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EUROPEAN UNION'S ENERGY POLICY AND TURKEY

DOKTORA TEZİ

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İSTANBUL, 2004

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ALTENER	:	Programme for the Promotion of AlternativeRenewable Energy Sources
APS	:	Automatic Price System
Bcm	:	Billion Cubic Metres
Bcma	:	Billion Cubic Meters per Annual
BO	:	Build-Own-Operate
BOT	:	Build-Operate-Transfer
BAT	:	Best Available Techniques
Bbl	:	Barrel
Bn	:	Billion (1,000 Million)
CARNOT		French Scientist 'Carnot' – Hence the Name of this Energy Programme. Promotion the Use of Clean and Efficient Solid Fuel Technologies
CEEC	:	Central and Eastern European Countries
CEN	:	European Committee for Standardisation
CENELEC	:	European Committee for Electro technical Standardisation
CERT	:	Energy, Research and Technology Committee of the EP
CHP	:	Combined Heat and Power
CIS	:	Common Wealth of Independent States
CO	:	Carbon Monoxide
CO2	:	Carbon Dioxide
COJ	:	Court of Justice
GDP	:	Gross Domestic Product/Capita
CORDIS	:	Community Research and Development Information Service
CTP	:	Common Transport Policy
DG	:	Directorate-General of the European Commission
DGI	:	DG for External Relations
DGIII	:	DG for Industry
DGIV	:	DG for Competition
DGVII	:	DG for Transport
DGXI	:	DG for Environment, Nuclear Safety and Civil Protection
DGXII	:	DG for Science, Research and Development
DGXV	:	DG for Internal Market and Financial Services
DGXVI	:	DG for Regional Policies
DGXVII	:	DG for Energy
DGXXI	:	DG For Customs and Indirect Taxation
EBRD	:	European Bank for Reconstruction and Development
EC	:	European Community
ECCB	:	Energy Conservation Coordination Board
ECSC	:	European Coal and Steel Community
EEA	:	European Economic Area
EEC	:	European Economic Community
EFTA	:	European Free Trade Association
EIB	:	European Investment Bank
EME	:	Emerging Market Economies
EP	:	European Parliament
ESC	:	Economic and Social Committee

EU	:	The European Union
EURATOM	:	European Atomic Energy Community
EUROSTAT	:	Publications of SOEC
ETAP	:	Energy Forecasts and Energy System Dynamics
FP	:	Framework Programme
FSU	:	Former Soviet Union
g	:	Gram
G-7	:	Group of Seven Industrialised Nations
G-24	:	Group of 24 Industrialised Nations
GATT	:	General Agreement on Tariffs and Trade
GDP	:	Gross Domestic Product
GNP	:	Gross National Product
GJ	:	Gigajoule
GW	:	Gigawatt, or One Watt X 109
Gwh	:	Gigawatt-Hour
h	:	Hour
HC	:	Hydrocarbons
IAEA	:	International Atomic Energy Agency
IEA	:	International Energy Agency
IEM	:	Internal Energy Market
IPCC	:	Intergovernmental Panel on Climate Change
IPPC	:	Integrated Pollution Prevention and Control
JNRC	:	Joint Nuclear Research Council
JRC	:	Joint Research Council
Ktoe	:	Thousand Tons of Oil Equivalents
Koe	:	Kilogram Oil Equivalent
Kton	:	Thousand Tons
KWh	:	Kilowatt-Hour
Kg	:	Kilogram
km	:	Kilometer
KW	:	Kilowatt
LNG	:	Liquefied Natural Gas
LPG	:	Liquefied Petroleum Gas
LCPD	:	Large Combustion Plant Directive
M	:	Million
MAED	:	Model for Analysis of Energy Demand
Mb/d	:	Million Barrel/Day
Mcm	:	Million Cubic Meters
MENR	:	Ministry of Energy and Natural Resources
MEP	:	Member of the European Parliament
mg	:	Milligram
MOU		Memorandum of Understanding
mtce	:	Million Tones of Coal Equivalent
mtoe	:	Million Tones of Oil Equivalent
MW	:	Megawatt of Electricity, or One Watt X 106
NECC	:	National Energy Conservation Center
NIS	:	Newly Independent States

NOx	:	Nitrogen Oxides
NORDEL	:	Network Which Covers Scandinavia
OECD	:	Organization for Economic Co-Operation and Development
OPEC	:	Organization of Petroleum Exporting Countries
OPET	:	Organization for the Promotion of Energy Technology
PACE	:	Action Programme on Electricity Efficiency
PCA	:	Partnership and Cooperation Agreement
PHARE	:	Programme of Technical Assistance for Central and Eastern Europe
PINC	:	Illustrative Nuclear Programme for the Community
PFD	:	Planning and Financing Department
R&D	:	Research and Development
RD&D	:	Research, Development and Demonstration
RECHAR	:	Community Initiative in Support of Badly-Hit Coal Mining Areas
REGEN	:	Community Initiative in Support of Certain Gas and Electricity Projects
RPC	:	Research Planning and Coordination Board
SAV	:	Specific Actions for Vigorous Energy Efficiency
SCP	:	Small Combustion Plant
SEA	:	Single European Act
SEE	:	State Economic Enterprises
SIS	:	State Institute of Statistics
SME	:	Small and Medium-Sized Enterprise
SPO	:	State Planning Organization
SO2	:	Sulphur Dioxide
SOEC	:	Statistical Office of the European Communities
SURE	:	Safeguards and Industrial Cooperation
TW	:	Terawatt, or One Watt X L09
TWh	:	Terawatt-Hour
t	:	Tones
TACIS	:	Programme of Technical Assistance for the CIS
TENS	:	Trans-European Networks
TFC	:	Total Final Consumption
THERMIE	:	Programme for the Promotion of Energy Technology
Tce	:	Tonne of Coal Equivalent
Toe	:	Tonne of Oil Equivalent
TOOR	:	Transfer of Operating Rights
TPA	:	Third Party Access
TPES	:	Total Primary Energy Supply
TPF	:	Third Party Financing
UN	:	United Nations
UNCED	:	UN Conference on Environment and Development
UCPTE	:	Connection of the Mediterranean Countries to the Network
VOC	:	Volatile Organic Compound
yr	:	Year
WASP	:	Wien Automatic System Planning Package
WETO	:	World Energy, Technology and Climate Policy Outlook

GENERAL KNOWLEDGE

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ABSTRACT

EU ENERGY POLICY AND TURKEY

EU energy policy progress clashes between the state and the free market, national interest and Pan- European consolidation. We try to show how such national and supranational interest in energy policy has helped or prevent the moves toward common energy policy. In this framework, we want to settle EU energy policy making tools which are competition, security of supply, compliance of market and social side are neither a linear and cumulative process. Energy policy is determined by an early tendency for convergence among national policy making processes as a result of state-society interaction. We try to show policy progress in the gas sector with pillars of energy and the effect of this process to Turkish energy policy as an applicant state. We want to describe the role, structure and procedures of market regulators, industry, consumers in energy sector, and their relationship to government and to competition authorities to determine the design issues that need to be addressed in establishing new market bodies especially in gas market that its importance seems to increase. We can say briefly that the European Union's policy-making process in the area of energy within a critical structure that attempts at excels the difficulties for market liberalisation faced in either state-centric or market-centric approaches to European integration.

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ÖZET

AB'NIN ENERJİ POLİTİKASI VE TÜRKİYE

Enerji politikası gelişimi, devlet ile serbest pazarın, ulusal çıkarlarla AB nın ulusüstü bütünleşme hedeflerinin çatışmasını yansıtır. Bu çalışmada, ulusal ve ulusüstü çıkarların ortak bir enerji politikası oluşumuna yarar ve zararını göstermeye çalıştık. Bu çerçevede AB enerji politikasını oluşturan araçların rekabet, arz güvenliği, pazar oluşumu, ve sosyal politikalardan oluştuğu ve bu araçların gelişiminin ne tek ne de çok yönlü oluşan bir süreç olduğu ve enerji politikalarının belirlenmesinde eski eğilimlerin devlet- toplum ilişkisinde daha çok belirleyici olduğu anlaşılmıştır. Daha sonra gaz sektorünü enerji politikasının ana hatları ile inceleyerek bu sürecin Türk enerji politikası oluşumuna AB adayı olarak etkileri belirlenmiştir. Bu çalışmada enerji sektöründeki pazar düzenleyicilerinin, sanayinin, tüketicinin rolu, yapısı, proğramları ve bunların hükümet ve rekabet kurumları ile olan ilişkileri, yeni pazar serbestleşmeleri ile özellikle önemi artan gaz sektöründe yapılanmasındaki rolu anlatılmıştır. Sonuç olarak, AB' nın enerji alnında politika oluşturma amacının, hassas yapıya sahip AB entegrasyon sürecinde karşılaşılan devlet veya pazar ağırlıklı yaklaşımların oluşturduğu zorlukları ortadan kaldırmak olduğu gösterilmiştir.

1. INTRODUCTION

The energy is needed effectively with increasing of globalization and interlinked world economy. To encourage and sustain this growth energy policy is significant. Energy is at the core of economic and social activity. The situation governing supply, transport, distribution, and consumption of energy therefore affect all individuals and economic operators Energy costs impact not only industries with large energy consumption but also industry as a whole and even the cost of living of citizens, especially, the impact of energy prices on transport cost and heating. Energy also establishes one of the motivations of economic development for countries developed, in transition or in course of industrialization and hence helps their political solidity.

Therefore, this thesis examines the European Union's policy-making process in the area of energy within an analytical framework that attempts at transcending the difficulties encountered in either state-centric or society-centric approaches to European integration. From the energy point of view The Union's policy-making process in the area of energy will tend to be 'integrative' and the policy stance will tend to be less exclusionist as the indices of transparency/divisibility and centrifugal society tendencies increase. Battle grounds between the state and the free market, national interest and Pan- European consolidation. We try to show how such national interest in energy has helped or prevent moves toward common energy policy. In this framework, EU energy policy-making is neither a linear and cumulative process determined by the exigencies of 'spill-over' neither logic nor an erratic series of intergovernmental compromises: it is determined by an early tendency for convergence among national policy-making processes as a result of state-society interaction. And the effect of this process to Turkish energy policy as an applicant state to EU will is discussed. We want to determine, what are the roles of governments, industry, regulators, traders, financial institutions, consumers in an EU energy policy? What national objectives should be set for security of supply by EU member countries? What supra-national objectives should be aimed at? What monitoring mechanism (if any) and eventually what instrument to overcome any shortfall. Are the securities of gas supply, environment, and competition, a national, regional or global issue? We want to also determine the approaches to institutional reform taken by EU countries. We want to describe the role, structure and procedures of market regulators, their relationship to government and to competition authorities. We will determine the design issues that need to be addressed in establishing new market bodies.

As a research method in the first place we have researched literature. We detailed investigate all university libraries. We researched articles books, publications, newspapers, journals etc. At the end of the literature investigation we have not satisfied with the result. Because in the literature the subject has not take adequate place as when we compared with its importance. In spite of this fact that there were same important sources which have taken place in the chapter of European Economics books which describe detailed about EU energy policy. Most important were Molle, Hitiris, McGowan.These chapters have given important vision for establisling theory of my research.

At the second phase of the literature investigation. We have researched foundations, intuitions, organizations which are both official and private. We investigate MENR, RPCB/PFD, TEAŞ, TEDAŞ, BOTAŞ, PİGM, EİGM, DSİ, TEK, İGDAŞ, TPAO, TUPRAŞ, Shell, Mobil, BP, Turk Petrol, TTK, TKI, and TAEK. We discussed, negotiated and learned their evaluation about energy policy. We have confused a little bit. Because according to our evaluation, there have not been any coordination, and solidarity. Between these organizations, there were lack of information about their vision, projects, investment, plans.Their opinion about energy policy were opposite with each others. For example according to DPT Turkey has not need any investment because when continues investment finished, Turkish energy balance would be in balance there would be no extra demand. But despite these opinions, MENR opinion was, Turkey must invest new natural gas projects to satisfied demand. If not Turkey can face dark days. At the same time another problems which we faced that, The White energy probe and other investigation for energy unlawfulness. New address of same energy bureaucracy was prisons and courts. This atmosphere causes difficulty to reach data.

Another point which we fallowed as a method is we joined national and international panels, congress, seminars, and fuars. We benefit from especially Energy Forums. We have got detailed information and clear visions from these activities.

Lack of literature show us reverse correlation with the importance of subject. When we look at the from the point of EU The literature were mostly belong to effect of collapse of Iron Curtain and Eastern European relations via energy security. Most of the literature was belong to mostly national energy policies of EU and as a sector natural gas. They were mostly separated, sectorel not from common point of view. Turkish literature also shows correlation with EU we see

energy policy as a something in the international relations. Statistical information in Turkey and EU literature was abundant. Most beneficiary data we reached.

Another point in the methodology was internet. We get detailed information by via internet. Energy policy was discussed upon time of crises, wars, from the point of security. Chernobyl Nuclear accidents caused to direct attention on environmental issues. This also weak point of EU energy policy because all methodological investigation showed us that EU has not completed Common energy policy, because of clashes between national and common policies.

After methodology complited, we want to investigate affect of energy market reforms to community integration and changes on people's life. So Turkey also how will be affectted from this progress.

The primary purpose of the first chapter is to examine the relationship between world energy and EU, which are analysed with official statistical datas to indicate Picture, which will help to us estimate regional as well as global vision of EU energy policies.

Chapter two identifies exchange from historical background to forming internal market and common energy policy. A further issue has been analysed which refers to the pillars and theoritical aspect of energy policy. The theory formed from the selected literature. We mainly dissussed in this chapter TEN, security of supply, completing internal market, competition policy, and environment and other opinions which included in the pillars of energy policy. That are social objectivies and R&D.There are no clear idea for fourth pillar of energy.

Chapter three examines the implications of gas sector to the completing internal market. Our study indicate that completing of gas sector to internal market have a positive effect to form and regulate market. In the chapter three, we reach a point that the effect of market reforms differs amoung the others. Conclusion can be drawn from that regulation is the most vital instrument to completing market.

Chapter four looks at the effect of gas sector in the competition policy. In the chapter four, we have invisgated the possible existence of relationship between competition and liberalization. We also have investigated the implications of barriers which had negative effect in market such as, vertical restrains, long term contracts etc, Tolls for achieving full market opening in terms of

gas market, like, access systems, unbundling, and methods which aims search the tools to reduce drawbacks of competition on society like horizontal and vertical agreement, employment and structural policies. In addition to another important point can be drowning from chapter four is effect of vertical restrains on the market policies.

Objective of the chapter five is to examine security of gas sector and determine the impact of various relevant policies in the EU gas market. It scrutinizes the security options, which are long term, short term, and another issues have been analyzed. Which refers to the impact of enlarging EU to security of supply? The chapter also looks at the effects of organizations, partnership, external dependence, EU solutions to these problems, and future prospects of EU gas security and possible risks have discussed.

Finally last chapter has been analyzed which refers to Turkish energy policy. With integration progression, liberalization process started which meant a new direction for statistic. Turkish economy. We want to show the effect of this process on the Turkish energy policy. To overcome the restrictions on energy policy, many policies and regulatory changes have been implemented. Government interventions reduced and price controls have been removed. And we investigate that this process has not been fully completed for the ultimate goal of membership. In The chapter we discussed market regulation process, liberalisation, and Community acquits to show effect of integration on Turkish energy policy.

2. WORLD ENERGY AND EU

Worldwide energy supply will raise 1.6% annually. Complete renewable energy supplies, both commercial and noncommercial, are predicted to grow 2.0%/yr. Solid fuels require will raise 1.5%/yr in the developing world. Nuclear energy has the least growth potential at 0.5%/yr. Nuclear energy industry has matured and is declining.

Natural gas is the fastest growing fuel and is growing its piece of the world-energy market. Demand for natural gas is predicted to grow as much as 2.7%/yr. Contrary, oil is hoped for to raise 0.5%/yr. While it hold the serious part of the worldwide energy market, its part will be dropping from 37% to about 30% by 2020.

Global shifts in product areas are hoped to change. By 2020, Western Europe and the U.S. will be manufacturing under current levels. In the fallowing millennium, the former Soviet Union will show improvement to meet larger domestic demand. Production raises are forecasted for Africa, Asia (chiefly China) and Latin America. By 2020, the Middle East will continue its control compared to the certain oil-producing area.[1]

2.1. World Energy Consumption

In 2030, fossil fuels coal, lignite, oil and natural gas are planned to represent 88% of world energy consumption. This proportion is greater than the 81% portion observed in 2000. Notwithstanding a rapid growth of coal and gas utilization, oil still represents the largest portion (34%) of the world gross inland consumption (GIC) in 2030.

Coal demand is also designed to grow rapidly over the next thirty years. Between 1990 and 2000 the growth of coal consumption was 0.9%/year but after 2000 it goes up to 2.1%/year until 2010 and then to 2.5%/year until 2030 as it becomes more competitive than other fuels.[2] EU with a regular raise achieves the highest progression among industrialized area. Coal will live

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[1] Wendy Weirauch (Edit), **Hydrocarbon Processing,** Volume 75, Issue 11, November 1996, p. 25, http://www.sceta.com/articles/oil_&_it.htm (Download: 21. 01. 2004)

[2] European Commission. **World energy, technology and climate policy outlook 2030**, Luxembourg, 2003, p. 24. www.world-nuclear.org/policy/weto_final_report.pdf (Download: 12. .3. 2004)

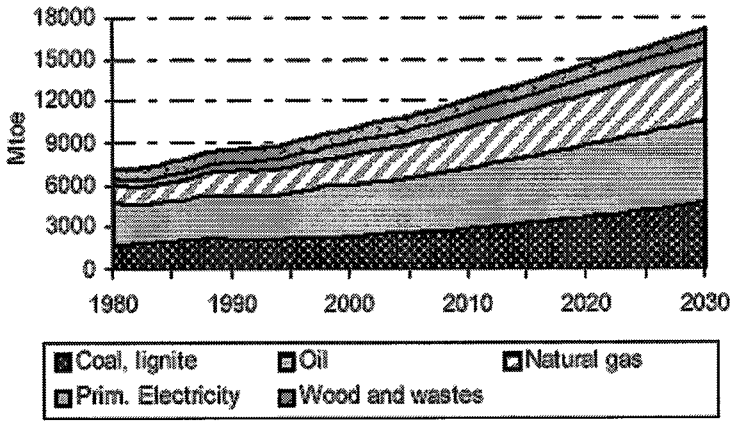
more consumption decline. Environmental drawback of solid fuels is shortly liable for their expected down. Solid fuel consumption may diminish one-third by 2020.[3]

Natural gas consumption is hoped for to show the huge volume raise. Demand will at least double, primarily for power generation. In contrast, use of oil will have limited raises since its growth is clearly connected the transportation sector. Natural gas demand rises by 3%/year on average between 2000 and 2010 and by2.1%/year afterwards. The part of natural gas in whole consumption extends to 25% in2030 from 21% in 2000.

Oil demand will focus in non exchangeable transport and non-energy uses. Extensive given demand barrel is hoped for to lessen, with growth in the center of the-barrel. Gasoline demand may raise in Southern Europe, but the tendency toward diesel-fueled passenger cars will limit its growth. Oil demand rises at a rate similar to the one monitored during the decade 1990-2000 (i.e. 1.6%/year) and demand reaches 5.9 Gtoe in 2030.[4]

The request of market reform to gas exporting countries is not yet clear. In particular, the development of spot and short-term negotiations and of gas-to-gas competition is sometimes seen by exporters to be a danger to their long-term agreement association with importing countries. Long-term contracts are examined devices to obtain the financing of large export projects. They should remain an option every participant.

Figure1: World Energy Consumption



[3] WETO - European Commission. **World energy, technology and climate policy outlook 2030**, Luxembourg, 2003 p. 25. www.world-nuclear.org/policy/weto_final_report.pdf (Download: 12. 3. 2004)

[4] Wendy Weirauch (Edit), **Hydrocarbon Processing,** Volume 75, Issue 11, November 1996 p. 27. http://www.seeta.com/articles/oil_&_it.htm (Download: 21. 01. 2004)

Source: World Energy, Technology and Climate Policy Outlook. 2030, Luxembourg, 2003 www.world-nuclear.org/policy/weto_final_report.pdf figure 2.7

Additional price sinking for long distance gas transported by pipeline or as LNG, must be obtained to permit entry to more distant wealth at situation interesting for consuming and producing countries. OECD member country cooperation in R&D in this area will be enjoyable.[5] This maturation marked the beginning of the new turn-around in West European policy to the utilization of its expanding gas reserves. [6]

As we have known, the gross inland consumption is the sum of the final energy demand and the energy demand for electricity production and other energy transformations. The final demand is modeled at the level of several sectors. In each sector, energy demand is driven by economic activity variable and price changes and tendency.

