	100.8	100.9	104.5	100	113	116	119	120	123	128	132
NUCLEAR ELECTRICITY	130.6	141.6	144.8	154.8	163.9	166.1	172.1	175.4	183	185	185	188	187	189	192	189
TOTAL	1280.8	1307.0	1334.2	1349.5	1364.3	1474.1	1497.8	1491.2	1496	1508	1530	1551	1572	1593	1635	1683
	Indicatori energetici / *Energy Indicators*															
NUCLEAR GENERATING CAPACITY (Gross GWe) (3)	97.9	107.2	113.8	123.2	124.9	129.4	127.5	128.7	129	128	130	129	130	132	134	131
ENERGY INTENSITY (4)	0.433	0.429	0.426	0.414	0.408	0.419	0.421	0.414	0.417	0.414	0.410	0.404	0.399	0.392	0.379	0.348
OIL INTENSITY (4)	0.191	0.193	0.187	0.183	0.178	0.177	0.179	0.180	0.180	0.178	0.177	0.173	0.170	0.165	0.156	0.140
ENERGY/GDP ELASTICITY (5)	1.2	0.7	0.7	0.3	0.3	0.8	1.4	−0.3	−0.8	0.8	0.8	0.5	0.5	0.5	0.4	0.3
	Variazione percentuale m.a. / *Percent changes*															
	85/84	86/85	87/86	88/87	89/88	90/89 (1)	91/90	92/91	93/92	94/93	95/94	96/95	97/96	98/97	00/98	05/00
SOLID FUELS	7.8	−1.2	1.2	−2.3	1.8	0.8	−4.0	−6.4	−7.8	−1.5	−1.0	0.4	0.3	0.3	0.2	0.1
NATURAL GAS	4.3	1.4	6.5	−2.0	5.5	3.6	7.7	−0.8	6.8	3.7	3.9	4.1	4.1	4.2	3.8	1.9
OIL	−1.9	3.7	−0.1	1.4	0.6	1.4	2.2	1.6	0.1	0.2	1.8	0.7	0.7	0.5	0.7	0.3
HYDRO-GEO ELECTRICITY (2)	−1.6	−4.9	9.2	7.7	−12.5	3.2	0.1	3.5	4.2	3.5	2.9	2.2	1.5	1.8	1.2	1.0
NUCLEAR ELECTRICITY	20.0	8.4	2.3	6.9	5.9	0.7	3.6	1.9	4.3	1.2	0.0	0.4	0.6	1.1	0.6	−0.4
TOTAL	3.1	2.0	2.1	1.1	1.1	1.7	1.6	−0.4	0.3	0.8	1.4	1.3	1.3	1.4	1.3	0.6
INDUSTRIAL PRODUCTION (6)	3.2	2.2	2.0	4.3	3.6	1.9	−0.9	−0.5	−2.2	1.7	3.3	3.1	2.6	2.7	2.6	1.7
GDP (7)	2.6	2.9	2.6	4.0	3.3	3.0	1.1	1.3	−0.4	1.5	2.5	2.7	2.6	3.0	3.0	2.3

Note: (*) Valutazioni preliminari. */Estimates.*
(1) Dal 1990 nuova serie con la Germania unificata. */Since 1990 including Unified Germany.*
(2) Include le importazioni nette di elettricità. */ Includes electricity net imports.*
(3) Consuntivi tratti da: Nucleonics Week; (nel 1990 sono state chiuse le 5 centrali della ex Germania est); previsioni: Nukem e CEE per il decommissioning. */Actual data: Nucleonics Week; (In 1990 5 East Germany nuclear power plants were closed); forecast: Nukem and EEC for decommissioning.*
(4) tep *1000 $ di PIL a prezzi e cambi costanti 1985. */toe*1000 GDP in 1985 US $.*
(5) Rapporto tra i tassi di variazione della domanda di energia e del PIL. */ Ratio between percent changes.*
(6) Consuntivi tratti da: WEFA – World Economic Outlook. */ Actual data: WEFA – World Economic Outlook.*
(7) Consuntivi tratti da: OECD Main Economic Indicators. */ Actual data: OECD Main Economic Indicators.*