We can say that, Gross Domestic Product/capita (GDP/POP) and the energy intensity (GIC/GDP). Under this decomposition, the Gross Inland Consumption is described as: POP x GDP/POP x GIC/GDP In the WETO Reference, the gross consumption raises at 1.8%/year between 2000 and 2030, as population grows at a rate of 1%/year and the per capita GDP at 2.1%/year, while the energy intensity of GDP declines by 1.2%/year. The projections show that at the world level and in most area, the GDP/capita chiefly influences the energy consumption growth. Nevertheless, in Africa, Latin America and Asia, the demography represents an important factor of the energy demand growth.[7]

2. 1. 1. World Gas Reserves

According to the most new estimation of world natural gas reserves, some 164 Tm3 in 2001, instructs that natural gas is a rich energy source. Anyway, 70% of these reserves are placed in two world area: the CIS and the Middle East. Western Europe represents 5% of the world's examined gas reserves and North America 4%. Since petroleum is financially manageable there will be guzzlers. [8]

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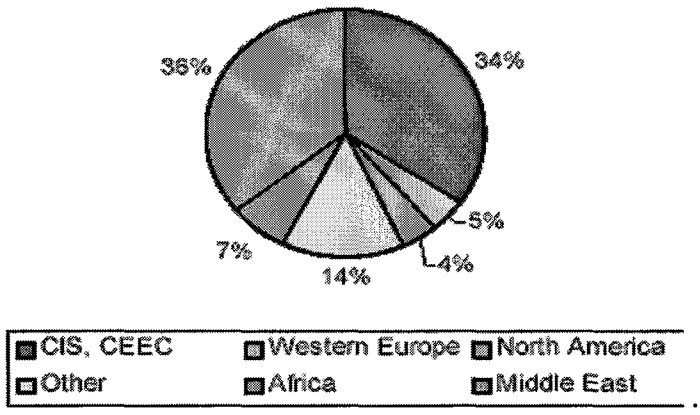
[5] International Energy Agency. **New Dimensions of Gas Security,** April, Paris, 2003, p. 21

[6] Steve Roth , *"Opening up the Energy Market and Securing Energy Supply in Europe"* **The Sanderstolen Conference,** Tisleidalen, 8 February 2002, pp. 1-3. http://www.hri.org/news/europe/midex/2002/02-02-08_midex.html (Download: 3. 2. 2004)

[7] IEA.**Key World Energy Statistics,** 2003 .http://library.iea.org/dbtwwpd/Textbase/nppdf/free/2003/key2003.pdf (Download: 14 .02. 2004)

[8] Roger Brownlie . *"It's a Gas, Gas, Gas"* **Design Engineering,** December 2000, p. 9.

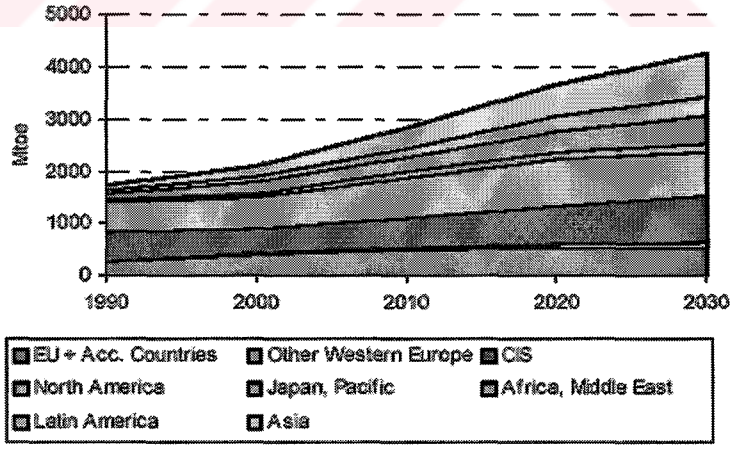
Figure 2: World Gas Reserves



Source: World Almanac & Book of Facts. **World Crude Oil and Natural Gas Reserves Jan. 1. 2000,** 2003, p. 161

In the end , rejecting the stuff as quickly as possible so that the world can get on with the future. So, while weight the efficiency drive European design criteria, US designs are still cost sensitive. A larger growth rate in gas consumption has occurred in Asia/Pacific and the Middle East. [9]

Figure 3: World Gas Demand



Source: http://europa.eu.int/comm/energy_transport/en/lpi_lv_en1stat.html (Download: 23. 02.2004)

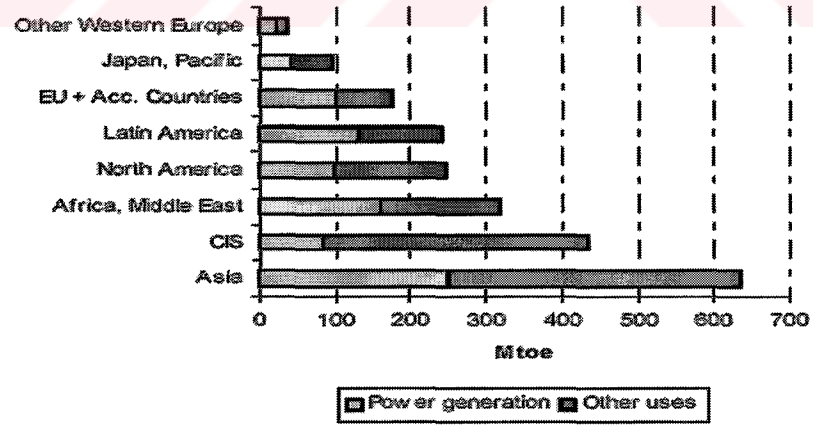
[9] See, Energy Information Administration U.S. Dept. of Energy. **Crude Oil and Natural Gas Liquides Reserves.** December. 2000, Oil and Gas Journal (OGJ), Dec 1999; World Oil (WO), Aug. 2000

2. 1. 2. World Gas Demand

The growth rate of EU is partly higher, namely 0.9%/year, when the Accession countries are included. Perhaps this rate will change, but this easy to understand that low growth, natural gas stays the second fastest growing chief source in the EU. The EU gas demand is estimated that to rise not quickly than the world average, at 0.8% per year over the outlook period[10], but also in image to the last ten years when it grew at an uncommon average annual rate of 4.9%. To compare, coal and oil fundamental demands are expected to rise singly by 0.5% and 0.2%/year. The EU is with North America the region where gas demand growth the least. The common rate of raise in North America is planned to be 1.2%/year for the next thirty years. EU with Accession countries causes to 7% of the raise in world gas demand over the outlook period.[11]

Thereafter the fastest growing component is wind energy but its portion in GIC remains small. Therefore tendency in natural gas demand, the portion of developing countries in the world gas demand raises to 40% in 2030 from around 25% in 2000. 1.7% per year on average between 2000 and 2010, and 0.4% .

Figure 4: Gas Consumption Increase from 2000 to 2030



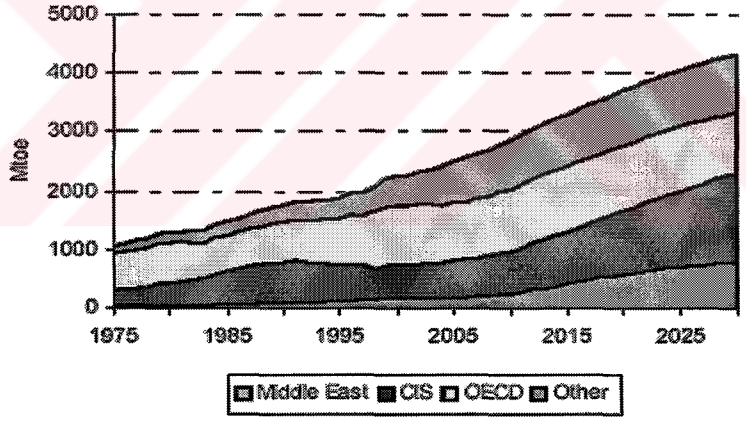
Source: WETO. **Gas consumption increase from 2000 to 2030**, 2001. p. 85

[10] WETO, p. 22.
[11] WETO , p. 23.

2. 1. 3 World Gas Supply

It is clear that the outlook for gas supply is not the same from oil in various respects. There are same reasons for think like that. First; the reserves are more greatly distributed among area for gas than for oil. However, as for oil, more than half of gas reserves are located in few countries, namely the CIS and the Gulf region. Second, gas reserves are hoped for to rise over the projection period (+9%) while oil reserves decline. Third, the recovery rate for gas is and will continue to be higher than for oil: it rises over the projection period from 80% in 2000 to around 94% in 2030. The rapid growth in natural gas reserves observed in the past is designed to continue for the current decade then, followed by a moderate way it continued constant fall. Some 100 Tm3 of extra production will be required to meet the cumulative demand from 2000 to 2030. Progress in drilling activity is reason to raise gas revelation around 1.4 % year over the period. This is equivalent to about two third of the investigated gas reserves at the end of 2000. [12]

Figure 5: World Gas Production



Source: WETO. **World Gas Production,** 2001, p. 44.

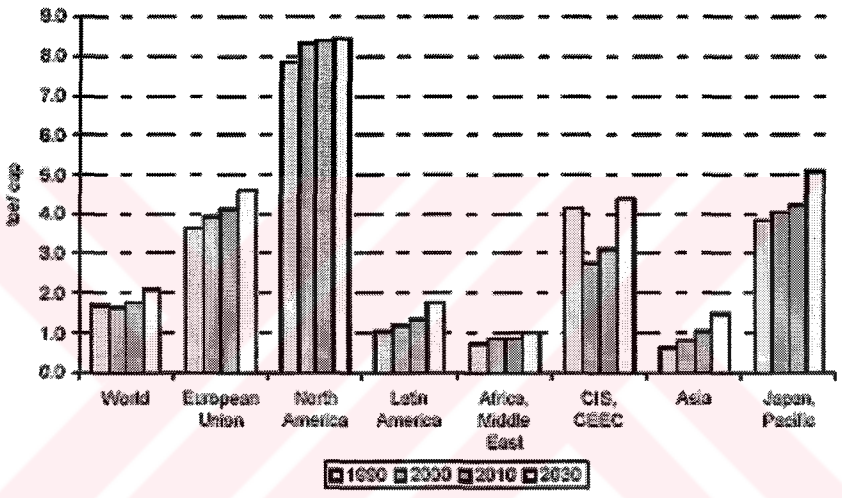
2. 1. 4. Regional Trends

In the EU, population is expected to be fixed over the projection period. Therefore, the 0.4%/year raise in energy consumption is chiefly due to the impact of the per capita GDP growth (1.9%/year) in a biased manner rewarded by the 1.4%/year decline in the energy intensity of GDP.

[12] World Energy, Technology, and Climate Policy Outlook, **Towards European Strategy for Securing Energy Supply,** Brussels, 12 May 2003, MEMO. 03. 105, Http://Europa.Eu.Int/ Comm/EnergyTransport/En/Lpi _Lv En1 .Html (Download: 11.02.2004)

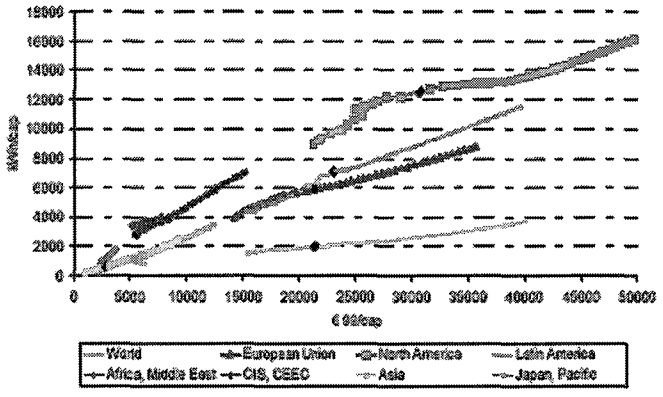
The designed growth for the EU thus shows a comparative saturation of supplies ownership (cars, refrigerators, etc.) but not a full stabilization of the energy demand we can see that whole GIC reaches about 1.7 Gtoe in 2030, from 1.5 Gtoe in 2000. The analysis show that when the Accession countries are included. The designed economic growth per capita is higher but on the other hand the decline in energy intensity is also more significant due to large efficiency gains. These indicators balance each other and the localized tendency is not significantly different from the EU picture.

Figure 6: World Energy Consumption Per Capita



Source: WETO. **World Energy, Technology and Climate Policy Outlook 2030,** 2003, p. 22

Figure7: World Electricity Use and GDP per Capita, 1980-2030



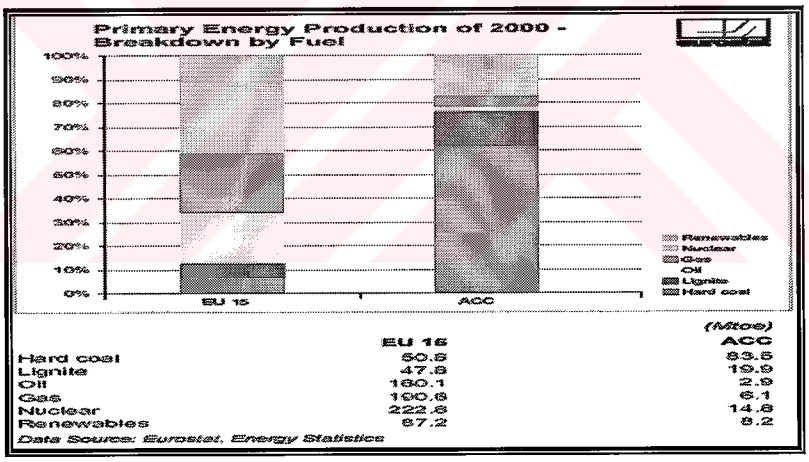
Source: WETO. **World Energy, Technology and Climate Policy Outlook 2030,** 2003, p 17

As it can be seen that, there are parallel relationship between electric use and GDP .when GDP rise, electric consumption also rise. There are huge differences between Asia and North America and EU and Japan.

2. 1. 5. EU Contribution to World Gas Consumption

According to the WETO comment is accepted a meaningful raise in the world demand for gas. This raise is the effect of the unusual growth of 3%/year on average from 2000 to 2010 went after by a partly below growth of 2.1%/year over the period 2010-2030.Over the period 2000-2030, gas demand is anticipated to double, arriving 4.3 Gtoe in 2030. On average, the gas demand growth through 2030 will be higher than during the last ten years, namely 2%/year. However, it is important to show that, as long as, the world natural gas consumption growth was meaningfully declined because a quite big decline in the CIS's consumption.

Figure 8: Primary Energy Production of EU and ACC



Source: G.Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, Eurostat 2003 http://www.europa.eu. int/ comm/ eurostat /Public /datashop /print-product/EN?catalogue=Eurostat&product=KS-DK-03-001- -N-EN&mode (Download: 12. 02. 2004)

2. 2. Primary Energy Production of EU and ACC

In the primary energy production fossil fuels have important place, they are entrapping from natural resources, which were manufactured from biomass in the geological past. In 2000 nuclear heat which used for the production of electricity was the most crucial energy source (accounting for 29% of the EU's 15 fundamental production), go after natural gas (25%) and oil

(21%). Fundamental energy goods discerning divided in fuels of fossil sources, nuclear energy and renewable energy goods. EU 15 fundamental energy yield inscribed a small growth of 7.5% over the last decade. The usage of renewable has also growth, but it less consumed when considered with several energy sources (11% of the total).Contained in the meaning of renewable energy is the energy produced from solar, wind, biomass, geothermal, hydropower and ocean resources. This was for a growth in the chief output of all fuels but solid fuels, the chief output of which has show an influential fall over new years.

Fundamental energy out put has stopped in by 20% over the last decade. The requirement is not the alike for the acceding countries; the chief coal-producing countries are the Czech Republic, where coal causes 85% of the fundamental energy production, and Poland with 75%. The fundamental energy production for the year 2000, collapsed down by fuels, shows that in these countries the most important energy source was hard coal (accounting for 62% of the total), go after lignite (15%), nuclear energy (11%), RES, natural gas and oil with few contribution.

2. 2. 1. Introductory Figures from Eurogas

Eurogas point out that the assess of change in gas demand varies much from country to country. In 1998, demand grew by 4.1% over the previous year. European gas demand grew intensely in 1999. Consumption rose by 4.7% to 385 Bcm (385 thousand million cubic meters), compared with 368 Bcm in 1998, notwithstanding different continuous mild winter experienced in most countries. For example, the Spanish gas market showed particularly strong growth (up 16.6%), chiefly because of an raise in demand from the industrial and residential sectors.

It is clear that, power generation was the chief driver behind growth in Italy (up 9.1%), Belgium (up 7%), the UK (up 5.4%) and Denmark (up 4.3%). [13].Long-run supply price elasticity for crude oil fell sharply after the oil shock, reflecting a change from a competitive to a market-maker structure. The same elasticity for natural gas rose, however, reflecting a elastic supply reply to a switch in demand toward natural gas.[14]

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[13] Thomas Victoria. "*New Gas Market Forces Strongly Affect Some European Countries*" **Pipe Line & Gas Industry** , Volume. 83, Issue 5, May 2000, p. 41.

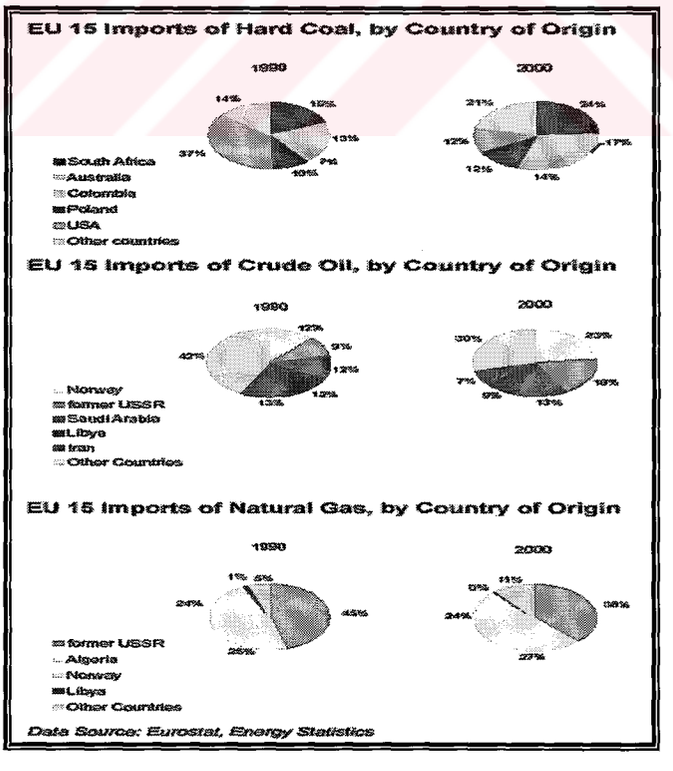
[14] Noureddine Krichene. "*World Crude Oil and Natural Gas: a Demand and Supply Model*" **Energy Economics, Volume** 24, Issue 6, November, 2002, pp. 557-576.

2. 2. 2. The Gas Reserve Outlook for Europe

When we looked at the gas reserve outlook for Europe at first apperance, may from this point not look bright. The EU represent 16% of world gas consumption; but solely 10% of world gas production and 2% of inspected gas reserves in the world. In reality, the EU is in a mere suitable gas supply requirement being confined by rich gas reserves to the North .Especially by Norwegian gas in the North Sea, the Norwegian Sea and the Barents Sea and by Russian gas in Barents Sea. Together, these area, from which the EU is previously importing gas or from which it is within logical distance, control more than 80% of entirely checked gas reserves in the world of almost 160,000 billion cubic metres (BCM) and collectively grip reviewed reserves able to encounter also the EUs import need far into the future.

In gas sector the EU is not an only region but an defenseless and nice market before attachet together with, and importing gas from, other countries and area of the world neighbouring Europe. At new rate of yield, the lifetime of examined gas reserves in the world arrive beyond 2060.

Figure 9: Imports of Energy in EU

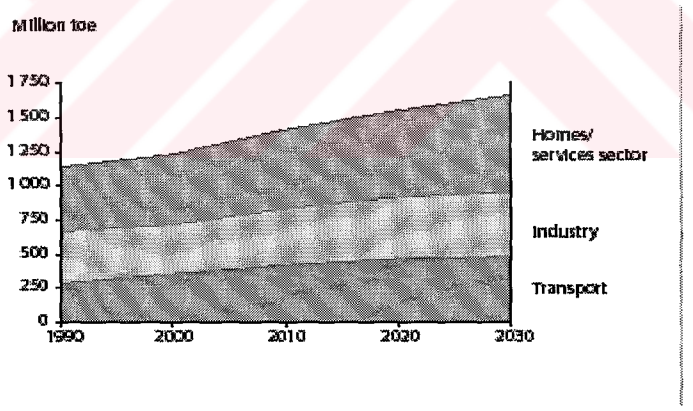


Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, Eurostat 2003: http:// www. europa. eu. Int / comm/ eurostat/ Public/ datashop/print-product/EN?catalogue=Eurostat&product=KS-DK-03-001--N-EN&mode Download.14.02. 2004)

2. 3. Imports of Energy in EU

It is clear that EU is total importor energy and it is most relying on and un protected region in the world. So import dependence is most crucial point of view of the energy policy.EU import all kind of energy facet renewable. An vulnerable and nice market in the past joinned together with, and importing gas from, other countries and area of the world neighbouring Europe. In spite of fact that gas obtaining for Europe will contain to the market from more and more distant sources. Official figures recommended that both in the short and medium term and likewise in the longer-term, Europe will be in a proportionatally easy supply location and have adequate ability for extending its supply base. Truthfully, the EU is in a very suitable gas supply position existence surrounded by plentiful gas reserves to the North (Especially by Norwegian gas in the North Sea, the Norwegian Sea and the Barents Sea and by Russian gas in Barents Sea).

Figure 10: Sectorel Energy Demand



Source: European Commission. **Let us Overcome our Dependence**, Luxembourg: 2002, p. 14

2. 3. 1. Sectorel Energy Demand in EU

For all of the sectors, energy is main source for competitive atmosphere and it is so critical for increasing living standards Energy demand will follow: 2 % every year from now until 2020. When it comes to transport, it is clear that a geographically widened Union will involve a steep

increase in traffic. Enlargement will not solve the problem as the new member countries of the EU will experience high economic growth (5–6 %).

We can expect EU's resources to diligently fall. Domestic resources are exhaustion EU will depend on world prices and technological progress. Only the potential of renewable energy sources has not been exploited as much as it could be because of their high production cost. It is predicted that enlargement of EU will not improve this situation, except for coal. If we fix that problem, renewable could be the only source for the future in the Union.

2. 3. 2. EU-15 Primary Energy Balance

According to the WETO primary energy balance commend a fuel mix that is not the same from the one depicted in the EU energy out looks published by DG Energy and Transport. Specifically, the part of gas is below in WETO comment, at the same time the portion of coal is higher. This is illustrated by two fundamental reasons. First of all, the gas consumption is confined by a slower nuclear phase-out in Germany, Belgium and Sweden, as the WETO Reference only thinks over the withdrawing from production of nuclear power plants at the end of their managing lifetime the price of gas, Secondly, relatively to that of coal, is higher in WETO due to hoped for less abundant gas resources; this changes towards a better cost competitiveness of coal based electricity generation when GHG emission forces are over looked.[15]

Table1: The Changing European Energy Mix

	1973	1979	1987
Oil	58.5%	53.1%	43.7%
Solid	23.2%	22.0%	24.1%
Gas	10.9%	15.1%	17.2%
Hydro/Geo	6.1%	6.9%	7.5%
Nuclear	1.3%	2.9%	7.5%[16]

[15] World Energy, Technology, and Climate Policy Outlook.**Towards European Strategy for Securing Energy Supply**, Brussels, 12 May 2003, MEMO/03/105, http://europa .eu.int/comm/ energy_transport /en/lpi_lv _en1 .html

[16] T.R Laskshmanan, Andersson Ake. "*Western European Energy Policy in Turmoil and Transition*", **Harvard International Review**, Volume 14, Issue 2, Winter 1992, p. 17. http:/ /www.hir.harvard.edu/search/ energy policy category.html?category=section&sectionid=3

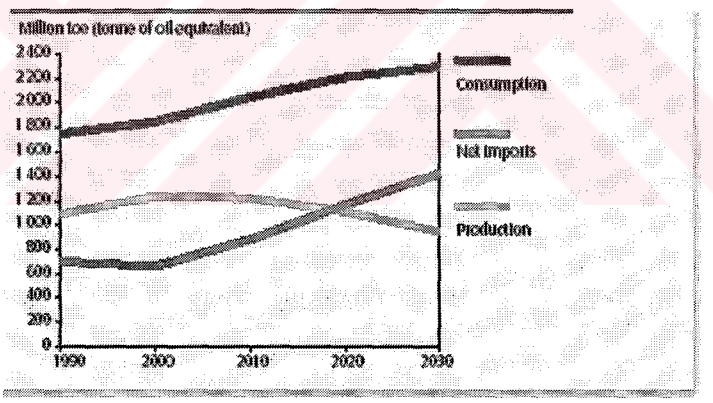
Source: T.R. Laskshmanan, Andersson Ake "*Western European Energy Policy in Turmoil and Transition.*" **Harvard International Review,** Volume. 14, Issue 2, Winter 1992, p. 17.

Table 2: Concentration of Gas and Oil Reserves and Production

	Middle East	Russia
Global gas reserves	40	26
Gas production (2001)	9	23
Expected gas production (2030)	15	18
Global oil reserves	53	14
Oil production (2000)	28	9
Expected oil production (2030)	43	8

Source:IEA. **New Dimensions of Gas Security,** April 2003, p. 2. www. //web. 25.epnet .com/.citation.asp?tb:18-18wp:dbs+0tln+en-us+sdAO5C10FC-CO98-46e (Download: 5 .01. 2004)

Figure 11: EU-30 Energy Balance



Source: European Commission. **Energy Let us Overcome our Dependence** ,Luxembourg, 2002, p. 8.

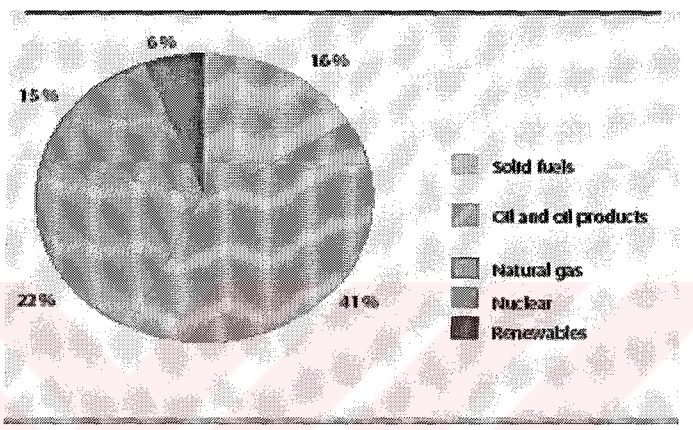
2. 3. 3. EU-30 Energy Balance

With parallel to modernization Energy consumption is rising by 1 to 2 % a year. Dependence on non-EU countries is beginning to rise above 50 % again. EU's domestic resources are starting to finish running out; regarding coal, we discuss 'economic depletion, in the condition that to distant too expensive to mine. The position is far from favorable. Still the EU has succeeds in to diminish its energy intensity, all the warning lights are blinking. And to

finish the picture, oil stays the preferred fuel of households, the services sector and transport. As success would have it, this recent sector will look on an amazing evolution before long.

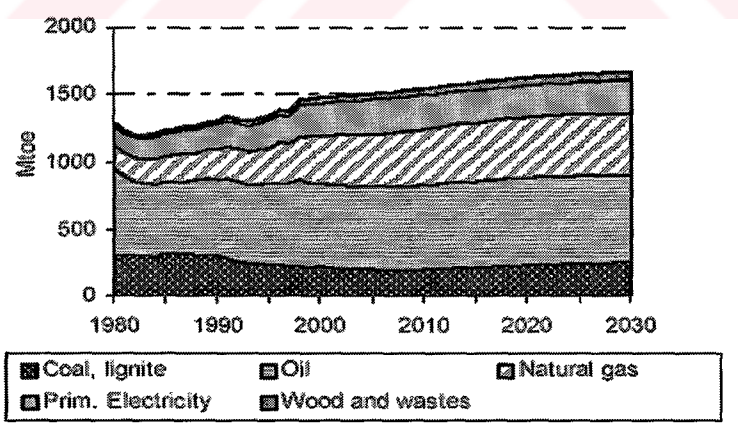
Surely it is successful that industry has maintained its consumption blessing to modernization investments. Transport, from the other point of view, is without. All facts demonstrate that consumption is not decrease especially. Households and the services sector are principally reliable for the development in electricity consumption, transport and heat. [17]

Figure 12: EU-15 Primary Energy Balance 1998



Source: European Commission. **Energy Let us Overcome our Dependence**, Luxembourg, 2002, p. 13.

Figure 13 : EU Energy Consumption



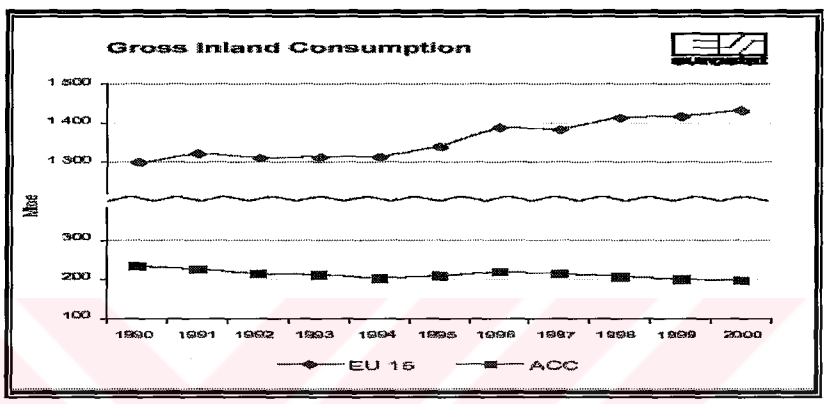
Source: http://www.world-nuclear.org/policy/wetofinalreport.eu. energy.consumption. pdf (Download: 120.2.2004)

[17] European Commission. **Energy Let us Overcome our Dependence**, Luxembourg, 2002, p. 12.

2. 4. EU Energy Consumption

When we observe energy consumption with regarding of fuels portions, the place of natural gas power entirely brings about from 2000 to 2030, at the sacrifice of coal, lignite and oil. At the end of the period, natural gas stand for 27% of EU total energy consumption and turn into the second fuel used, behind oil (39%), but in advance of coal and lignite (16%).[18]

Figure 14: Groos Inland Consumption in EU and ACC



(Mtoe)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
EU 15	1 320	1 346	1 335	1 337	1 337	1 364	1 413	1 407	1 437	1 441	1 456
ACC	234	225	214	211	203	209	218	214	207	200	197

Data Source: Eurostat, Energy Statistics

Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003. http: //www. Europa .eu.int/ comm/ eurostat/ Public/ datashop /print-product/EN?catalogue=Eurostat&product=KS-DK-03-001- -N-EN&mode (Download: 13. 02. 2004)

2. 4. 1. Groos Inland Consumption in EU and ACC

The gross inland using up in EU 15 has grown by 10% over the last decade. The part of natural gas totally rise up from 16.8% in 1990 to 23% in 2000, while that of solid fuels diminished from 22.8% in 1990 to 14.8% in 2000 . Oil is the most important fuel (40% of total gross inland consumption in 2000) and its contribution stayed fixed over the period. The change from solid fuels to natural gas is caused by environmental respectfulness. The hard coal imports are almost without change divided in excess of the five chief countries of origin

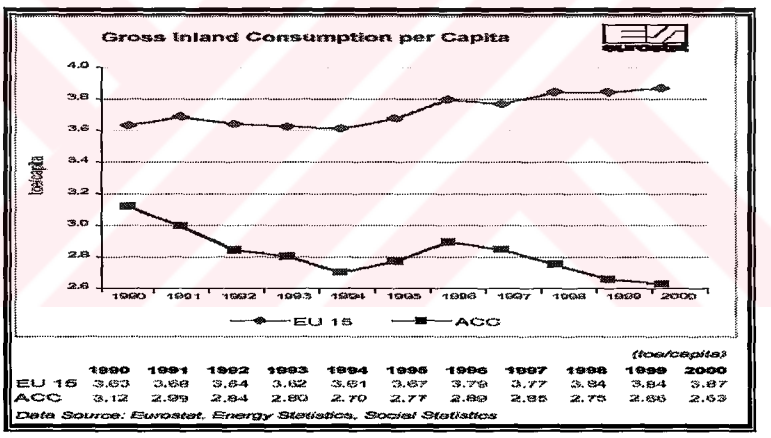
[18] WETO.**Towards European Strategy for Securing Energy Supply**, Brussels, 12 May 2003, MEMO/03/105, http:www.//europa.eu.int/comm/energy_transport/en/lpi_lv_en1.html (Download: 03.03. 2004)

(USA, South Africa, Australia, Poland and Colombia) while total imports have risen by 30% in the period 1990-2000.

The gross inland consumption of the acceding countries, on the other hand, fell by 16% over the same period The most powerful fuels entrance to the gross inland consumption were the solid fuels (hard coal and lignite),which is nearly half (46%) of the whole.

The starting point of crude oil imports has altered over the last decade. Norway and countries of the former USSR covered 41% of the oil imports in 2000 (doubled from 1990) and the rate of imports from Libya, Iran and Saudi Arabia was decreased from 37% in 1990 to 29% in 2000. Imports of natural gas rose 83% from 1990 to 2000. Due to that, imports from most supplying countries have lifted crucially. In what way, the proportionate share of the former USSR has lessened while Algeria's share has lifted.[19]

Figure 15: EU Gross Inland Consumption Per Capita



Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: EuropeanCommunities, 2003, http://www.europa.eu.int/comm / euro st at / Public/datashop/ rintproduct/EN? catalogue= Eurostat& product= KSDK -03-001 -N-EN&mode (Download: 11. 02. 2004)

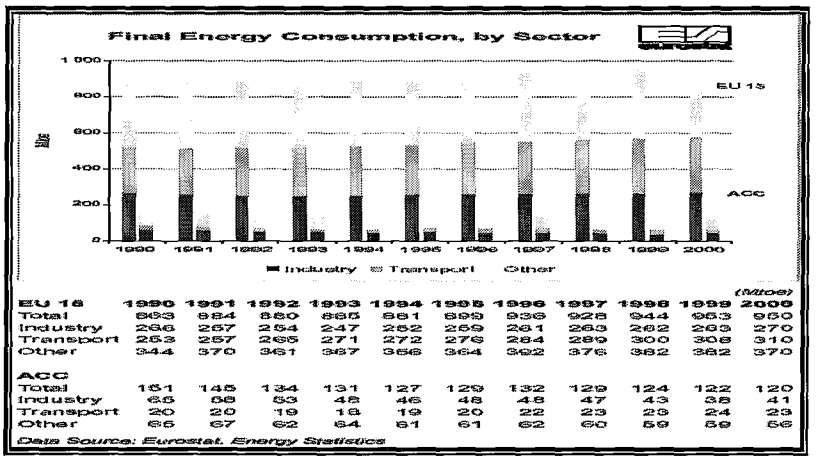
2. 4. 2. EU Gross Inland Consumption Per Capita

It can be noticed that from 1991 until 1994 the EU 15 gross inland consumption per capita went down diligently but after 1995 EU 15 gross inland consumption per capita seem a little increase of 7% in the period 1990-2000. It start to be examined, it reached a peak of 3.87

[19] European Comission.Energy Indicator, http://www.europa.eu.int/comm/eurostat/Public/datashop/print-product/ EN? Catalogue =Eurostat&product=KS-DK-03-001- -N-EN&mode (Download: 11. 02. 2004)

toe per capita in 2000. For the acceding countries, the gross inland consumption per capita fell by 16% over the period, arriving 2.63 toe per capita in 2000.

Figure 16: Final Energy Consumption,by Sector



(Mtoe)											
EU 15	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total	843	824	850	835	861	899	936	928	944	963	930
Industry	256	257	254	247	252	259	261	263	262	263	270
Transport	253	257	265	271	272	276	284	289	300	308	310
Other	344	370	381	387	356	364	392	376	382	382	370
ACC											
Total	151	145	134	131	127	129	132	129	124	122	120
Industry	45	56	53	48	46	48	48	47	43	38	41
Transport	20	20	19	18	19	20	22	23	23	24	23
Other	86	67	62	64	61	61	62	60	59	59	56

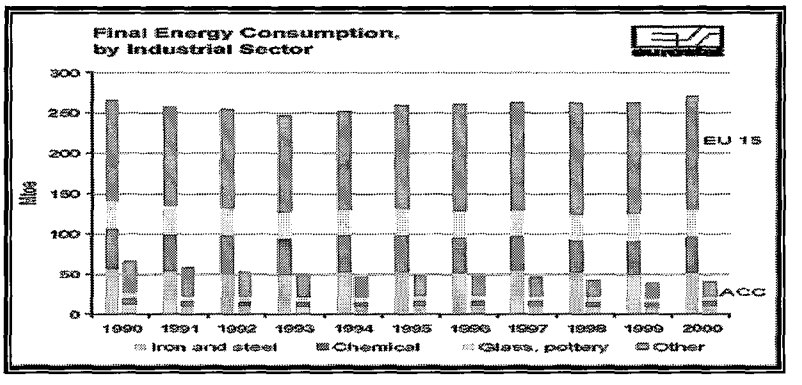
Data Source: Eurostat, Energy Statistics

Source : G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003.http://www.europa.eu.int/comm/ eurostat/Public/datashop /printproduct/EN? catalogue=Eurostat &product=KSDK -03-001-N-EN&mode (Download:15. 02 2004)

2. 4. 3. Final Energy Consumption,by Sector in EU

It can be say that, the final energy consumption of the acceding countries fell by 21% over the period 1990-2000. Industry's final energy consumption improve alone by 2% and the several sectors' by 8%, in the similar phase the increase was chiefly caused by the transport sector, up 22% over the last decade. The decisive energy consumption of the EU 15 was lifted by 10% over the period 1990-2000. In 2000, transport is liable for 33% of EU 15 final energy consumption, industry 28% and the households, commerce and public services sectors remains the largest final energy consumers, accounting for 39% of the whole in the same year. The chief source of this declining was the industry sector, down 38%, while final energy consumption in transport rose by 16% during the same period.

Figure17: Final Energy Consumption, by Industrial Sector



EU 15	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total Industry	265.9	267.4	263.7	247.5	252.3	259.3	260.9	263.1	261.8	263.0	270.2
Iron and steel	56.0	53.8	51.0	49.2	53.1	54.2	52.0	55.0	52.5	49.5	51.5
Chemical	50.6	45.9	47.3	45.4	45.1	44.6	43.5	42.4	40.7	42.0	44.7
Glass, pottery	35.6	34.8	34.2	32.3	32.3	32.7	32.9	32.8	32.0	34.7	34.9
Other	123.6	122.8	121.2	120.6	121.7	127.8	132.5	133.1	136.6	136.8	139.2
ACC											
Total Industry	65.5	58.6	63.0	48.5	48.3	48.4	47.8	46.7	42.6	38.3	40.7
Iron and steel	13.0	10.6	10.1	9.5	10.1	10.9	10.3	10.3	9.1	8.0	10.4
Chemical	7.8	6.9	6.5	6.2	5.7	6.6	7.0	7.3	7.0	6.5	7.0
Glass, pottery	6.9	6.3	5.3	5.8	6.0	6.3	6.4	6.2	5.9	5.3	5.1
Other	38.0	34.7	31.1	27.0	24.5	24.7	24.1	22.9	20.7	18.5	18.1

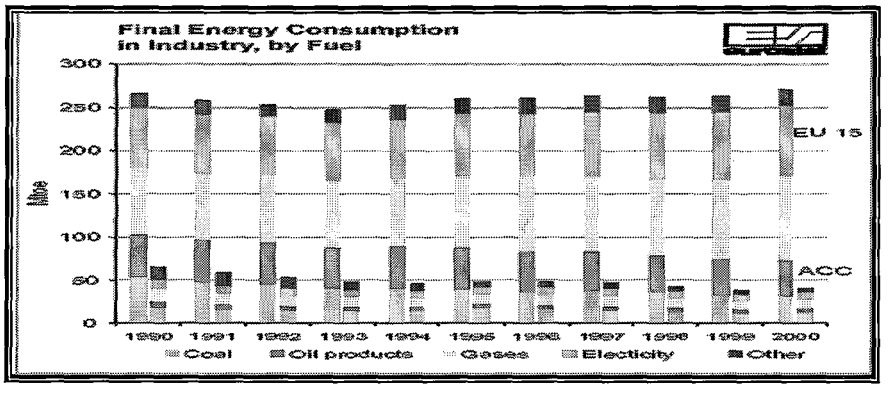
Data Source: Eurostat, Energy Statistics

Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003, http://www.europa.eu.Int /comm/eurostat /Public/datashop/ print-product/ EN?catalogue= Eurostat & product =KS-DK-03-001--N-EN & mode (Download : 14. 02. 2004)

It is important to point here that, the industrial energy using up of the acceding countries has droped significantly. Over the period 1990-2000 the consumption of the iron and steel sector went down by 20%, the chemical sector by 8% and the glass, pottery and building materials sector by 27%. Another important point which is necessary to mention here is that .When we look at all this in closer detail.The complate energy consuming of whole of the industrial sectors of the EU 15 rose by 2% over the last decade. Anyway the main energy-intensive branches appear to be an obvious go down in energy consumption (8.2% for iron and steel sector and 11.6% for the chemical sector). Europe in liberalising gas and electricity markets energy consumption of the common sectors outwarded by 9.3% over the similar period. With gas and electricity more and more give frankly by all comers. Demand for gas is expected to grow by 2% a yearover coming together in the energy industry may manage to some oil firms' receivinig power firms totally.[20]

[20] Economist. "*Energy, the New Convergence*" Volume 351, Issue 81210, 5. 29. 1999, p. 59.