Fonte: OECD – Annual Energy Balances; Petrolio: BP – Statistical Review; per il 1993 OECD – Quarterly Energy Balances e letteratura specializzata; Previsioni: ENI – Stuen. */ OECD – Annual Energy Balances; Oil: BP Statistical Review; 1993 OECD – Quarterly Energy Balances; Forecast: ENI – Stuen*

DOMANDA MONDIALE DI PETROLIO E SUA COPERTURA
(Milioni di barili giorno)
OIL SUPPLY AND DEMAND
(Millions barrels per day)

	CONSUNTIVI / ACTUAL					PREVISIONI / FORECAST								
	Domanda di petrolio / Oil demand													
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	2000	200
OECD	36.3	37.5	37.8	37.9	38.3	38.9	39.1	39.6	40.0	40.5	41.0	41.5	42.0	42
– North America	18.5	19.2	19.3	18.9	18.6	18.9	19.2	19.6	19.7	20.0	20.3	20.6	20.9	21
– Western Europe (1)	12.6	12.8	12.8	13.0	13.4	13.6	13.7	13.7	13.9	14.0	14.1	14.2	14.3	14
– Pacific	5.2	5.5	5.8	6.0	6.2	6.3	6.3	6.3	6.4	6.5	6.6	6.7	6.8	6
NON OECD	26.7	27.4	28.1	28.4	28.5	28.2	28.0	28.4	28.9	30.0	31.2	32.3	35.0	40
– Developing Countries (2)	13.7	14.4	15.0	16.0	16.3	17.4	18.3	19.1	19.9	20.8	21.6	22.2	24.1	27
– Former USSR	9.0	8.9	8.8	8.4	8.3	6.9	5.6	5.0	4.6	4.5	4.7	4.9	5.4	6
– China	2.2	2.2	2.4	2.4	2.5	2.7	3.0	3.1	3.2	3.4	3.6	3.8	4.0	4
– Eastern Europe (1)	1.8	1.9	1.9	1.6	1.4	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1
TOTAL DEMAND (3)	63.0	64.9	66.0	66.3	66.8	67.1	67.2	68.0	68.9	70.5	72.2	73.8	77.0	83
	Produzione di petrolio / Oil supply													
OECD (4)	16.8	16.7	15.9	15.9	16.3	16.6	16.8	17.2	17.4	17.5	17.5	17.5	17.4	1
– United States	10.0	9.8	9.2	9.0	9.2	9.0	8.8	8.7	8.6	8.5	8.3	8.1	7.9	
– North Sea	3.8	3.7	3.7	3.8	3.9	4.2	4.6	5.1	5.3	5.4	5.4	5.4	5.5	
NON OECD (4)	24.7	24.9	24.9	24.5	23.8	22.6	22.3	21.9	21.8	22.2	22.8	23.5	24.2	2
– Developing Countries (2)	9.0	9.3	9.7	10.0	10.3	10.5	11.3	11.7	11.8	12.0	12.1	12.2	12.4	1
– Former USSR	12.6	12.5	12.2	11.5	10.4	9.0	7.8	7.0	6.7	6.9	7.3	7.8	8.3	
– China	2.7	2.7	2.8	2.8	2.8	2.8	2.9	2.9	3.0	3.0	3.1	3.2	3.2	
– Eastern Europe (1)	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
OPEC of which:	19.6	21.7	23.7	25.1	25.4	26.5	26.9	27.5	28.2	29.3	30.3	31.1	33.8	3
– OPEC (crude)	17.7	19.8	21.7	23.1	23.3	24.4	24.7	25.2	25.9	26.9	27.9	28.7	31.3	3
– OPEC (NGL's)	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.4	2.4	2.5	
TOTAL	61.1	63.3	64.6	65.5	65.5	65.7	66.0	66.6	67.4	69.0	70.6	72.1	75.4	8
PROCESSING GAINS	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	
TOTAL SUPPLY	62.3	64.6	65.9	66.9	66.9	67.2	67.4	68.1	68.9	70.5	72.2	73.7	77.0	
(Supply–Consumption) (5)	–0.7	–0.3	–0.1	0.7	0.1	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	