Figure18: Final Energy Consumption in Industry, by Fuel



EU 15	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
All fuels	265.9	257.4	253.7	247.5	252.3	259.3	260.9	263.1	261.8	263.0	270.2
Coal	54.0	48.2	45.2	40.0	40.4	39.2	36.4	37.7	36.0	32.7	32.4
Oil products	49.3	49.1	49.0	47.8	49.6	49.2	46.8	45.7	43.3	41.8	41.7
Gases	77.2	76.5	77.3	77.4	78.2	82.6	88.2	87.0	88.5	91.8	96.5
Electicity	69.3	68.1	67.8	66.9	68.0	71.4	71.7	74.3	76.0	77.9	81.9
Other	16.1	15.5	14.3	15.3	16.1	16.9	17.8	18.4	18.0	18.7	17.8
ACC											
All fuels	65.5	58.5	53.0	48.5	46.3	48.4	47.8	46.7	42.6	38.3	40.7
Coal	18.5	15.8	14.3	14.4	14.2	18.2	16.8	15.7	13.1	11.7	13.3
Oil products	7.0	6.4	5.5	4.9	4.7	4.5	4.1	4.3	5.1	4.5	4.3
Gases	15.2	12.7	12.5	11.8	10.8	11.6	12.3	11.8	11.3	9.9	11.0
Electicity	10.0	8.5	7.8	7.3	7.5	7.8	8.2	8.5	7.9	7.6	7.8
Other	14.8	15.0	12.9	10.1	9.1	6.4	6.5	6.4	5.2	4.6	4.4

Data Source: Eurostat, Energy Statistics

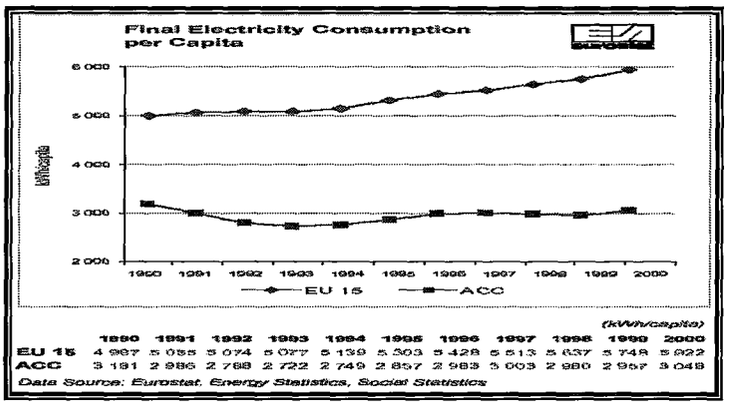
Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators**, Luxembourg: European Communities, 2003 http://www.europa.eu.int/comm/eurostat/Public/datashop/print-product/EN?catalogue=Eurostat&product=KS-DK-03-001-N-EN&mode (Download : 18. 02. 2004)

2. 4. 4. Final Energy Consumption in Industry, by fuel in EU

There has also been a crucial (18%) grow in electricity consumption by industry between, 1990 and 2000, which so have a sum of to 30% of the total decisive energy consumption in industry. An evident tendency in the EU 15 industry is the significant decrease in coal use (40% over the last decade). Consumption of oil was too gone down by 16% over the same period. It is came into view that that European industry is spinning nearby natural gas, a cleaner and more efficient fuel 25% which raised over the last decade.

There was a reduction of 28% in coal, 39% in oil, 28% in gas and 22% in electricity use over this period. Especially for the acceding countries the decrease of the entire energy consumption in industry can also be monitored in all fuels.

Figure 19: EU Final Electricity Consumption Per Capita



Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003 http:// www.europa.eu.int/comm/ eurostat/ Public/datashop/print-product/EN?Catalogue=Eurostat& product=KS-DK-03-001--N-EN&mode (Download: 11. 02. 2004)

2. 4. 5. EU Final Electricity Consumption per Capita

We see that for the acceding countries the index down from 1990 to 1994, but there look like be a tendency excess to the prior values. So, in 2000 the final electricity per capita was 3 048 kWh, 2% less than the 1990 value. We see that, between 1990 and 2000, final electricity consumption per capita grown diligently, both for the EU 15 common and for every the Member States. For the EU 15, the final electricity per capita inscribed the influential assess over this era (5 922 kWh/head) in 2000. Sweden, Finland and Luxembourg have much difficult values of this index; more than double the EU 15 average.

2. 4. 6. Gas Consumption in EU

It is necessary to declare that, EU gas demand is growing despite fact that the mildly compared to the new inclination. It is growing faster than the gross inland energy consumption. Moreover, fundamental gas consumption in EU grows faster than final gas demand, chiefly because of the increasing priority for gas as a power generation fuel and the growing understanding of electricity in the economies. Therefore, the portion of natural gas in total energy necessity is still hoped for to grow to 27% in 2030 from 24% in 2000. Several factors cause to slow the progression of gas used by final consumers: the moderate growth of the overall final energy demand because of a firm fall in final energy intensity, and the

saturation of gas demand for several end uses, like space and water heating in the residential and third sectors, express the quality of the gas market in many European countries.

2. 5. The Energy Situation in Europe and World

WETO shows the comparative decline of Europe in the world situation both in terms of population (400 million people from a whole of 8 billion) and GDP (€17,000 billion from a whole of €100,000 billion) for 2030. In the commend case checked by WETO, European CO_2 emissions will raise by 18% in 2030 compared to the 1990 level (in the USA the raise is around 50%). While the emissions from developing countries represent 30% of the whole in 1990, these countries will be reliable for more than half the world CO_2 emissions in 2030.

The world gas reserves can meet hoped for demand but are focused in two world area: the CIS and the Middle East where gas production is designed to grow much while the next thirty years.The EU gas market is rapidly expanding and growth is hoped for to continue in the next two decades, incited by the "dash for gas" power generation.. In contrast, the European gas resources are restricted and output is hoped for to decline persistently beyond 2010, bringing about in an growing dependence on external gas supplies.

The rapid growth of gas demand in Asia is hoped for to have some influence on the EU gas supply pattern in 2030: while Asia is formed to depend on gas supplies from the Middle East, the EU and Candidate countries may import greater half their natural gas needs from the CIS. This outcome may turn into higher supply dangerfor the EU. These dangers could in what way be restricted through different actions as summarized in the Green Paper "Towards a European strategy for the security of energy supply", like the reproduction of gas transport routes, the more joinning of the European gas network, and a successive conversation with gas producing countries. Long-term contracts for supply of liquefied natural gas from more varied sources in Africa and the Middle East are intended to raise mildly. [21]

The decline of conventional oil reserves is compensated by a raise in the reserves of non-conventional oil. We see from the figures that, sufficient oil, gas and coal reserves

[21] European Commission. "The World Energy, Technology and Climate Policy Outlook". Brussels, 12 May 2003 p.6. Comission Press release, MEMO .03 05 ,http :// europa .eu .int/ comm/ energy_ transport /en /lpi_lv_en1.html (Download:21. 02. 2004)

plentiful world wide to satisfy the designed demand during the next three decades. The reserves of natural gas are plentiful and hoped for to rise by around 10%. Coal reserves are immense and do not forms a restriction to coal demand at the horizon of 2030.

World oil production is intended to rise by about 65% to reach some 120 million bl/day in 2030: three quarters of the output raise will come from OPEC countries, where the important part of oil reserves is intensified. Accordingly, OPEC would responsible for 60% of whole oil supply in 2030 compared to 40% in 2000.

World gas production is intended to double between 2000 and 2030. However, localized inequality in gas reserves and production costs are hoped for to adapt the localized gas supply pattern in 2030: about one third of the whole gas production will originate from the CIS while the remaining production is designed to be almost equally allocated among OECD countries, the Middle East, and the other gas producers in Latin America and Asia.

World coal production is also hoped for to double between 2000 and 2030, the growth taking place mostly in Africa and in Asia. This latter region is designed to encase more than half the whole coal production in 2030.

The growth of final energy demand shows compared sample from one region to the other in relation to their level of industrial development. In the EU, the final energy demand is formed to raise by 0.5 %/year since, at the contrast side of the extent, final demand in Asia raises by 3 %/year over the projection period .Among industrialized area, the EU is designed to have the lowest raise, with a more rapid progression for the household, service and agriculture sector (0.7 %/year) than in transport (0.4 %/year) and industry 0.3 %/year. The EU, with an annual average lessening of 0.9 %, has the not fast energy degree decline among industrialized area. However, in clear terms, the EU has low levels of energy intensity compared to most world area: in the nineties, together with the Japan and Pacific region, it experienced the lowest level of energy intensity. New renewable energy sources excluding large hydro covers 4% of the electricity production (from 2% in 2000), chiefly because of a rapid progression in wind electricity. [22]

[22] WETO, p. 7.

3. COMMON ENERGY POLICY

3.1. Introduction

It is impossible to live without energy which is necessary to economic development. Without it, most of the existing output and property would not be possible. It is measured as a strategic good, and the control over energy supplies has always been an issue of worry for governments. In an integration plan, the equal access to energy is of great economic importance; as energy is a major input in many other productions, non-integrated energy markets would lead to distortion. It also has much political weight as the interdependency on strategic commodities may be the best confidence for peace.[23]

The Community is not adequate in energy production and therefore is highly dependent upon the caprice of foreign suppliers. Although the proportion fluctuate depending on the source of energy from country and from region to region, today the Community depends on imports for almost 50 per cent of its fuel consumption.[24]

A low pricing policy, for example by providing financial assistance domestic supply and imports, would reduce producer costs and disfigure trade prices and competition. Moreover, domestic energy shortages and dependence on imported energy expose a country to risk, and may also cause price fluctuations with repercussions on production and supply, economic crises and even recession. Therefore, in most countries, the energy sector has attracted state policy intervention because of concern about security of supply in a changing world market.[25]

The EU has from its start continued the integration of energy markets. It is a complicated one, because it needs to take account of the different ways in which all member states occur in the energy markets and in the organization of the energy sector.

Since the early 1950s, the idea of a Common Energy Policy (CEP) for the EC has been on and off the political agenda many times. In the years since the EC was signed by a

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[23] Patrick Cro. "*European Union Energy Policies*." **Oil & Gas Journal.** Volume 93, Issue 5, January 30 1995, p. 46.
[24] Theo Hitiris, **European Union Economics**, Fifth edition, Essex: Printice Hall, 2003, p. 310.
[25] Hitiris, p. 311.

replacing solidity of preference and a domain of recommended mechanisms, depending on conditions in the energy markets and the impact of the Commission. Usually, these attempts have reach to in no way, with member states in differing ways denying or rejecting them. However, there has been a recommenced concentrate on energy subjects, as the effort of the single-market argument has gathered pace and environmental concerns have intensified.

3. 2. Historical Background

European integration had its birth in the treaty to the peaceful use of coal and steel as important supply for economic step same what for the produce device of war. The 1952 Treaty determine the European Coal and Steel Community (ECSC), which finished on the 23 July 2002, plan to found a common market of the coal and steel resources needed for economic realization and put the base place of a entirely and deeper community in peoples desired for separated by armed fight. The 1957 Treaty establishing the European Atomic Energy Community (EURATOM) is intent to out put the position vital for the progression of a powerful nuclear industry which will provide comprehensive energy resources. Existence free in coal and adopting nuclear power to be the energy resource of the future, the Community was not set for the economic effect of the oil crisis of October 1973. Afterwards begin to describe propose and examine to lessen its certainty on imported crude oil and petroleum products. With these attempts a common energy policy began to design in European Union agenda.

Energy resources were seen as national resources and Member States were not obtained prepare to change duty to the Community. No separate chapter on energy has been pointed Treaty correction at Maastricht (1992),[26] Amsterdam (1997) in the latest revision of the Treaty on European Union it was not possible to include a separate chapter on energy. Energy policy was, rather, included in the list of objectives;[27] energy was also referred to in the Environment title.[28] The Treaty on European Union also referred to trans-European networks, to which energy infrastructure also belongs.[29]

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[26] Clive H .Church and David Phinnemore, **European Union and European Comminity a Handbook and Commentary on the Post Mastrich Treaty**, London: Harvester Wheat Sheaf, 1994, pp. 211-214.

[27] See,Amsterdam Treaty,(1997) Article 3u, ex Article 3t

[28] See, Treaty correction at Maastricht, Title XIX, ex Title XVI; Article 175(2), ex Article 130s (2))

[29] See, Treaty correction at Maastricht Title, XV, Articles 154, 155 and 156 in conjunction with Article 158, ex Title XII, ex Article 129b, c and d in conjunction with ex Articles 70 and 130a.

Energy is reminded as a background of the environment and trans-European networks. The whole ask of Community internal market law is the route to a more integrated energy market. Central focus of national interest and domestic preferences in final the sample of European integration is to give important power to supranational actors like European court and transnational economic interests. But the energy sector does not yet totally profited from this integration because the Member States still use the security of supply and the diversity of their energy situation as the reason for keeping their national monopolies and their unusual controlling structure.[30]

3. 2. 1. The Treaties and Energy

The three treaties on which the EC is based, [31] in the energy policy EU was separated into between the European Coal and Steel Community (ECSC).[32] Each contains usual train for specific segment of the energy sector. The European Coal and Steel Community (ECSC), was birth in 1952. Coal was the most important energy source for Europe. The (ECSC) treaty refers various targets (Article 2 and 3) of a market regulation and structural policy for the coal mining sector. Commission's first obligation worry the adequate functioning of the market; it has to ensure that all comparably placed consumers in the Common Market have equal access to the sources of production; guarantee the establishment of the lowest prices'. The ECSC tried to call off all limits to trade between member states until economical aids and cartel-like manner. With careful attention, the EU gives valid area to competition to control the market process. Anyway, in the times of "manifest crisis" or scarceness, it can take place as soon as in the prices (Article 61) or direct production quotas (Article 58) and international trade (Article 74); such intervention must be functional just in circumstance that more indirect actions fail. The second mission, carry on a structural policy, is planned by the treaty as illustrated: ensure the maintenance of situation which will encourage undertakings to expand and improve their production potential'. To satisfy this purpose, the ECSC formulate suggestive plans, provide for restructuring by proper actions (Article 46 to 56). [33]

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[30] FMc Gowan (1990). EC Energy Policy. in: Ali M: El-Agraa. (Ed), *Economics of The European Community*, Thirth edition, pp. (243-250) HemelHempstead: Plilip Allan.

[31] Gowan, pp. 243-250.

[32] Hitiris, pp. 310-315.

[33] Willem Molle, **The Economics of European Integration, Teory, Practice, Policy**, Thirth edition. Aldershot: Ashgate, 1997, pp. 299-305.

The 1957 EURATOM Treaty tried to discover to encourage working together in the maturation of civil nuclear power, and then be aware of as the principal starting point of future energy needs. EURATOM also makes in sincere the idea of a common market in nuclear products. A common market for other energy sectors was addressed in the Rome Treaty. The European Atomic Energy Community (EAEC) born in 1958 has no ability concerning the controlling of the market. The EAEC's principal mission is a political, to build inquiry (Articles 4-7) .It continues extensive research plans in it's confessed research centre to scatter knowledge (Articles 14-24) and to make investments (Articles 40 and 47). Besides encouraging and harmonizing, the EAEC can also be involved clearly in investments.[34]

The European Economic Community (EEC) born in 1958. While the EEC was leaded in direction to lesser competitively organized sectors, it was also about to insure the lesser competitively arranged sectors.[35] EEC contract include no particular conditions for the energy sector; from this point the operating of the oil, gas and electricity markets given up to supply and demand power managed by the inclusive situation of the treaty, for example with relation to competition (Articles 85 and 86). No structural steps for these sectors have been on the condition for all either.[36]

3. 2. 2. Policy Efforts 1951 -73

Energy policy based upon the three treaties which mentioned above. The aims of the Common Energy Policy have been particularly firm over times until their vital trait are included. These are: (1) security of supply (external dependency); (2) primacy of market forces (competitiveness); (3) sustainable development (environmental protection); and (4) stimulation of research and innovation these aims have been produced otherwise approaching of the external conditions. There are significant terms in the development of energy policy which are include three terms 1958-72, 1973-85 and 1985 to the present.[37]

It is crucial to declare here that; First attempt to establish a common energy policy was taken in the1950s there has been the Commission attempt to construct an opinion for coal. The High Authority was could not bring himself to influence the spirit of the Paris Treaty on

[34] Molle, pp. 299-305.
[35] Gowan, pp. 243-250.
[36] Molle, pp. 299-305.
[37] Molle, pp. 299-305.

national industries; it was principally varied in applying to with the crises which bother the European coal industry from the mid-1950s.[38] In the 1950s and 1960s the imported energy source were appropriate, the critical, problem was how to run away from becoming in a risky manner dependent upon foreign supplies, chiefly coal. Already when international prices went to fall, during the economies of the EU member states were growing quickly, the problem of restricted domestic energy sources and unemployment became more serious.[39]

Afterwards, the foundation of the new Communities on energy in 1959 tried to fix up a policy centralizing on the establishment of a common energy market. The primary curiosity of the committee was with the influence of energy prices on industrial competitiveness and, to a smaller degree security of energy supply. Anyway, governments mainly rejected the committee's tries to achieve energy policy; as a substitute they rejected respecting the energy sector. This slowness on energy policy caused turn back the mainly undisturbed energy markets. Anyway, there was concern over supply in the 1950s and 1960s; governments were keen to save their autonomy. [40] In the 1960s, it was identified that the condition in the energy field without balance.[41]

To form CEP, Commission submitted three whole goals Firstly, A plan for the sector including data collection and predicting as a way of ruling members' investment strategies. Secondly steps to cause a common energy market. Thirdly actions to make certain security of supply measures at cheap cost.[42]

We can say from historical point of view that, the primary level for a common policy were included 1964. ECSC Community objectives were fair competition between the different sources of energy security of supply, low-priced supply and freedom of choice for consumers. It asked for a sufficient system of state aid for coal production and consumption by the steel industry trust in national aids, regard on common policy was arrived, chiefly due to rich inexpensive origins of supply from outside and the different needs of tile member states, some of which depended heavily on imports.[43]

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[38] Gowan, pp. 243-250.
[39] Hitiris, pp. 310-315.
[40] Gowan, pp. 243-250.
[41] Molle, pp. 299-305.
[42] Gowan, pp. 243-250.
[43] Hitiris, pp. 310-315.

Second try to set up a common energy policy was taken in 1968. Commission submitted in a reminder the objectives and suggested for setting a common market in energy reaches to lower energy prices. This indicate taking off of the state monopolies which plenty of member states perform, harmonizing energy taxes and progressing with the organized Common Transport Policy.

3. 2. 3. Energy Crises

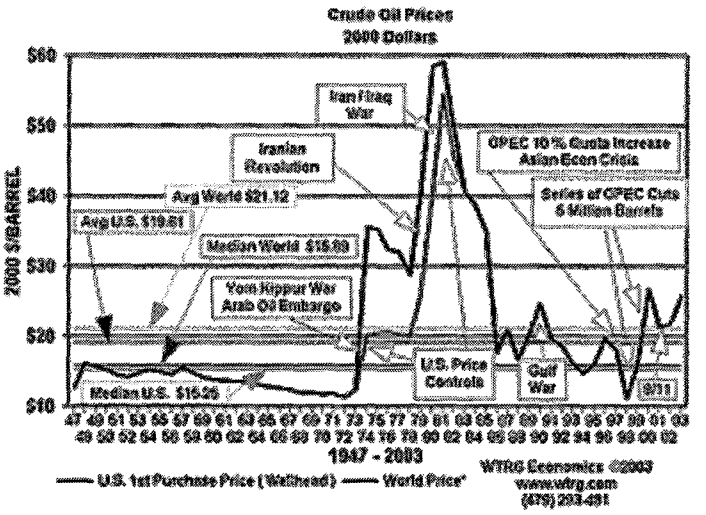
Energy crises usually have worried with rising movements in prices accordingly a special resources being dramatically reduced in quantity under its prior schedule of prices or being less than correspondingly rose in quantity under increased prices. Whether caused by changes in supply or in demand, energy crises can have common disturbing outcomes. Before energy resources are on essential section of social and economic organization. Generally, policy was worried with changing the structure of energy balances rather than the structure of energy markets.