Note: (1) La Germania Est è inclusa nell'Europa Occidentale. / *East Germany is included in Western Europe.*
(2) Comprendono: America Latina (dal 1993 l'Equador), Asia, Medio Oriente, Africa. / *Include: Latin America, (since 1993 Ecuador), Asia, Middle East, Africa.*
(3) Compresi i bunkeraggi internazionali, consumi di raffineria ed oli non convenzionali. / *Includes delivenes from refineries primary stocks, international marine bunkers, refinery fuels and non conventional oils.*
(4) Inclusi NGL's. / *Includes NGL's*
(5) Include: variazioni di stocks, (–) riduzione (+) costituzione; variazioni di riserve in mare e fuori dai territori OCSE, differenze statistiche. / *Includes: changes in non–reported stocks on land inside and outside the OECD and non OECD areas; changes in oil at sea;statistical reporting and estimation errors.*

Fonte: Consuntivi: IEA – Oil Market Report, Maggio 1994; previsioni ENI–Stuen. / *Actual data – IEA Oil Market Report, May 1994; Forecast – ENI–Stuen.*

June 1, 1994

PRODUZIONE E CONSUMO DI ENERGIA NELL'EUROPA DELL'EST
(Milioni di tep)
ENERGY PRODUCTION AND CONSUMPTION IN EASTERN EUROPE
(Million toe)

	1988					1992				
	Coal	Oil	Gas	Primary Electr.(1)	Total	Coal	Oil	Gas	Primary Electr.(1)	Total
					PRODUZIONE /PRODUCTION					
BULGARIA	12,0	..	..	4,0	16,0	4,8	0,0	0,0	2,0	6,8
CZECHOSLOVAKIA	43,0	..	..	8,7	51,7	30,7	0,1	0,3	5,9	36,9
POLAND	121,0	..	3,4	0,5	124,9	88,2	0,2	2,4	0,2	91,0
ROMANIA	16,0	10,0	26,0	..	52,0	7,3	6,4	17,1	3,0	33,8
HUNGARY	8,0	2,7	5,0	4,8	20,5	3,7	2,4	3,8	3,0	12,9
TOTAL	200,0	12,7	34,4	18,0	265,1	134,6	9,1	23,5	14,1	181,3
EAST GERMANY	72	–	3	6	81	–	–	–	–	–
FORMER USSR	312	627	623	102	1664	258	450	631	94	1432
TOT EASTERN EUROPE (*)	584,0	639,7	660,4	126,0	2010,1					
TOTAL (**)	512,0	639,7	657,4	120,0	1929,1	393,0	458,8	654,1	107,7	1613,6
					CONSUMO /CONSUMPTION					
BULGARIA	16,0	15,0	4,9	0,4	36,3	6,6	3,7	3,5	2,5	16,3
CZECHOSLOVAKIA	43,0	15,6	8,7	7,5	74,8	30,9	9,4	9,2	6,5	56,0
POLAND	99,0	16,0	8,7	0,5	124,2	72,9	11,1	8,6	0,7	93,3
ROMANIA	21,0	15,0	29,6	4,6	70,2	10,4	12,0	20,4	4,8	47,6
HUNGARY	8,0	9,0	9,2	5,5	31,7	6,2	7,5	8,2	4,8	26,7
TOTAL	187,0	70,6	61,1	18,5	337,2	127,0	43,6	49,8	19,3	239,8
EAST GERMANY	72,0	13,0	8,7	6,0	99,7	–	–	–	–	–
FORMER USSR	312	464	540	103	1419	250,7	330,6	556,2	88,7	1226,2
TOT EASTERN EUROPE (*)	571,0	547,6	609,8	127,5	1855,9					
TOTAL (**)	499,0	534,6	601,1	121,5	1756,2	377,8	374,2	606,0	108,0	1466,0
					ESPORTAZIONI NETTE / NET EXPORTS					
				(2)					(2)	
BULGARIA	−4,0	−15,0	−4,9	3,6	−20,3	−1,8	−3,4	−3,5	−0,5	−9,2
CZECHOSLOVAKIA	0,0	−15,6	−8,7	1,2	−23,1	−0,0	−9,1	−11,0	−0,7	−20,8
POLAND	22,0	−16,0	−5,3	0,0	0,7	15,3	−11,8	−6,5	−0,4	−3,5
ROMANIA	−5,0	−5,0	−3,6	−4,6	−18,2	−3,3	−5,5	−3,4	−1,8	−13,9
HUNGARY	0,0	−6,3	−4,2	−0,7	−11,2	−2,1	−5,6	−4,5	−1,8	−13,9
TOTAL	13,0	−57,9	−26,7	−0,5	−72,1	8,0	−35,5	−28,9	−5,2	−61,5
EAST GERMANY	0,0	−13,0	−5,7	0,0	−18,7	–	–	–	–	–
FORMER USSR	0,0	163,0	83,0	−1,0	245,0	8,4	123,7	67,2	4,8	204,
TOT EASTERN EUROPE (*)	13,0	92,1	50,6	−1,5	154,2					
TOTAL (**)	13,0	105,1	56,3	−1,5	172,9	15,3	84,6	48,1	−0,4	147,