It is important for Community to set on security of supply for the development of the Community's energy balances and the substitution in worldwide energy markets. Since the 1950s the member states had became less dependent upon internally produced coal and more on imported resources, mainly oil. This exchange in demand sent back the development in energy demand extensive but clear decline in energy resources in the middle of the member states. By 1970 over 60 per cent of the EC's needs were imported, rest it very open to the supply division and price growth of 1973-4.[44]

[44] Gowan, pp. 243-250.

Figure 20 : Crude Oil Prices

Crude Oil Prices 1947-2003



Source: James L. Williams, *"Oil prices"*, WTRG Economics, 2004 http://www.wtrg.com/ prices. (Download: 08. 3. 2004)

The 1973-1985 periods are signed by the two energy crises, in 1973 and 1979, that at showed that the EU was put before by three serious problems

1. Lack of stability: The EU was depending on for a big production of its energy on foreign oil. Decreasing supplies was used like a tool by some producers for strategic as well as economic reasons
2. Change in prices: Crude oil and the trade rate to the dollar had brought about big discontent to the European economy in general and the energy sector
3. In balance on the stability of salary. Between 1973 and 1981, the oil bill of the EU had multiplied by eight (in dollars), despite a concerned go down of net imports by some 40 per cent.

The very different national reactions to the 1973 crisis made the EU painfully observant of the need for extra action. This was supported by the second oil crisis of 1979.[45]

The significant increase in oil prices which bring about social unrest in most Member States recently, from figure it is too obvious, the Commission analyses the mechanisms which

[45] Molle, pp. 299-305.

resulted in this increase. Especially, it measured the three components of the prices paid by European consumers: the price of crude oil, refining and distribution margins, and the taxation of petroleum products. We see that to complete these actions the Commission recommends six lines of action:

1. More open relations with the producer countries, in particular the OPEC countries;
2. liberalisation of market mechanisms;
3. Convergenge on energy policies;
4. the reinforcement of the joint approach to taxation and the management of strategic oil stocks;
5. a more secure and economical energy policy;
6. An alternative common transport policy.

Between the first oil shocks, the EC took risk for a crisis management role but it became unsuccessful for supply agreements between Communist party and others. Member states continue to applied their own policies or worked through the International Energy Agency (lEA) formed in 1974, the lEA un certain the EC both in width of membership (covering all the OECD countries except France) and in terms of its ability on oil dividing in a new crisis.[46] The current Community oil crisis measures that were developed when oil dominated the energy market are still crucial and the Commission reaffirms the importance of these crisis measures.[47] The consequences of an oil crisis would be rapidly communicated to all other energy sectors.[48]

To improve a more strategic entry to the management of energy supply and demand the Commission took risk. Directive would have obliged Member States to set up special agencies to maintain oil stocks representing 60 days domestic consumption.[49] Directive included diminishing of oil imports, the maturation of inner energy power especially nuclear power gained importance in the energy balance and the reasonable utilization of energy. The new strategy also supplied the basis for a handful of directives planned to limit the usage of

[46] Gowan, pp. 243-250.
[47] See, Commission Revised Proposals on Oil Crisis Measures - COM/92/145
[48] See,73/238/EEC on Community Measures in Time of an Oil Supply Crisis - OJ/73/L228
[49] Out of the 90 Days Required Under a 1968 Directive, Directive 72/425/EEC on Oil Stocks - OJ/72/L291

gas.[50]New tools are mobilized resources for R&D and promotional plans on energy, involving formal and nuclear technologies but also renewable and energy efficiency technologies.

We see a policy change because; the situation of energy markets and concern over energy prices and security in the early 1980s was such that the policy was supported into the decade. The 1995 objectives contained several horizontal objectives, directed toward at more general energy policy interest, as an example of its connection with other EC policies.

3. 2. 4. The New Energy Agenda

In the period 1985-95, important developments formed for a new arrangement for each of the three main purposes for EU energy policies: Security of supply, environment, and complinance of integral market. The progression was the raised interest with the flaming of energy sources with high carbon content, so the plan of the policies became more directed nearby the limitation of consumption, and regarding less polluting sources. Another development concerned as a security of supply.[51]

We can say that as a reason for a central cause in this changed regime was the shift in energy markets. Prices stabilized and unstabilised before 1980s and went on to weaken up to the 1986 oil price collapse. Many countries had sought to increase quality and energy efficiency and changing source of energy. The economic recession of the 1980s also depressed demand. The joint effect of these factors was a heavy capacity in supply and minimal demand growth which forced down prices.[52]

Market situations altered energy policies, unusually those encouraging conservation or diversification from high price fuels by the mid-1980s, therefore, the Commission had succeeded in setting up a place in energy policy making, but it was far from being central to member states' energy policy agenda support. While these steps guarantied that the Commission had insured in the White Paper.[53] We can say that it is not wholly as a reflection of past energy policy failures; the Commission did not include energy in the initial agenda for the SEM.

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[50] Gowan, pp. 243-250.
[51] Molle, pp. 299-305.
[52] Gowan, pp. 243-250.
[53] See, White Paper (EC Commission, 1985a).

3. 2. 5. Internal Energy Market

The internal market contain a territory besides internal boundary in which the free movement of goods, persons, services and capital is protected [54]. To meet this main plan of the Treaty of Rome, the European Community is dependable for introducing, amongst the rest, the agreement required to finished the internal energy market which will make it may be to gradually open up the market in order to make the energy sector more competitive. The internal market is also established on the necessity for unity between the Member States of the European Union, more specifically in the essential sectors of energy supply which are gas, oil and electricity.[55] Competition powers have taken the respect that they should send out some of their domestic businesses energy firms, which have been buy more of trade.[56]

Unfortinetly the 1985 White Paper "Completing the Internal Market" did not record any specific effect for energy, but the Single European Act (1987) concluded, an Internal Energy Market based on competition and transparency. [57]

The passible advantage of a IEM would cut costs to consumers especially to energy-intensive industries, in that connection making European industry as a whole more competitive; it would increase security of supply by improving integration of the energy industries; it would change the structure of the energy industries and permit for immense complementarily among the different supply and demand profiles of member states. The profit would occur from a variety of cost-reducing competition and the achievement of scale economies in a number of industries IEM and the obstacles which faced it. According to the Commission, the obstacles to the IEM were to be found in the structures and practices of the energy industries. These ranged from different taxation and financial regimes to restrictive measures which protected energy industries in particular countries and situations which prevented full coordination of supplies at the most efficient level.

The Commission has begun to carry out the agenda, pushing forward proposals on public sale and editing those on indirect taxation, presenting a draft directive on energy price

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[54] Article 14 of the EC Treaty.

[55] Commission Communication to the European Parliament and The Council the Internal Market in Energy: Coordinated Measures on the security of Energy Supply.

[56] Anonymous. *"Energy market tests limits of the law"* ***Corporate Finance***, April 2002, Issue 209, p. 52.

[57] See, The Internal Energy Market' (COM (88) 238).

transparency, announcing a probe of limiting activity in relationships between coal and electricity industries and advertising its concept on electricity trade. The step of the dispute has not only between helped by changes in EC decision-making procedures, notably the majority voting protocol enabled by the Single European Act (SEA), but also by the perspective of the Commission using its powers to inspect the energy sector from a Treaty of Rome perspective.

We have not seen enough effort to achive, "Completing the Internal Market" A beginnig was made by crucial competition law to weaken monopolies and make secure transparency of prices and by increasing the associations for the transit of gas and electricity divided the main networks of the European Union.

The second stage began in EIM 1992, Europe in a short time to reach to the creation of a single, liberalized EU energy market. to propose the program of the internal energy market, provide for the situation for real and request in a even mode to whole, managing single market, for the benefit of consumers.

Composed of same gate in hydrocarbons looking for important materials, confirm and yield and of setting divided regulations for the gas and electricity markets, including third party access. Complete agreement on third party access was infilexible to acqure.[58]

It is necessary to point out here that, there are huge irregularity in the owning single one plan of market opening between Member States, which impact to meaningful abnormality of competition in the internal market. And it refuse single consumers and small and medium-sized enterprise of the competitive cost tolerable to big firms.

We have seen that Commission have intented to encourage the viewpoint for real and fight for equally fair to all players and to ensure a truly mixed, single market.But Fifteen divided liberalised markets would no way no how be a good result. Aim of the Commission neither market opening, competition nor market integration are goal in themselves. The aims are competitive prices, excellent role and consumer protection, specifically concerning the most unprotected in short, a better agreement for the citizen. to secure that this result will

[58] See, Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 (31996L0092) concerning common rules for the internal market in electricity.

complement each other with market opening. to secure waching by Member States of the supply-demand place and its anticipated advance over time, respecting the building of adequate role. [59]

To say openly interventionist energy policy have designed by EU. Europeans would be arranged better by no energy policy at all. Another important development was, The green paper.[60] Which have pointed a future of changed direction investment and extreme price. It drawn attention , to abuse. And this costly future would be bestowed account of missing security of energy supply than would succes if markets were free. Costs of Europe's heavily taxed energy already are high. The avarage reason of depending them still would be uncertain even thought the claim were good. But the EU green papers reasons are lacking, which makes the expensive programs in a foolish manner.[61]

3. 3. Common Energy Policy

The common policies made official by the Treaty on European Union (1992) which verified that the Community would receive responsibility "measures in the sphere of energy."[62] When common energy policy finally resemble, it was not fully because the habitual energy actors were release their rare rule on the energy base. In this fell the appearrence of a common energy policy has describe the attempt of European integration. Premier level for linking internal market and environmental protection has been founded upon supranational power, which the Commission and its members have verified to strecht into the energy sector. The property for the energy policy was also inserted in two new ways. Before all else, stated by other parts of the Commission than DG XVII, the DG XI (Environment). Secondly, through general political summit meeting decisions in the case of CO2-tax and the Energy Charter introductory. [63]

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[59] Loyola de Palacio *"The EU Energy Policy in transition: transforming objectives into market realities European Society"*, **London School of Economics** London, 22 November 2001, p. 1-5. Commission Press Release, DN:IP/01/568http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/01/568|0|RAPID&lg=EN&display= (Download: 12.2. 2004)

[60] See, Green Paper.

[61] Anonymous. *"EU Energy Paper Shirks Markets"* **Oil & Gas Journal**, Volume 93, Issue 25, 1 June 1995. p. 19.

[62] Hitiris, pp. 310-315.

[63] See, Svein S. Andersen *"EU Energy Policy: Interest Interaction and Supranational Authority* "ARENA www.arena.org.energy/lib%20.pol7eu (Download: 21. 01. 2002)

One may mark the opinion in the energy sector as political spill-over, but not in the neo-functional sense. In the latter theory spill-over is based on an idea of interest group politics, where rational actors continue their interest and there is few concern with contextual cause. Importance of the productivity caused to move European energy market standard forward. [64] Neo functionalist shows the importances of that national government are as soon as put inside in a slow of political web of European political economic organization that influence and settle future political choice. But European integration could also be went after at a calm and standard level, a Project promised by those who have investigated replacing ideas of Europe or changing shape in the ethics of the European Project.

The new progression of EU energy policy, on the other side, presents, to establish wide and more powerful supranational power. It is the active interaction between some policy contexts and the momentum of the more general development that display the EU energy policy.[65]

Energy is not included by the Treaty of Rome. The turmoil between national interests and the EU is the chief reason why energy did not formally become a field of common policy during the treaty revisions in Maastricht and Amsterdam. This also exhibit the absence of a piece vizualize for a beneficially energy policy at the EU level. It has been demand that the completion of the internal market critically harm the work of the DG XVII (Energy), and that energy policy in the next will be managed by environmental interests. The position of environmental policy has been supported in the Maastricht and Amsterdam treaties. These treaties also supported the base for portion EU foreign policy. Indirectly this may enlarged the role of the Community to manage supply subject. Because the EU is very dependent upon import of oil and gas, and that this is probably to raise even more in the next decade.

Anyway, it is meaningfull to store in memory that that EU policy is not the only starting point of alter. Policy cause to move will act recoprically with uncommon factors which have more liberal effects, but which may be less unprotected to the political cycles in the EU. One of the The first factor stems from the interaction between policy-making, the function of the EU court and market plans. We should declare that, such interaction is most

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[64] Roger Brownlie. *"It's a Gas, Gas, Gas"* **Design Engineering,** December 2000, p. 9.

[65] See, Svein S. Andersen *"EU Energy Policy: Interest Interaction and Supranational Authority* "ARENA www.arena.org.energy/lib%20.pol7eu/en/0065htm (Download: 21. 01. 2002)

certainly to have an flow from on deregulation attempt. The other reason is the subsidiarity, which remove restrictions for more busy national procedure within the building of inclusive EU opinion. The other source of alter is that some personel corporations may continue on plans that can alter living market structures. Together such powers of change can open up for and support new policy initiatives, as has in the past occurred in connection to the electricity and gas market directives. This also means that problems will not clearly operate the political agenda in the same way.[66]

Europe will needs for expanding sum of energy to meet demand and supply fuel for its economy. Yet this growth will present several of dares to the energy sector, including interruption interest about energy security development of fitting regulation in liberalized markets lessening of CO2 emissions from energy use.[67]A Commission working document of 10 May 1999 followed this second report. This document is a factual annex providing a country-by-country overview of the state of legislative preparation, the way electricity is produced, the timetable for opening the market, the system chosen to provide access to the transmission and distribution systems, as well as unbundling of accounts and of management. It also identifies the regulatory authorities, defines public service obligations and reports on notifications concerning transitional regimes. [68]

Commission made progress and to outlined the action necessary to speed up the completion of the internal energy market.[69] The objective of the Electricity and Gas Directives on establishing the internal energy market is the formation of one really integrated single market for energy which would furnish the European Union with a competitive market and a secure energy supply.[70]

The Union has summed up an ambitious plan to double the donation of renewable to EU energy output by 2010. EU members are presently unable to agree on the ' sum of valid finance for energy policy. Member states should try to inter their disagreement and agree a

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[66] ibid.

[67] Claude Mandil, "*Europe in the Global Energy System*" **Challenges for Energy Policy: Corporate Strategies,** Cologne, 23 September 2003, p. 1.

[68] See, SEC(1999) 712].On 13 March 2001, the Commission presented a proposal for a Directive amending Directives 96/92/EC and 98/30/EC concerning common rules for the internal market in electricity and natural gas [COM(2001)125 - not published to date].

[69] See, Commission Report, "Completing the Internal Energy Market". 13 March, 2001

[70] See, Electricity and Gas Directives 96/92/EC and 98/30/EC.

figure for the EU's energy policies in future.[71] EU to become the world's one of most competitive economy by the end of the decade will not be met without a well functioning single market.[72]

Given the prime importance, the Commission considers that, in addition to the Gas and Electricity Directives, three major actions are necessary in maximising possibilities for trade context:

- appropriate rules with respect to the pricing of cross-border trade;
- rules for allocation and management of scarce interconnection capacity; and
- Where economically justified, the raise of existing physical interconnection capacity

Another important development have been made by Commission for common energy policy by setting up two consultative bodies, the Electricity Regulatory Forum of Florence ("Florence Forum") and the European Gas Regulatory Forum of Madrid ("Madrid Forum"), to deal with these subject. They are made up of representatives of all the sectors concerned: representatives of the Member States, the national regulatory authorities, consumers, distributors, etc. This is an informal process; their decisions are not, therefore, binding.

3. 3. 1. Trans-Europan Networks in Energy (TENs- Energy)

The idea of Trans-European Networks (TEN) emerged by the end of the 1980s in conjunction with the proposed Single Market. The work on completing the internal energy market was accompanied by the creation of trans-European Networks. It made little sense to talk of a big market, with freedom of movement within it for goods, persons and services, unless the various area and national networks making up that market were properly linked by modern and efficient infrastructure. The construction of Trans-European Networks is also an important element for economic growth and the creation of employment within and around the region.

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[71] EU States Split over Energy Policy Budget, **European Voice,** Volume 4, Issue 40, 5. 11. 1998, p. 8.

[72] Francesco Guerrera. *"European Single Market - 10 years on: Europe Sees Progress Give Way to Red Tape and Protectionism"* **Financial Times,** 14. 1. 2003, p. 11.

The Treaty establishing the European Union provides a sound legal basis for the TENs. Under the terms of Chapter XV of the Treaty (Articles 154, 155 and 156), the European Union must aim to promote the development of Trans -European Networks as a key element for the creation of the Common energy policy and the reinforcement of Economic and Social Cohesion. This development includes the interconnection and interoperability of national networks as well as access to such networks.

According with these objectives, the Community is developing guidelines covering the objectives, priorities, identification of projects of common interest and broad lines of measures for energy. The European Parliament and the Council approve these guidelines after consultation of the Economic and Social Committee and the Committee of the Area. [73]

On 13 March 2001 the Commission adopted a set measures to open the gas and electrictiy market sup fully by 2005 for the benefit Europen consumers These measures will reinforce the situations which encourage real and fair competation, and introduce a genuine single market by the operation of Trans-Europan Networks in Energy (TENs- Energy). The objective of TENs Energy is to facilitate the establishment of Networks for the transmission of electricity or natural gas.

It is also important to declare that, the introduction of TENs-Energy would also have an impact on relations with thirt countries, the countries of central and eastern Europe and Norway. The Charter is an attemp to secure energy supplies for the growing needs of the industry of the Community while at the same time providing oil and gas producing states with finance for the modernization of their market.[74]

The revision undertaken by the Commission of the guidelines for the Trans-European Networks (TENs), an essential component of the European energy infrastructure, also causes to the initiatives dealing with this. The guidelines stress the goal of the optimal functioning of energy networks. Criteria for TEN summarized like that;

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[73] See, Council Regulation (EC) No 2236/95 of 18 September 1995 laying down general rules for the granting of Community financial aid in the field of trans-European networks [Official Journal L 228, 23.09.1995]. Regulation (EC) No 1655/1999 of the European Parliament and of the Council of 19 July 1999 [Official Journal L 197, 29.07.1999].

[74] Hitiris, pp. 310-317.

Eligibility criteria:

- projects of common interest financed by Member States and identified within the framework of the guidelines referred to in Article 155 of the Amsterdam Treaty;
- projects financed by Member States, by localized local authorities or organizations working within an administrative or legal framework that makes them alike to public organizations;

Forms of aid:

- co-financing of studies related to projects, including preparatory, feasibility and evaluation studies, and other technical support measures for these studies
- contributions towards fees for assurances for loans from the European Investment Fund or other financial institutions;
- subsidies of the interest on loans granted by the European Investment Bank or other public or private financial bodies;
- direct grants to investments in duly justified cases;
- Where appropriate, a combination of the above-mentioned forms of Community assistance.

The trans-European energy networks (electricity and natural gas) diversify and improve the security of the European Union's energy supply by forging stronger links with non-EU countries and integrating the networks of the future Member States. In addition to these factors, the process of establishing a more open, competitive internal energy market must also take account of the more general objectives of economic and social cohesion. It must go hand-in-hand with raised use of renewable energy sources in the framework of sustainable development policy.

By the way we see that with this proggress, the Union has redefined its priorities, its objectives and the broad lines of its action on trans-European energy networks. It has introduced criteria supplementing the provisions of the existing legislation in order to identify projects of common interest including priority projects in the field of trans-European electricity and natural gas networks.

3. 3. 1. 1. Types of Electricity and Natural Gas Networks

In the TEN electricity and natural gas networks are decribed like that;

The electricity networks concern:

- high voltage lines, excluding those of distribution networks, and submarine links
- Protection, monitoring and control supplies essential for the system in question to operate properly.

The natural gas networks concern:

- high pressure gas pipelines, excluding those of distribution networks, making it possible to obtain supplies from internal or external sources;
- underground storage facilities;
- reception, storage and re-gasification facilities for liquefied natural gas (LNG) and also gas carriers;
- Protection, monitoring and control supplies essential for the system in question to operate properly.

3. 3. 1. 2. Preference for the Trans-European Energy Networks

It is importannt to declare that, the action preference for the trans-European energy networks are compatible with the objectives of sustainable development. They may be common to the trans-European electricity and natural gas networks or specific in nature.

The common preferenceare:

- solving the problems of bottlenecks and missing links, eunusually cross-border, and dealing with congestion;
- taking account of the needs of the internal market in the light of enlargement;
- establishing energy networks in island, isolated, peripheral and ultra peripheral area while promoting the use of renewable energy sources;

- Interoperability of networks within the European Union with those in the accession countries and with other countries in Europe and the Mediterranean and Black Sea basins.

The specific preference for electricity networks relate to integrating and connecting renewable energy production facilities. For natural gas networks concern monitoring of supply systems and diversification of supply routes.[75]To create a more favourable context for the development of trans-European networks in the energy sector and speed up the realization of projects of common interest already identified.[76]To analyse natural gas and electricity interconnections with third countries and the development of these networks on the scale of the European continent, of the Mediterranean Basin and, where appropriate, Central Asia and the Middle East.

The Communication stresses the importance of energy interconnections with third countries for the development of economic trade and the need to secure supplies. In all Member States, demand for natural gas is increasing along with its market portion. The Communication describes the progress of natural gas interconnections with the Russian, Algerian and Norwegian gasfields.

The objectives for the Community are as follows:

- to maintain a high level of diversification of external gas supplies so as to establish a climate of competition between existing and potential suppliers;
- to improve flexibility of gas transfers;
- To raise underground storage capacity.

Central and Eastern European countries generally depend on one external supplier, i.e. Russia. The challenges for those countries are then to improve security of supply and attempt

[75] See, Proposal for a decision of the European Parliament and of the Council of 10 December 2003 laying down a series of guidelines for trans-European energy networks and repealing Decision No 96/391/EC and No 1229/2003/EC [COM(2003) 724 final - Not published in the Official Journal].

[76] See, Official Journal L 161, 29.06.1996conl Decision 96/391/EC of 28 March 1996 laying down a series of measures aimed at creating a more favourable context for the development of trans-European networks in the energy sector.

to diversify their sources, for example through interconnection with Western European countries, the creation of underground storage capacity and the development of gas pipelines.

As regards electricity, most of mainland Europe is covered by the TESIS network, linking up the CENTREL and UCPTE systems. The NORDEL network which covers Scandinavian countries is connected to the UCPTE network.

New interconnections are currently being studied:

- connection of the Balkan countries to the UCPTE network;
- connection of the Baltic States to the NORDEL or CENTREL/UCPTE networks;
- connection of the Mediterranean countries to the UCPTE network;
- Connection with the CIS countries.

The Commission is carrying out a survey of the various Community actions to promote energy network projects in third countries that it intends to pursue. Apart from identifying projects of mutual or localised interest, the Community is encouraging the inter connection of energy networks on the scale of the European continent by other actions of a political nature such as:

- the signing of the Energy Charter Treaty, the implementation of which will cause to securing investment in the signatory third countries and establishing the right of transit on networks across these countries;
- reference to energy infrastructures in association, partnership and cooperation agreements;
- implementation of coherent energy policies with funding under programmes such as SYNERGY, MEDA, PHARE and TACIS;
- Use of instruments such as the EIB and the European Investment Fund to finance investment for energy network projects, particularly in candidate countries.

We have seen the encouraging attemps of the Commission to invite the Member States and the third countries which have concerned to collaborate closely in order to interconnect energy networks on a wider scale, with the aim of improving the security of energy supply, economic and social cohesion and the functioning of the internal market and

contributing to the competitivity, environmental protection, enlargement and external cooperation objectives of the Community.[77]

3. 3. 1. 3. Framework Programme for Actions in the Energy Sector (1998-2002)

To assurance the coherence and efficiency of Community energy actions taken under the energy policy or under other Community policies.[78]The aim of the decision is to establish a multiannual (1998-2002) framework programme for Community actions in the energy sector in order meet the following objectives:

- Security of energy supplies;
- Competitiveness;
- Environmental protection.

This framework programme seeks to enhance the transparency, effectiveness and coordination of the activities of the European Union in the energy sector. It does not aim to replace Member States' initiatives nor other Community initiatives, but endeauvours to reinforce the complementarity and coherence between these different actions. The implementation of this framework programme is based on six specific five-year strands ranging over the following actions:

- Regular monitoring of market developments and energy trends in order that policy decisions can be taken on the basis of a shared analysis, whereby all the decision-makers have access to identical reference bases in terms of economic studies and analyses, energy forecasts and energy system dynamics (ETAP);
- strengthening of international cooperation in the energy sector (SYNERGIE);
- promotion of renewable energy sources (ALTENER);
- encouragement of the rational and effficient use of energy resources (SAVE);
- promotion the use of clean and efficient solid fuel technologies CARNOT programme;
- promotion of the use of environment-friendly technologies in the solid fuels sector; improvement of safety in the use of nuclear energy through increased

[77] See, Comission, 1999. 125 Final.

[78] See, Council Decision 1999/21/EC, of 14 December 1998, adopting a Framework Programme for actions in the energy sector (1998-2002) and connected measures.

industrial cooperation with Russia and the New Independent States as well as better monitoring of the carriage of radioactive materials. Cogeneration to facilitate the installation and operation of electrical cogeneration plants;

- Promotion of nuclear safety in the TACIS countries. improvement of the safe transport of radioactive materials in the European Union and the safety of nuclear installations in countries participating in the TACIS programme by means of increased cooperation in the field of safeguards and industrial cooperation SURE programme;
- Providing economic aid to candidate Central and Eastern European countries The PHARE programme. [79]

3. 3. 2. SYNERGY Programme: Cooperation with Third Countries (1997-1998)

Synergy aims to develop a programme of assistance and cooperation with third countries for the formulation and implementation of energy policy.[80]Synergy is a Community programme of cooperation with third countries in the field of the formulation, elaboration and implementation of energy policy in fields of mutual benefit. It is aimed at all third countries. Synergy will help achieve the Community objectives set out in the White Paper on 'An energy policy for the European Union', namely: overall competitiveness;

- security of supply;
- Protection of the environment.

To achieve these objectives, the Community will contribute, in particular, to the financing of activities concerning:

- advice and training;
- energy analyses and forecasting;
- the organisation of conferences and seminars;
- support to regional transboundary cooperation,

[79] See, Official Journal L 7, 13. 01. 1999.

[80] See, Council Regulation (EC) No 701/97 of 14 April 1997 amending a programme to promote international cooperation in the energy sector - Synergy programme *Official Journal L 104, 22/04/1997 p. **0001 - 0007*** Council Regulation (EC) No 701/97 of 14 April 1997 amending a programme to promote international cooperation in the energy sector - Synergy programme.Extended by Council Regulation (EC) No 2598/97 of 18 December 1997. 31997R0701.

The Regulation gives details of:

- the awarding of contracts under the programme;
- Beneficiaries; Eligible and non-eligible expenditure. [81]

We can say that the common challenges are related to security of supply, competitiveness and environmental concern.

3. 3. 3. ALTENER Programme

The objective of Altener is to promote renewable energy sources in the European Union.[82] Within the multiannual programme for actions in the energy sector, the Decision establishes a multiannual programme of support for renewable energy sources, the objectives being:

- to encourage private and public investment in the production and use of energy from renewable sources
- to create the requisite legal, socio-economic and administrative situations for the implementation of a Community action plan for renewable energy sources;
- The programme follows on from the Altener programme, which ended on 31 December 1997, and from the Altener II programme,[83] which ended on 31 December 1999. Altener ties in with the Community's overall environmental and energy objectives, namely:
- to ensure security of supply;
- to limit CO2 emissions;
- to reduce dependency on imported energy;
- To contribute to local and regional economic development and to economic and social cohesion.

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[81] See, Official Journal L 104, 22.04.1997 Official Journal L 351, 23.12.1997.

[82] See, Council Decision No 646/2000/EC of the European Parliament and of the Council of 28 February 2000 adopting a multiannual programme for the promotion of renewable energy sources in the Community (Altener) (1998 to 2002).

[83] See, Council Decision of 18 May 1998 concerning a multiannual programme for the promotion of renewable energy sources in the Community (Altener II) *Official Journal L 159 , 03/06/1998 P. 0053 - 0057* 31998D0352 98/352/EC.

The Decision lists the types of action eligible for financial support under the programme. These are:

- studies and measures to implement and complement measures taken by the Community and Member States to develop the potential of renewable energy sources;
- monitoring and evaluation actions intended to monitor the implementation of the Community action plan for the development of renewable energy sources, to support initiatives taken in implementing the action plan and to evaluate the impact and cost-effectiveness of actions and measures undertaken under the Altener programme
- pilot actions of interest to the Community aimed at creating or extending structures for the development of renewable energy sources;
- measures intended to develop information, education and training structures; measures to encourage the exchange of experience;
- targeted actions facilitating the market penetration of renewable energy sources and relevant know-how and encouraging investment;
- to increase the proportion of renewable energy sources in the energy balance, in order to reach the indicative objective of 12 % in gross internal energy consumption in the Community in 2010. [84]

3. 3. 4. The SAVE Programme

Objective of the SAVE programme was given life by a Council Decision in October 1991 under Article 235 four categories of actions were specified:

1. Technical evaluations for standards work;
2. Measures to implement the pace decision;
3. Measures to foster an information network;
4. Measures to support member states' initiatives for energy efficiency infrastructures (training/information and sect oral pilot projects in areas such as least cost planning, cogeneration, transport, third party financing);

[84] See, Official Journal L 79, 30.03.2000. Community action plan for the development of renewable energy sources.

The short Decision defined the level of support for projects and the setting up of a committee to assist the Commission in approval of the projects. A group called ENR, made up loosely of Member States' energy efficiency organizations, coordinates the information network at an arm's length from the Commission using about Ecu1m/yr of the SAVE money. Although the Commission offers guidelines every year and tries to direct their concentrate, the projects cover a very wide range of topics; they also tend to be small, making the programme administratively burdensome.[85]

It is necessary to declare here that, the most important Community energy saving initiative is the SAVE omnibus Directive.[86] The Commission regulates measures in seven key areas and proposed that Member States take action in their own way. Commission said that, without abatement measures, CO2 emissions were likely to raise in the Community by 12% and that this Directive could reduce the growth by 3% or 80mt.

3. 3. 4. 1. Aims of the SAVE Programme

Aims of the SAVE Programme include same measures and aplications we can briefly mention them like;

Technical measures

Domestic appliances: voluntary agreement with manufacturers; minimum performance levels for fridges and freezers; labelling;

Buildings:The efficiency of hot water boilers; mandatory annual inspections of boilers; a methodology for thermal insulation necessity;

Transport: minimum performance necessity for cars to reduce CO2 emissions; examining the possibility of a system for limiting the consumption of vehicle fleets; periodic inspections of cars; projects to improve the ratio of public to private use of town roads;

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[85] See, Council Directive 89/364/EEC establishing an action programme on electricity efficiency (PACE) - OJ/89/L157.

[86] See, SAVE Omnibus Directive which was approved by the Council in September 1993.

House automation: Proposals to promote more effective energy management. Least cost planning and demand side management: 10-15 pilot studies; Development of national energy plans. Measures will be taken to promote and strengthen localized and national agencies;

Taxes and other levies: Proposals on energy pricing following a detailed study; possibility of tax incentives for industrial and final energy users; the concept of road pricing to be studied

Cogeneration: Support through thermie; a proposal for removing commercial and structural obstacles;

Measures relating to user behavior:

- Education,
- Training and information;
- The study of the impact of pricing on behavior;
- Proposals on energy audits and building certification;
- Individual metering in multi-occupancy buildings;
- Labeling and monitoring of appliances.

Cooperation with third countries: Closer cooperation with third countries aimed at rational use of their energy resources; study of parallel initiatives in other area such as Japan and the US.

Financial and taxation measures: Promotion of third party financing (TPF) through the creation of a European network; removal of obstacles to the use of TPF.

The SAVE omnibus Directive was caught up in the height of concerns about subsidiary and in the rush to get a plan adopted prior to Rio. Although the extent of the Commission's support for energy saving and renewable is not generally recognized, the Commission and the Council have failed to fully harness the potential in both these areas. Measures to encourage energy efficiency and the raised use of renewable are given priority in many Community actions - research and demonstration, localized initiatives as well as more directly through the SAVE and Altener programmes. [87]

[87] See, OJ/92/C23, Measures to encourage energy efficiency and the raised use of renewables.

It is necessary for the Community to facilitate these exchanges, in line with the subsidiarity process, on the basis of the SAVE programme, with the chief concentrate being on the developed area and cities not covered by the localised funds. At the European level, the exchanges between the different area or cities can be a powerful catalyst not only for technology transfer but chiefly for the exchange of know-how and good practice given the diversity of the European area and cities.

The politicians also wished to see renewables take a much more significant place in the development policies of the EU and Member States and thus facilitate the transfer and the development of environmentally sound technologies in developing countries, notably in the fields of energy and transport.[88] The importance of energy saving, the Commission has long favoured supporting renewable energies.[89]

3. 3. 4. 2. SAVE II Programme (1998-2002)

One objective of Community policy is to ensure prudent and rational utilisation of natural resources, the European Union is pursuing a programme to encourage rational and efficient use of energy resources. In the context of the Kyoto Protocol and the commitments to cut CO2 emissions, energy efficiency is considered the cornerstone of Community action.[90]

On the basis of Article 174 of the Treaty, which stipulates that Establishment of a programme to stimulate energy efficiency measures, encourage investments in energy conservation, and improve the energy intensity of final consumption.

The Decision defines the categories of actions which can be financed by the programme:

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[88] Renewable Energy Sources, **Environmental Policy & Law,** 2000, Volume 30, Issue 4, p. 195.

[89] See, Decision 93/500/EEC on Altener programme - OJ/93/L235 C ommission proposal for promoting renewables (Altener) - COM/92/180.

[90] See, Council Decision No 647/2000/EC of the European Parliament and of the Council of 28 February 2000 adopting a multiannual programme for the promotion of energy efficiency (SAVE) (1998 to 2002) [Official Journal L 79, 30.03.2001]This Decision repeals Council Decision 96/737/EC of 16 December 1996 concerning a multiannual programme for the promotion of energy efficiency in the Community - SAVE II Council Decision No 647/2000/EC of the European Parliament and of the Council of 28 February 2000 adopting a multiannual programme for the promotion of energy efficiency (SAVE) (1998 to 2002) [Official Journal L 79, 30.03.2001]This Decision repeals Council Decision 96/737/EC of 16 December 1996 concerning a multiannual programme for the promotion of energy efficiency in the Community - SAVE II.

- monitoring of progress on energy efficiency and evaluation of the actions undertaken under the programme;
- sectoral pilot actions aimed at accelerating investment and/or improving energy use patterns;
- measures proposed by the Commission or by third parties to foster the exchange of experience;
- studies of energy efficiency with a view to establishing it as a criterion within other Community programmes, the effects of energy pricing, and action to complement Community measures;
- Specific actions in favour of energy management at regional and urban level and greater cohesion between Member States and regions.

Some actions are fully funded by the Community, others are only part-funded, with a maximum Community contribution of 50%.[91]

3. 3. 5. ETAP Programme (1998-2002)

ETAP programme aims to promote a cooperative approach between the Community, the Member States, non-Community countries (including the applicant countries), international organisations and other interested parties to analysis of energy problems and trends at Community level.[92] A programme of studies, analyses, forecasts and other related work concerning the future development of European energy policy. We can briefly say that, ETAP programme has the following objectives:

- To establish at Community level a shared approach to studies, analyses and forecasts in the energy sector;
- to promote analysis of energy markets and policies at Community and Member State level;
- to analyse: the impact of energy production and use on the environment;
- energy market trends in Europe and the world;

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[91] See, The Decision repeals Decision 96/737/EEC (Official Journal L 335, 24.12.1996) on improving the efficiency of electricity use (SAVE II Programme).

[92] See, Official Journal L 7, 13.01.1999 Council Decision 1999/22/EC adopting a multiannual programme of studies, analyses, forecasts and other related work in the energy sector (1998-2002) (ETAP programme).

- to help identify and transfer the best analysis methods;
- to facilitate information networks in the energy field;
- to develop the dissemination of results;
- To develop methodologies for monitoring the implementation of the energy framework programme.

To achieve these objectives, the Community may help fund the following measures:

- observation, monitoring and the exchange of information in the energy field;
- provision of technical and methodological assistance to projects;

3. 3. 6. CARNOT Programme

CARNOT programme targets to promote the use of clean and efficient solid fuel technologies.[93] The Carnot Programme was set up to promote clean solid fuel technologies (coal, lignite, peat, ormulsion, oilshale and the heavy fraction of petroleum products). The programme comes under the energy framework programme and covers the period 1998 to 2002.

The programme has two closely linked objectives:

- to promote the use of clean and efficient technologies in plants using solid fuels;
- Encourage the development of advanced clean solid fuel technologies.

We can say that two categories of actions on clean solid fuel technologies may be financed under the Carnot programme, namely:

- measures to foster the exchange of market and technical information between national, Community and international activities;
- Measures to promote the industrial exploitation of clean technologies for energy purposes (e.g. combined heat and power production) through increased industrial cooperation.

[93] See, Official Journal L 7, 13.01.1999 Council Decision 1999/24/EC of 14 December 1998 adopting a multiannual programme of technological actions promoting the clean and efficient use of solid fuels (1998 to 2002) - Carnot Programme.

3. 3. 7. Cogeneration

Cogeneration aims to facilitate the installation and operation of electrical cogeneration plants (technology allowing the production in one process of heat and electricity) in order to save energy and combat climate change.[94]The Green Paper on security of energy supply published in 2000 highlighted the need to limit the energy dependency of the European Union and reduce greenhouse gas emissions. However, carbon dioxide (CO2) emissions in the EU are currently on the rise, making it difficult to meet the commitments under the Kyoto Protocol.

Electricity production from cogeneration accounted for 11% of total electricity production in the Union in 1998. If the share of electricity production from cogeneration increased to 18%, the energy savings could represent around 3 to 4% of total gross consumption in the EU. Cogeneration saves energy and improves security of supply. There is considerable unexploited potential for cogeneration in the Member States. Moreover cogeneration:

- reduces losses on the electrical grid because cogeneration installations are usually closer to the consumption point;
- increases competition among electricity producers;
- allows new enterprises to be set up;
- to isolate extremely remote areas.

Comission should overcome the major obstacles:

- inadequate control of longstanding monopolies;
- inadequate support from regional and local authorities;
- incomplete liberalisation;
- regulatory obstacles having a negative effect;
- No European standards for network connection.

[94] See, Proposal for a Directive of the European Parliament and of the Council on the promotion of cogeneration based on a useful heat demand in the internal energy market [COM (2002)415 final - Not published in the Official Journal].

3. 3. 7. 1. The Principle of Cogeneration

The proposal distinguishes between three classes of cogeneration based on different factors:

- Industrial cogeneration: the generation in one process of electrical and/or mechanical energy and thermal energy useful for industrial production, generally with heat temperatures of 140°C or higher.
- Heating cogeneration: the generation in one process of electrical and/or mechanical energy and thermal energy useful for heating purposes in district heating systems or directly in buildings, generally with heat temperatures between 40 and 140°C.
- Agricultural cogeneration: generation in one process of electrical and/or mechanical energy and thermal energy useful for agricultural heating of greenhouses, aquaculture plants and same applications, generally with heat temperatures between 15 and 40°C.

Public support for the promotion of cogeneration should be concentrateed on cogeneration based on useful heat demand in order to avoid increased heat demand which would result in an increase in fuel consumption and CO2 emissions.

The Directive proposes that direct public support should be concentrated on electricity produced in small installations (with a capacity below 50 MW). Larger installations will also be eligible for aid, but only for the production of the first 50 MW of electricity in order to ensure that these installations do not receive excessive support.

Finally, in order to eliminate any lack of clarity resulting from current definitions and to improve the transparency and cohesion of the internal energy market, the Commission proposal stresses the need for a common definition of cogeneration and provides for a flexible method of determining high efficiency cogeneration.[95]

[95] See, Codecision Procedure (COD/2002/0185).

3. 3. 8. SURE Programme

SURE programme aims to improve the safe transport of radioactive materials in the European Union and the safety of nuclear installations in countries join in the TACIS programme by means of increased cooperation in the field of safeguards and industrial cooperation.[96]

The decision sets up, under the framework programme for actions in the energy sector, a specific programme of activities relating to the safe transport of radioactive materials and to safeguards and industrial cooperation to promote certain aspects of the safety of nuclear installations in countries participating in the TACIS programme (SURE programme). Like the framework programme, the SURE programme covers the years 1998 to 2002.