Note: (1) Comprende energia idrogeo e nucleoelettrica; nei consumi sono incluse le importazioni nette di elettricità. / Includes hydro/geo and nuclear electricity; consumption includes electricity net imports.
(2) Esportazioni nette di elettricità. / Electricity net exports.

(*) Including East Germany
(**) Excluding East Germany

Fonte: Stime ENI–Sluecen su dati OECD–Annual Energy Balances, PlanEcon e letteratura specializzata./ ENI–Sluecen estimates on OECD Annual Energy Balances and PlanEcon

PRODUZIONE E CONSUMO DI ENERGIA NELL'EUROPA DELL'EST
(Milioni di tep)
ENERGY PRODUCTION AND CONSUMPTION IN EASTERN EUROPE
(Million toe)

	1992					1993				
	Coal	Oil	Gas	Primary Electr.(1)	**Total**	Coal	Oil	Gas	Primary Electr.(1)	**Total**
					PRODUZIONE PRODUCTION					
BULGARIA	5.0	0.1	0.0	3.4	**8,5**	4.9	0.1	0.0	3.7	**8,7**
CZECHOSLOVAKIA	31.5	0.1	0.3	6.1	**38,0**	29.6	0.1	0.2	6.2	**36,1**
POLAND	85.0	0.2	2.5	0.8	**88,5**	81.4	0.2	3.1	0.8	**85,5**
ROMANIA	7.9	6.4	19.5	2.9	**36,7**	8.7	6.5	19.0	3.0	**37,2**
HUNGARY	3.8	2.1	3.8	3.1	**12,8**	3.1	2.0	4.1	3.2	**12,4**
TOTAL	133.2	8.9	26.1	16.3	**184,5**	127.7	8.9	26.4	16.9	**179,9**
EAST GERMANY	–	–	–	–	–	–	–	–	–	–
FORMER USSR	258.6	450,4	629.3	104.2	**1442,5**	229.6	387.3	592.9	104.2	**1314,4**
TOT EASTERN EUROPE (*)										
TOTAL (**)	391,8	459,3	655,4	120,5	**1627,0**	357,3	396,7	619,2	121,1	**1494,3**
					CONSUMO CONSUMPTION					
BULGARIA	7.3	3.0	4.4	3.7	**18,4**	7.1	3.4	4.0	3.7	**18,2**
CZECHOSLOVAKIA	30.3	10.2	10.0	6.0	**56,5**	28.8	10.3	11.6	6.1	**56,8**
POLAND	71.5	13.7	7.5	0.1	**92,8**	66.5	13.7	7.6	0.1	**87,9**
ROMANIA	11.5	13.0	24.4	3.9	**52,8**	11.8	11.1	25.5	4.1	**52,5**
HUNGARY	5.2	6.6	7.8	3.7	**23,3**	4.6	5.7	9.3	3.6	**23,2**
TOTAL	125.8	46.5	54.1	17.4	**243,8**	118.8	44.2	58.0	17.6	**238,6**
EAST GERMANY	–	–	–	–	–	–	–	–	–	–
FORMER USSR	249.5	343.3	549.5	102.5	**1244,8**	215.8	279.8	513.2	100.7	**1109,5**
TOT EASTERN EUROPE (*)										
TOTAL (**)	375.3	369.8	603.6	119.9	**1488.6**	334.6	324.0	571.2	118.3	**1348.1**
					ESPORTAZIONI NETTE NET EXPORTS					
BULGARIA	+2.3	−2.9	−4.4	−0.3 (2)	**−9,9**	−2.2	−3.3	−4.0	0.0 (2)	**−9,5**
CZECHOSLOVAKIA	1.2	−10.1	−9.7	0.1	**−18,5**	0.8	−10.2	−11.4	0.1	**−20,7**
POLAND	13.5	−13.5	−5.0	0.7	**−4,3**	14.9	−13.5	−4.5	0.7	**−2,4**
ROMANIA	−3.6	−6.6	−4.9	−1.0	**−16,1**	−3.1	−4.6	−6.5	−1.1	**−15,3**
HUNGARY	−1.4	−4.5	−4.0	−0.6	**−10,5**	−1.5	−3.7	−5.2	−0.4	**−10,8**
TOTAL	7.4	−37.6	−28.0	−1.1	**−59,3**	8.9	−35.3	−31.6	−0.7	**−58,7**
EAST GERMANY	–	–	–	–	–	–	–	–	–	–
FORMER USSR	9.1	107.1	79.8	1.7	**197,7**	13.8	108,0	79.5	3.5	**204,9**
TOT EASTERN EUROPE (*)										
TOTAL (**)	16.5	69.5	51.3	0.6	**138,4**	22.7	72.7	48.0	2.8	**146,2**