The SURE programme's main three objectives are:

1. to review safety relating to the transport of radioactive materials in the Community;
2. to help the TACIS countries to improve their systems of safeguards;
3. to promote industrial cooperation and cooperation between regulatory bodies and the TACIS countries to help those countries achieve high safety standards.

Various types of actions may in particular benefit from SURE funding:

a) in the field of the safe transport of radioactive materials:

- identifying the harmonisation measures called for;
- helping to improve legislation further (by developing experimentation and know-how);
- evaluating and analysing incidents which have occurred during transport;
- making emergency procedures more consistent and improving the way in which they are carried out;
- developing efficient systems of reporting in the event of an incident;
- cooperating with the TACIS countries on safe transport;

[96] See, Council Decision 1999/25/Euratom of 14 December 1998 adopting a multiannual programme (1998 to 2002) of actions in the nuclear sector relating to the safe transport of radioactive materials and to safeguards and industrial cooperation to promote certain aspects of the safety of nuclear installations in the countries currently participating in the TACIS programme - SURE programme.

- enhancing the exchange of information between the relevant bodies in the Community and in the TACIS countries;
- improving public information, comprehension and awareness as regards the transport of radioactive materials;

b) in the field of safeguards in the TACIS countries:

- the training of experts from those countries in the matter of nuclear safeguards;
- support for the development of accounting and control systems for nuclear materials;
- the development of modern logistical, evaluation and control equipment and the relevant training;

c) in the field of industrial cooperation with the TACIS countries:

- analysing the industrial, administrative, legal and financial context specific to each of those countries;
- developing the transfer of European technologies by means of cooperation in industry and between regulatory bodies;
- Promoting cooperation between partners from the Community and the TACIS countries (e.g. in the form of joint industrial projects). [97]

3. 3. 9. The PHARE Programme

The PHARE programme is entered EU agenda to provide economic aid to candidate Central and Eastern European countries.[98]The PHARE programme is currently the European Community's main instrument of financial and technical cooperation with the candidate Central

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[97] See, Official Journal L 7, 13.01.1999

[98] See, Council Regulation (EEC) No 3906/89 of 18 December 1989 on economic aid to the Republic of Hungary and the Polish People's Republic [Official Journal L 375 of 23.12.1989].
Council Regulation (EEC) No 2698/90 of 17 September 1990 [Official Journal L 257 of 21.09.1990]; Council Regulation (EEC) No 3800/91 of 23 December 1991 [Official Journal L 357 of 28.12.1991]; Council Regulation (EEC) No 2334/92 of 7 August 1992 [Official Journal L 227 of 11.08.1992]; Council Regulation (EEC) No 1764/93 of 30 June 1993 [Official Journal L 162 of 03.07.1993]; Council Regulation (EC) No 1366/95 of 12 June 1995 [Official Journal L 133 of 17.06.1995]; Council Regulation (EC) No 463/96 of 11 March 1996 [Official Journal L 065 of 15.03.1996]; Council Regulation (EC) No 753/96 of 22 April 1996 [Official Journal L 103 of 26.04.1996]; Council Regulation (EC) No 1266/1999 of 21 June 1999 [Official Journal L 161 of 26.06.1999]; Council Regulation (EC) No 2500/2001 of 17 December 2001 [Official Journal L 342 of 27.12.2001].

and Eastern European countries (CEECs). It was set up in 1989 to support the process of reform and economic and political transition in Poland and Hungary.

Following the Essen European Council of December 1994, PHARE became the financial instrument of the pre-accession strategy leading ultimately to the accession to the EU of the ten associated Central and Eastern European countries. These countries are: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania Poland, Romania, Slovakia and Slovenia. In the initial stages of the transition, the programme concentrateed on providing know-how and technical assistance and, where necessary, humanitarian aid. As progress was made, the demand for technical assistance declined in relative terms and the need for investment aid, particularly in areas such as infrastructure and environmental protection, increased considerably.

PHARE activities concentrate on two priorities:

- Helping the administrations of the candidate countries to acquire the capacity to implement the Community *acquis*. Phare also helps the national and regional administrations, as well as regulatory and supervisory bodies, in the candidate countries to familiarise themselves with Community objectives and procedures;
- Helping the candidate countries to bring their industries and fundamental infrastructure up to Community standards by mobilising the investment needed, particularly in areas where Community rules are increasingly demanding: environment, transport, industry, product quality, working situations, etc.

It is crucial to mention here that, after 2000 we see radical changes, Phare's management methods which were changed with a view to:

- concentrating projects on the *acquis* implementation preferenceprogrammed by the Accession Partnerships;
- improving budgetary implementation;
- radically increasing the size of projects;
- Continuing decentralisation of management to the recipient countries. [99]

[99] See, Report COM (2003) 97 final [Not published in the Official Journal] Report from the Commission of 3 March 2003 on the Phare programme Annual Report 2001.

3. 4. Security of Supply

The importance of security of energy supply has growed and declined in the Community context over the last 40 years. In the beginning, the ECSC and Euratom Treaties established new legal structure in which security of supply was a part of a more general industrial policy aimed at a common market, growth and employment. The need for a Community reply to the first oil crisis in 1973 resulted in the development of an energy policy of sorts. But, with weak energy markets in the late 1980s, and into the 1990s, and the immovable rise of environmental and Single Market interest, security of supply as a policy issue skipped right to the bottom of the agenda.

Security of supply is global issue because an interruption of supply could easily trigger an armed conflict and endanger political and social solidity elsewhere in the world. Although there seems to be plenty of oil and gas some underlying tendencies arouse concern that our countries may drift into danger over time. In particular, dependence on the Persian or Arabian Golf oil exporters is rising and projects that the proportion of world oil production provided by Gulf exporters will, by 2010, edge back to the levels of the early 1970s. On various occasions the European Commission has drawn attention to the fact that Europe's energy dependence in 2020 will presumably be again where it was before the first oil price shock, i.e. at roughly 70%. For natural gas, coal and oil it could well raise to 70%, 80% and 90% respectively. But this will have to compete for oil and gas with a world that consumes more energy than ever. It is e.g. assumed that China will triple its fundamental energy consumption in the next 50 years. Other Asian countries will follow. And most of this energy stems from the same sources as Europe's oil and gas. [100]

Most of the policies, established at the Community level directly relating to security of supply are now old policies, stemming from the 1973-86 period and are, almost by default, still used as a definition of energy policies. In fact, it is no longer possible to define energy policy as simply a question of security of supply. This was already recognized by the Commission at the turn of the decade, but the Gulf War and the opening up of East Europe diverted the attention of DGXVII from re-examining energy policy.

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[100] See, IEA. World Gas Forecasts Report 2000.Paris:2001.www.iea.org en/gas-storehtm-world –gas/en/dr2000htm (Download: 3.2.2004)

Security of supply needs to be defined, not just in a general sense, but in a specific sense for every type of fuel. There do need to be guidelines on how security of supply is to be dealt with at the European Union level, and this needs to be formalized in the Treaties. This should be done as part of the energy policy exercise, during the 1996 intergovernmental conference on Treaty revision, leading to a new chapter on energy. Then, based on the general Treaty law, preference for every fuel and sector should be developed. Such preference need not be complicated, but should recognize the different kinds of security of supply. In the oil sector, for example, there must be concern about prices, about supply difficulties in a crisis situation, and about long term dependency on imports. In the electricity sector, the preference reliability of the grid, allocation of planning responsibility, public service obligations, will be wholly different.

For Continuous security and supply Union need to raise its gas storage capability in the long term or build more import pipelines than it would under normal circumstances. This is more complicated than for oil, because gas storage and supply is more costly and the import sources and supply lines are far more restricted geographically. If such solutions are deemed to be necessary, then these will have to be of a Community nature, since it would be uneconomic and very difficult for some States to take their own national measures.

On the subject of supply security, the Commission impels continued alarm and careful monitoring of the situation, particularly because of the EU's increasing dependence on gas imports. However, it argues that security and competition are compatible objectives and, indeed, goes so far as to say that gas security can be enhanced by the single EU gas market.

The Commission argues that as EU member countries' energy networks are integrated and become larger, fewer consumers in one country will have to rely on the production, supply or storage capacity in their own country. Furthermore, the removal of obstacles to using the gas system, as well as in trade and investments, will open up new supply sources, and will add flexibility and opportunities for synergy in respect of supply security.[101]

Energy objectives were almost wholely directed at security of supply. Progress on the general objectives has been varied with a range of initiatives on energy saving and networks but few concrete developments in the other areas. There would have been a firmer attempt to meet the

[101] Thomas Victoria. *"European Competition."* **Pipe Line & Gas Industry,** September 2001, Volume 84, Issue 9, p. 19.

specific targets if the oil market had stayed firm and if prices had continued to be manipulated by OPEC. As it is, the Community as a whole failed miserably to reduce its reliance on oil. The EC's overall import dependency has risen sharply from 43% in 1986 to over 50% in 1992. Forecasts by DGXVII suggest that by 2020, the energy imports from third countries could reach a massive 75% of consumption.[102]

The current import figures and the forecasts illustrate the need to ensure that security of supply as a policy issue is not left to linger on the sidelines. The Commission has made attempts to broach the subject with package of measures to cope with an oil supply crisis. The Commissioner had powerfully criticized oil companies and traders for encouraging price speculation during the Gulf war; the extra revenues paid for the oil products.

The key point to recognize with regard to security of supply is not so much that the EU needs it today, but that without the Community framework, suggested in the DGXVII paper, or a broader European energy policy defining and consolidating security of supply at the Union level, certain Member States will continue to find it unacceptable to relinquish more than a modest portion of national control over their industries.

Whereas most of the policy subject connected with security of supply of other fuels have been raised at one time or other, there is an urgent need to start the widest possible argument over how to cope with long-term dependency on natural gas imports. Clearly, developing solid international relationships with the supplier countries is one answer as it is with oil. In promoting initiatives such as the dialogue with the GCC which has already broached the subject of future gas supply and the European Energy Charter, the Commission is to be powerfully commended. There is a need, though, for a much deeper analysis of the Union's interest in how and why to develop its energy security interests in the international arena. The long-term security of gas supply cannot simply be dealt with through enhancing international links. And diversification of both energy suppliers and the energy mix may provide comfort in theory but not for consumers where there is no immediate alternative to the unreliable gas supplier and where the demand for all the other fuels is already tightly matched by supply, as in Italy for example.

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[102] See, Eurostat: www. europa.eu.int/comm/eurostat/Public/datashop/printproduct/EN?catalogue=Eurostat&product=KS-DK-03-001- -N-EN&mode (Download: 11. 02. 2004)

3. 4. 1. Competition Policy

Competition policy is a vital instrument in the Union's Single Market tool box. The Commission needs to utilise the research and arguments of the complainants to provide the impetus to chip away at what will be, in the first place, a very rough-edged internal energy market and one with much potential for increasing the level of competition.It is important to note that the Commission exercise a lot of pressure behind the scenes and its successful craftsmanship is not always abvious.

In parallel with the efforts by DGXVII to set up a framework of regulations for an internal energy market, there have also been continuing efforts to apply Treaty law on competition policy to the same ends. For several years, the Commission's annual report on competition policy has stated firmly that the present situation in the electricity and gas industries is not compatible with the achievement of an internal market, and that consumers are losing out on prices and choice because of the action of monopoly producers or distributors. Public service obligations can be met in a way compatible with the Treaty. In 1994, the Commission pointed out that the lack of competitive pressures in the energy sector 'has probably resulted in job losses in Community industry'. Public service obligations should be fulfilled without any negative effect for liberalization of the market.[103]

The 1993 report on competition serves warning, for the first time, that the Commission will ensure that the rights of non-discriminatory access are implemented in the light of new initiatives on networks. As the UK example shows, the Commission has sought, in the past, to ensure that pipelines or transmission lines funded by the Community, or subject to some kind of approval in Brussels, are open to fair competition, although this is not always possible.

Competition actions are generally divided into two tracks: those concerning companies [104]and those concerning the role of Member States, either through state aid or through ownership or legislative control of enterprises[105]. Although when dealing with the energy sector, there are so many linkages between governments and enterprises, actions can often involve examinations along both tracks.

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[103] Christos Papoutsis. *"Elecricity on the Move"* **Unipe XXIV Congress**, Montreux, Switzerland, 18-22 May 1997, p. 1.

[104] Based on Articles 85 and 86, ECSC Articles 65 and 66.

[105] Largely based on Articles 30-37 and 90-93.

The chief Single Market aim relevant to coal, is the reduction of subsidies and the rationalisation of high cost mines. The Commission has worked steadily and determinedly over the last few years to encourage a more competitive approach in the German and Spanish industries. In the oil sector, actions are largely confined to the newest Member States and concern delayed liberalisation of the distribution markets. In the gas and electricity industries, the Commission's aims run parallel - breaking down monopoly activity and giving the consumer more choice.

3. 4. 2. Environment Policy

It is obvious that, from the 1980s in the energy policy other factor began to impact the design of Common energy policy, namely the environment. First, acid rain, then global warming gradually moved up the agenda. Sulphur targets were imposed at the European level as a localised solution to a localised problem, and then governments began to adopt unilateral and multi-lateral targets for greenhouse gases.[106] The greenhouse effect has moved diligently up to the top of the international political agenda. 'Energy and the environment' which looked for the first time at the interface between the two policy areas and outlined a strategy for controlling both acid rain and CO2 emissions.

Ultimately, the Greens are a visible certain form of a challenge to governments around the world. Electors are seeking more energetic protection of the environment, and traditional parties are striving to provide this new interest. The message of the greens in this situation is quite simple; if you do not succeed in adopting vigorous environmental policies, your voters will turn to new parties.[107]

The importance of EC environmental policy for the energy sector has paralleled the ascent of the issue up the political agenda in an increasing number of member states, particularly as the Greens have become a political force. In those cases where governments have been obliged to introduce new controls on pollution, they have sought to have them generalised across the EC so as not to lose competitiveness. The best example has been the acid rain argument where the West German government, forced to introduce major controls on domestic emissions from industrial

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[106] See, Commission. **Environmental Pollution Energy: the Changing Climate,** Buressel, June. 2000

[107] Von Moltke. "*Konrad the Greens of Europea New Environmentalism*" **EPA Journal,** Volume 16, Issue 1, February 1990, p. 46.

and electricity plant, has pressured for alike controls in all member states. The importance of the issue to energy policy was demonstrated in the 1995 objectives, where environmental concerns were identified as a. major consideration in policy. The status of environmental subject overall was confirmed in the SEA where it was given its own provisions (allowing it to enforce decisions on a majority vote). The SEM proposals also identify the need for. High standards of environmental protection and this has impacted on the IEM argument. The issue is likely to grow in importance as the issue 'continues to gain political importance in member states, particularly with growing concerns over subject such as the greenhouse effect'.

At the Rio meeting, all the Member States and the Community signed the Climate Change Convention, which further emphasised the Community's commitment to CO2 stabilisation by the year 2000 and reinforced the need to develop adequate measures to meet that target. UN Conference on Environment and Development in Rio de Janeiro, by a package of four proposals which made up the Commission's climate change strategy: a CO2/energy tax, a draft Directive on energy saving (under the SAVEprogramme), a draft Decision on promoting renewables (Altener), and a draft Decision on greenhouse gas monitoring.

The European Commission has adopted a strategy for strengthening EU environmental energy policy. It has outlined a range of activities to develop a more sustainable future for energy. It concentrates on three areas: promoting energy efficiency and energy-saving; increasing the portion of renewable energy sources; and reducing the environmental impact of conventional energy sources.[108] The need for an energy tax was already under serious discussion during 1990, and there were intense negotiations which led to the Commission informing the Environment Council that it would opt for a combined CO2/energy tax.

The Community's Fifth Action Programme for Sustainable Development takes the view that internalization of external costs and benefits could offer the best and most efficient way of integrating environmental concerns since it has the clear advantage that it is working with the market rather than against it.

Eco-Principles for Europe, Precaution and Preservation the principle must be applied to energy policy. Precaution places the reduction of air pollution in Europe's cities high. Climate

[108] Renewable Energy Sources, **European Power News,** Volume 23, Issue 11, November 1998, p. 2.

change makes it urgent to implement the decisions taken at the Rio and Kyoto conferences to curb gases that warm the atmosphere. Precaution also compels Europeans to stand by idea of the "cultural exception". [109]

The effects of environmental measures on competitiveness are likely to be short term and will largely depend on how well industry is able to adapt to the new situation. For instance, as a result of environmental measures, the need for industry to invest in new less energy intensive technologies and develop new management skills may, in the medium term, provide an advantage instead of a penalty for competitiveness.

Improving competitiveness and protecting the environment are not necessarily in conflict. Any negative effects of environmental measures on competitiveness will only affect industries which are in direct competition with entities located in areas where no alike measures have been introduced, be it inside or outside the Community. This would be an argument for measures to be introduced at Community level in order to ensure even competitive situations. and that policies that move industry to invest in new, cleaner, and less energy-intensive technologies[110] will prove an advantage rather than a penalty to European firms in the long term.

In many respects, external costs have been progressively reduced through emission limits, voluntary agreements, civil liability, etc. which charge the polluting activities with some parts of the cost to society. However, where necessary, further consideration should be given to the introduction of economic instruments. Such measures are compatible with a market based approach, as the decisions are left with the participants in the markets, while the framework is set to reflect environmental necessity. Which instruments or combinations of instruments to choose is primarily a question of economic efficiency in achieving energy and environmental policy objectives. The outcome of both the renewable energy and energy conversation programmes will depend primarily on the goverment's policicies.[111]

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[109] Daniel Cohn-Bendit. "*American Hormone-Fed Beef into our Food Supply*" **NPQ New Perspectives Quarterly,** Volume 16, Issue 5, fall 1999, p. 13.

[110] Principally in the energy efficiency and renewable areas.

[111] D.A.Elliot. "*Regulation, Technology Strategy and Energy Policy:The Missin Link*" **Technology Analysis & Strategic Management,** Volume 6, Issue 3, 1994, p. 312.

3. 4. 2. 1. Environmental Consequences

Opening of the market may help to achieve Community environmental objectives in terms of energy. The introduction of competitive pressure has had a positive effect on energy efficiency. On the other hand, care should be taken to ensure that falling energy prices do not have an adverse effect on the development of consumption and on renewable energies and cogeneration.

Therefore, in addition to the existing provisions of the Electricity and Gas Directives, the Commission has adopted independent measures, including legislative proposals on promoting renewable energies, energy efficiency and energy taxes.[112] European Union has outlined an ambitious programme to double the contribution of renewables to 12 of EU energy production by 2010.[113]

3. 4. 2. 2. Kyoto Protocol

Along with, the EU will have to rely on heavily on elasticity mechanisms such as emissions commerce to meet the goals under the Kyoto Protocol. A view to fight climate change, developed countries have obligated themselves, under the Kyoto Protocol adopted in 1997, to achieve compulsory targets of reducing emissions of a basket of six greenhouse gases (the most important one of which is CO_2) by an average of 5.2% below 1990 levels over a period between 2008 and 2012. The EU has obliged itself to an 8% reduction in its greenhouse gas emissions at Kyoto. Nuclear volume was necessary to meet Kyoto obligations to reduce carbon emissions. "We can raise renewable energies from 6 per cent to 12 per cent of the mix. But renewable energy itself is not enough."[114] With the raised, use and production of gas, however, access will need to be developed that reduce methane leakage from the gas system with a view to maximize the environmental aid of using gas.[115] They will also describe their access at national level to urge the contribution made by renewable energy to meeting the EU's power needs. The Union has indicated an aspiring programme to double the contribution of renewable to 12 of EU energy

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[112] See, COM(2001)125 final the Commission has Plans for Measures Relating to climate change

[113] Chris Johnstone. "*EU States Split over Energy Policy Budget*" **European Voice**, Volume 4, Issue 40, 5.11. 1998, p. 8.

[114] Daniel Dombey. *"Brussels Differs with US in New Energy Policy"* **Financial Times,** 27. 6. 2002, p. 8.