Note: (1) Comprende energia idrogeo e nucleoelettrica; nei consumi sono incluse le importazioni nette di elettricità. / Includes hydrogeo and nuclear electricity; consumption includes electricity net imports.
(2) Esportazioni nette di elettricità. / Electricity net exports.

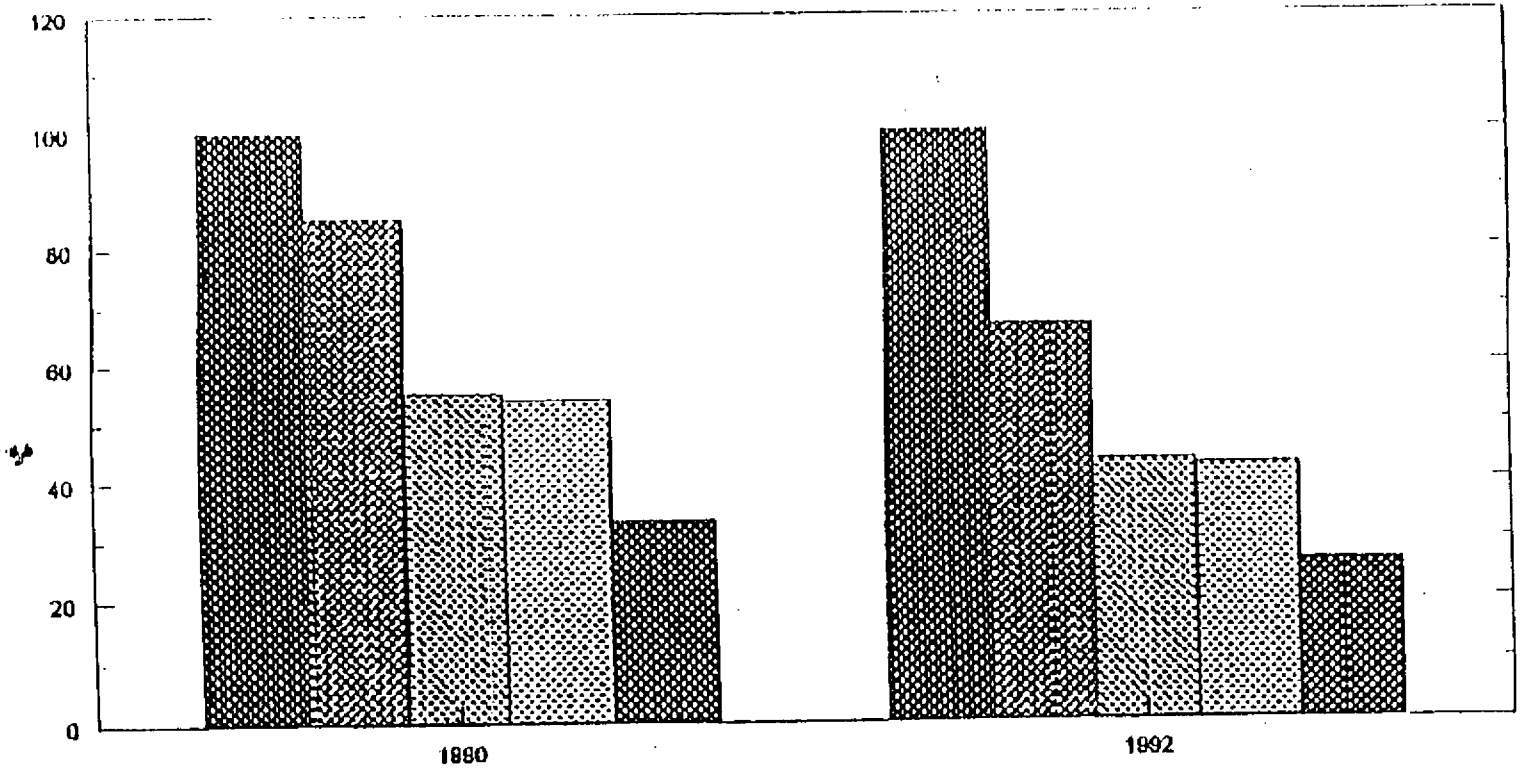
(*) Including East Germany
(**) Excluding East Germany

Fonte: Stime ENI – Stucen su dati OECD – Annual Energy Balances. PlanÉcon e letteratura specializzata./ ENI – Stucen estimates on OECD – Annual Energy Balances and PlanÉcon.

LL.25 maggio 1994

Energy Intensity Index, 1990 - 1992 (*)

(Former Ussr = 100)

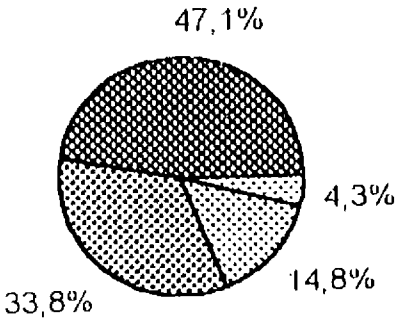


(*) toe* 1000 $ of Gdp (1985 $)

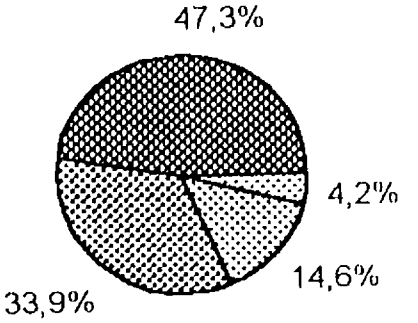
CONSUMI FINALI DI ENERGIA NELL'EUROPA DELL'EST E DELL'OVEST

(Composizione percentuale)

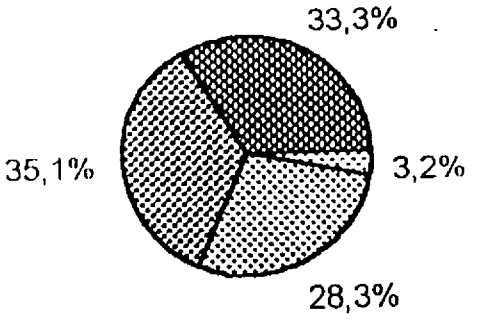
(1990)



Ex URSS (945 Mtep)



Europa Centro/Orient. (219 Mtep)



Europa Occidentale (963 Mtep)

INDUSTRIA | RESIDENZ.LE/TERZ. | TRASPORTI | USI NON ENERG.

ota: (1) Compresa l'agricoltura

onte: IEA, world Energy Statistics and Balances

)ECD, Paris; IEA, Energy Balances of OECD Coun