[115] See, *COM* (99)571Why a Communication on security of EU gas supply? - Introduction and Background.

production by 2010 EU members are presently cannot to fit on the ' sum of valid finance for energy policy.[116]

3. 4. 3. Relationship between Energy, the Economy and Economic and Social Cohesion

In addition to economic efficiency, energy policy aims to meet other objectives such as security of supply, environmental protection and social goals. The old command and control mechanisms traditionally applied to pursue these goals are generally neither the best approach nor feasible in the new context. In a competitive market, policies have to be implemented with competitively neutral instruments that do not discriminate among market players and minimize market deformions. Implementing suitable instruments has proved to be a difficult task. Community energy policy is developing in the context of very disparate rational, localised. Moreover, the least developed countries and area are not only handicapped by having insufficient access to energy supplies but are also the least efficient in their use of energy. If greater integration between energy systems in Europe is to help reduce these disparities, energy policy must include the objective of cohesion and must be prepared to play an important part in achieving that objective. [117]

Despite of its relatively small weight in the supply chain, end user supply has a disproportionately large importance in getting competition to work for the benefit of consumers. To safeguard the security of supply, as well as its regularity and quality at affordable prices, member states can individually define public-service obligations in the general economic interest, provided that they are objective, transparent and non-discriminatory[118] Because the directive constituted only a modest step towards liberalization, the Commission has continued to apply the infringement procedures against the import and export and the transmission and distribution monopolies in order to seek pressure through Treaty law. The Commission, in turn, has to define the Community interest and show that the member states could reach the same objective with less stringent measures. A private competitor must also show that the existing restrictions impede his

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[116] European Power News, **States Splitover Energy Budget**, Volume 23, Issue 12, December 1998, p. 1.

[117] See, *COM* (93)645, *Articles 130 a and 130 b of the Treaty on European Union. COM (92) 23 Final. 27. 3.1992. Vol II,* Energy, Economic and Social Cohesion. Communication from the Commission European Commission.

[118] Adrienne Heritier. *"Market Integration and Social Cohesion: The Politics of Public Services in European Regulation"* **Journal of European Public Policy,** Volume 8, Issue 5, 2001, pp. 825–852.

activities disproportionately and that the political objectives could be reached with less strict measures. [119]

3. 4. 4. Social and Regional Objectives

Social objectives, including universal service, support to disadvantaged consumers or equalization of tariffs can, in principle, be promoted in a market context provided they are made explicit and they are financed in ways that do not deform competition. Governments need to review and clarify what social and localised objectives they want to pursue. For instance, uniform electricity tariffs may no longer be justified if broad geographical cohesion stops to be an important policy goal because it is already achieved. Achieving these objectives, nonetheless, generally entails deforming electricity prices and therefore there is a limit to what electricity markets can cause to social objectives without suffering significant loss of economic performance. In the long run, general policies, rather than sectoral electricity policies are more efficient in achieving social objectives. In defining social objectives, policy makers should keep in mind that competition itself brings some significant social benefits. For instance, low prices are an important step forward in achieving universal service; and more product and price differentiation have the potential of allowing a better match between unusual consumer groups and the service they need.

3. 4. 4. 1. Public Service Obligations

It is essential that liberalisation of the markets and the completion of the internal market continues to maintain and even improve the provision of energy supplies at reasonable prices while at the same time adhering to a number of principles, such as environmental protection. Given that energy is a fundamental aspect of daily life, the attainment of the highest possible standards of public services in these areas is a fundamental objective of Community energy policy. Given that liberalisation has done away with State monopolies in energy distribution and transmission, this objective is ensured by sector-specific regulatory authorities on the basis of standards framed by the Member States in accordance with the principle of subsidiarity. The Commission can, however, frame objectives, and monitor and compare performance within the

[119] See, The Court rulings on Corbeau and Almelo qualified the notion of general-interest services under Art. 86 (ex 90) for the first time. Subsequent Court rulings confirmed this interpretation. If member states disagree with Art. 86.3 (ex 90.3).

Community energy policy with a view to bolstering specific provisions. Priority objectives in this area will include ensuring the right of households to receive an electricity supply on reasonable terms, the protection of vulnerable consumers and environmental protection.[120]

It is important to defent that security of supply policies, obligations and commercial practices are not in any way used as an artificial and therefore unjustified obstacle to competition and market entry. Any such security of supply policies and obligations shall be objective, non-discriminatory, necessary for the effective protection of the objectives in question and proportionate to their purpose. Furthermore the development of the larger single EU gas market should be taken into account. General public service obligations, may be defined at the political level, can in this way be shared and translated into concrete and operational measures and hence be dealt with by all involved players on a fair, non-discriminatory and commercial basis. [121]

Public service obligations must be objective, transparent and non-discriminatory, verifiable and published and should fall within one of the five categories concerning security, regularity, quality and price of supplies and environmental protection. The change brought by the internal market should address not only the economic needs of society by lowering prices through competition, and therefore improving competitiveness on the global market place, but also address social and environmental necessity.[122]Public service provisions need to be re-checked and updated, in order to re-assure EU citizens that this further market opening will serve their essential interests.[123]

3. 4. 4. 2. Employment and Value Added in the Energy Sector

The energy sector in the EU 15 employs only 4.2% of the industrial workforce, but its contribution to the value added of industry was up to 13.9% in 2000. Between the years 1995 and 2000, the value added at factor cost generated by energy sector raised by 20.8% corresponding to a raise of € 35 billion. In both reference years 1995 and 2000, about 73% of the whole value

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[120] Loyola de Palacio. *"European Energy Policy and Citizen Access to Energy"* **European Commission,** Bruxelles, 5 March 2002, http://www.f-e-e.org/redirect.htm?http://www.f-e-e.org/cgi-bin/fee/cal /event. cgi?ActID=472 (Download:18.12.2003).

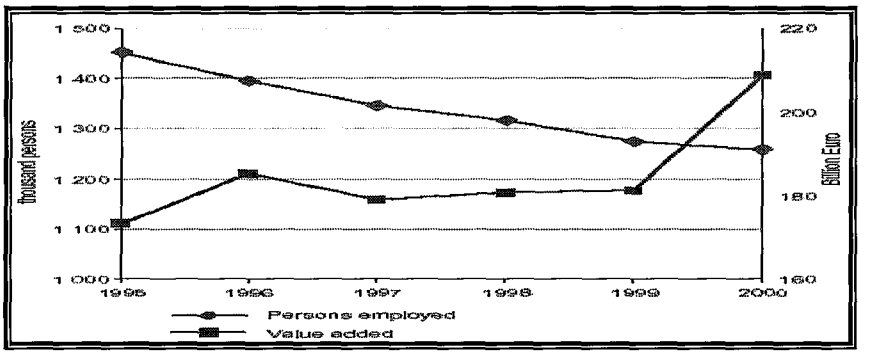
[121] See, *Comission* (1999) 571.Why a Communication on security of EU gas supply? Introduction and Background.

[122] Loyola de Palacio. "*Conditions for Successful Gas and Electricity Liberalization"* Commission Press Release DN: IP/01/132, Brussels 30/01/2001. p. 1-3.

[123] Loyola de Palacio. "*Further Liberalisation of gas and Electricity Markets*" **Commission Press Release** DN: IP/01/59 Brussels, 16 January 2001, pp. 1-4.

added of the EU 15 energy sector is generated in the four large Member States UK, Germany, France and Italy.

Figure : 21 Employment and Value Added in the Energy Sector



	1995	1996	1997	1998	1999	2000
Persons employed (thousand persons)	1 440	1 384	1 335	1 305	1 264	1 247
Value added (Billion Euro)	172	184	178	179	180	207

Data Source: Eurostat, Structural Business Statistics

Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators**, Luxembourg: European Communities, 2003, http://www.europa.eu.int /comm /eurostat/ Public/ datashop/print-product / EN? catalogue= Eurostat & product=KS-DK-03-001- -N-EN&mode (Download: 21.02. 2004)

We see from figure that, at the breakdown by sub-sector of the energy sector, electricity, gas, steam and hot water supply had a value added of € 125.4 billion; coke, oil refining and nuclear fuels yielded € 30.1 billion; the extraction of crude oil and natural gas € 43.85 billion and coal and lignite mining € 6.7 billion in 2000.

3. 5. The Community and the Energy Industries

3. 5. 1. Coal

The coal industry in the EC has undergone a major restructuring since the 1950s when it was the main stay of the industrial European economy. Indigenous production of hard coal has been in more or less constant decline lignite and peat has actually shown a slight increase but they are relatively unimportant due to their low thermal value.[124]

[124] Gowan, pp. 243-250.

The role of the Commission in coal policy has been limited. Because, many of the attempts to develop policy from the 1950s on came to little as the industry entered successive crises and the Commission grew concerned over the EC's vulnerability to imported energy'. On top of that, we can say that, the Commission developed a more itemized way for confirming those aids and for reconsidering gain made on increasing quality of the industry's financial and economic condition and for bringing into line the different forms of aid offered by member states. The policy set a framework for continuing aid until 1993 on the basis of three criteria: to improve the industry's competitiveness; to create new economically viable capacity; and to solve the social and regional problems related to developments in the coal industry. [125]

We regognized the vertical agreements is big headaches for Commission because It is not particularly concerned with trade in coal within the EC. The vertical agreements between producers and consumers are of greater interest. These agreements are apparently of mutual benefit to both sides, providing producers with an assurance market and consumers with a protected supply of coal outside of price and supply fluctuations. Such agreements may not reflect market prices and will favor coal over other fuels. Restriction of imported coal is a real enough obstacle but it is one permitted by the ECSC by commercial policy and therefore not directly subject to the IEM process. According to the Commission they do not themselves block EC trade in coal. The combined effect of these measures is to restrict competition in coal supply.

One of the important point for coal that the Paris Treaty laid down rules for agreements, company concentrations and dominant positions, and prohibited unfair competitive practices and discriminatory practices, i.e. the application by a seller of disalike situations to comparable transactions and eunusually on the grounds of the nationality of the buyer. The single market in the coal sector was regulated, until July 2002, by the European Coal and Steel Community (ECSC) Treaty entry or exit taxes, taxes having equivalent effect, and quantitative restrictions on product movement were abolished. It thus succeeded to secure that users have equal access to sources of production and to promote the development of international trade. The "acquis communautaire" in the coal sector is now assuranced by the EC Treaty.

We can say that in the World coal is the most plentiful non-renewable energy origin valid and will go on to play a extremely significant function as a regulator of the Union's energy

[125] Gowan, pp. 243-250.

market, especially in the generation of energy. In any case, the European Union does not face a problem in coal supply, both as far as native resources are interested, which are plentiful, and imports from several third countries, which are more competitive. In this junction, one must say that Article 71 of the ECSC Treaty keep out Community capability in the trade of coal before it specified that "the competence of the governments of Member States on commercial policy is not affected by the application of the Treaty." This measure is, today, without feasible importance, since there is no more any limitation in the Member States on coal imports and any imported coal liberated for free movement in a Member State move around openly in all the Community. [126]

3. 5. 1. 1. Coal vs Gas

In the energy production coal-use profit from the suitable economics of existing coal-fired power stations, i.e. when the capacity is in place, investment price are sunk and, basically, this means that coal's important drawback has been take off. This tendency is fortified by the fact that innovations in information technology have declined the price of maintenance of existing plants Of course, this means that tense rules for new capacity enlarge the stimulus to use and give source of enegy existing coal-fired stations.

Coal-fired power generation is even now competitive. Regarding fixed costs and long-term investment at existing sites, This deduction is fortified reality that coal prices are hoped for to grow more slowly than gas prices in the future. Also, security of supply reasons have also projecting worry regarding future growth in gas-use Essentially, these concerns have arisen since the revelation of many non-European producers to control the gas import market.[127]Electricity supply much more flexibility in fuel select than most other energy uses. Thus, investment in all types of fuel still exists, but it is in fossil-fuelled power generation where we have seen the most deep changes in fuel-use and ability over time; then, our concentrate on coal and gas.[128]

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[126] Friedrich H. Esser. **Is Coal Merely a 'Necessary Evil' for the Short-Term, or is it a Resource which must be Nurtured for Long Term Use?,** Paris: IEA Publications, 1999, p. 27.

[127] Patrik Soderholm. *"Fuel Choice in West European Power Generation Since The 1960s"* **OPEC Review: Energy Economics & Related Issues**, Volume 22, Issue 3, September 1998, pp. 201-226.

[128] Soderholm, pp. 203-226.

3. 5. 1. 2. Coal Industry and Market

3. 5. 1. 3. Production

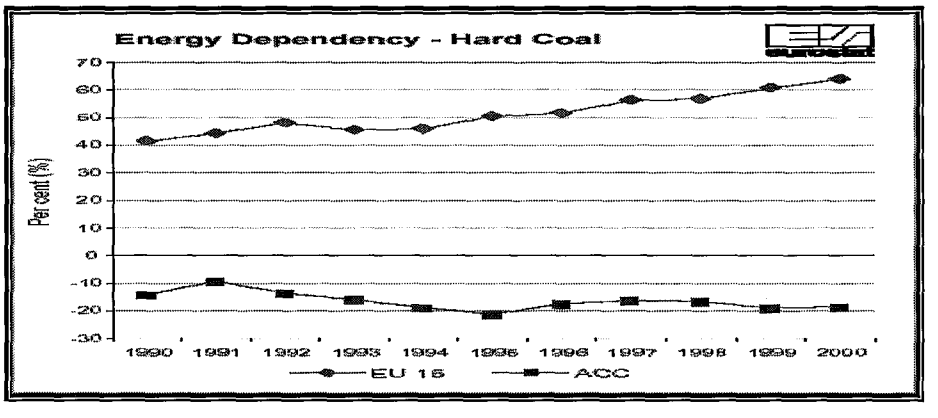
The average production cost of EU coal is 114 'Ecu per tonne coal equal' (TCE), while the price of coal imported from third countries often surpass 40 Ecu per TCE.The cost of EU production fell 22% between 1989-1994, but over that same period, the price of imported coal dropped by 40% to its lowest level since the end of the Seventies. In 2001, coal production in the European Union totalled 77.3 million tonnes, down by 5.2 million tonnes compared with 2000.[129]

. Table 3: Coal Production (1000 t)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001*
B	218	0	0	0	0	0	0	0	0	0
D	72153	57900	52000	53100	47900	45800	40700	39200	33300	29000
E	18551	18402	18194	17627	17688	18000	16320	15420	14800	13800
F	9478	8576	7538	7014	7310	5779	4862	4532	3166	2334
P	221	197	147	0	0	0	0	0	0	0
UK	83987	67463	48971	52630	48538	48490	41180	37080	31970	32121
Other	149	15	1	0	0	0	0	0	0	0
UE 15	**184757**	**152553**	**126851**	**130371**	**121436**	**118069**	**103062**	**96323**	**83236**	**77255**

Source: Eurostat; Commission, Coal Industry and Market, Brussels, 02. 07. 2002, Nouvelle Version Com, (2002) 176 final 72 le Com (2002)176 Final 10.04.2002 Table 1

Figure 22: Hard Coal Energy Dependence



[129] **Tim Jones,** *"Dark Times for Union's Coal Sector"* **European Voice,** Volume 2, Issue 20, 16 .05. 1996, pp. 1-3.

											Per cent (%)
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
EU 15	41.3	44.2	47.9	45.5	45.7	50.3	51.4	56.0	56.7	60.6	63.8
ACC	-14.3	-9.3	-13.7	-16.0	-18.9	-21.3	-17.7	-16.4	-16.6	-19.0	-18.7
Data Source: Eurostat, Energy Statistics											

Source: G. Giannakidis and P. Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003 http://www. europa.eu.int/ comm/eurostat/ Public/datashop/print-product/ EN? Catalogue = Eurostat & product=KS-DK-03-001- -N-EN&mode (Download: 20. 2. 2004)

It was fortified from deduction that the EU's 15 energy dependency rate of hard coal raised during the period 1990-2000. Countries with their own hard coal resources (e.g. Germany, UK, Spain) have a comparatively lower hard coal import dependency (35%, 40%, and 66% respectively), while the remaining Member States import most or all of the coal they consume. Concerning the acceding countries, the Czech Republic and Poland are the only hard coal exporters in Europe. The average energy dependency rate of hard coal in 2000 was 64% in the EU 15 and -19% in the acceding countries. The latter is chiefly attributable to the exports of the aforementioned two countries, some of those exports being destined to EU 15 countries. In Italy, coal is used in a mere 8% of total electric generation, %7 of energy meet by coal in Sweden.[130]

3. 5. 1. 4. Coal Demand and Trade

Accordig to figures internal distribution of coal within the Community (including net imports) stayed nearly firm at 257 million tonnes in 2001. This evelotion is chiefly because of the electricity generating sector, which has constantly been the chef coal user in the European economy, auditing for about 70% of whole consumption. "Today 39% of electricity generation in the world is produced from coal and it is forecasted to supply around one quarter of the world's total energy demand and 45% of electricity generation into the future."[131]

[130] Karen Greate. "*Expectations-Why EU is Warming to Coal Again*" **European Voice,** Volume 9, Issue 30, 18. 9. 2003, p. 18.
[131] Greate, p. 19.

Table 4: Total Internal Deliveries of Coal (1000 t)

	1993	1994	1995	1996	1997	1998	1999	2000	2001*
B	11118	11569	13122	12106	10176	11077	9897	9628	9686
DK	10219	11569	12937	13011	11161	10446	7804	6671	5572
D	75179	75003	78904	72558	69367	83940	65311	67399	65126
EL	2279	1944	1447	2490	1927	1623	1382	1030	150
E	30802	29518	31152	28778	32778	30948	34681	37133	35514
F	26818	21698	19803	15907	21503	25533	21946	22229	21095
IRL	3092	2988	3104	3147	3043	2918	1839	2795	2737
I	14950	14426	11310	15993	16071	17068	16972	17957	19859
L	277	303	217	245	195	153	151	171	203
NL	13524	13944	14937	14690	15123	15175	11528	15500	15942
A	3029	2826	2728	3393	3317	3458	3733	3731	3483
P	4761	5144	5940	5688	5660	5046	6099	6367	5751
FIN	4222	5549	6192	4034	4096	3081	3785	4573	4328
S	2422	2582	1978	3054	6095	5938	2980	3078	3147
UK	85733	69024	76469	74568	72846	67490	56083	58897	64051
EU R 15	**288425**	**268087**	**280240**	**269692**	**27394**	**265385**	**244191**	**257159**	**257644**

Source: Commission, **Coal Industry and Market**, Brussels, 02.07.2002 Nouvelle Version Com (2002)176 Final 72, Le Com (2002)176, Final, Table 2.

We have to say that. The price of coal is different from hydrocarbons price, which rose by around 20% on the international markets in 2001. In 2001, coal imports from third countries stand up to more than 181 million tonnes in order to pay back for lessen inner production. An extra crucial emphasize is that imported coal from third countries is progressively subside. The transport of coal by sea does not cause to any serious environmental problems. Unlike oil tankers, ships transporting coal do not cause great pollution in case of or smash and there is less danger of fire.

Table 5: Imports of Coal from Third Countries (1000 t)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001*
B	13147	11404	12087	13671	12465	12459	13270	12634	10085	11237
DK	11789	10319	11544	12975	13116	13471	8070	7117	6412	6813
D	14248	12627	13896	13891	15578	19031	20527	22280	27500	28325
EL	2132	1337	1500	1409	1778	1214	1370	1203	1200	1235
E	13729	12293	11395	1359	11783	11045	14342	20198	21090	21623
F	21401	13900	11914	12790	11216	12437	17247	17491	18412	18177
IRL	2737	2690	2243	2744	2578	2874	2685	2384	2565	2689
I	17557	14287	15889	18481	16540	15292	16565	17309	19004	18591
L	253	251	207	107	107	99	91	153	114	124
NL	14661	14871	16746	17021	16644	20030	22078	19002	19000	19806

A	3796	3178	2580	2859	3637	3766	3727	3349	3450	3615
P	4445	4762	4990	5711	5349	5758	5113	6080	5000	5685
FIN	4232	5932	7862	5821	6866	6944	4608	3597	4573	4824
S	3001	3189	3024	3459	3211	3246	3012	2930	2963	2976
UK	19814	18078	14570	15612	17573	19370	20035	20758	23260	35305
EUR 15	146945	129118	130447	140306	138441	147036	151840	154687	164628	180925

Source: Commission, **Coal Industry and Market**, Brussels, 02.07.2002, Nouvelle version com (2002)176 final, l72, le Com (2002)176 final, table 3.

3. 5. 1. 5. Financial Aid Scheduled for the Coal Industry

Most of Europe's decline coal industry get financial aid, with those in Spain and Germany amid the highest we can exclude UK. However, there have been no prior court rulings found if national asist can be used to encourage coal exports under the Union's European Coal and Steel Community (ECSC) treaty.[132] The portion, for the clear or indirect aid of the coal industry, of the price gave needed as a result of State intervention, without any difference being drawn between help admittedly by the State and aid granted by public or private bodies set by the State to manage similer aid.

This report[133] classifies aid according to the categories used in Articles 3, 4, 5, 6 and 7 of Decision No 3632/93/ECSC, i.e. distinguishing between operating aid, aid for the reduction of activity; aid to encase unusual expense, aid for scientific activity and aid for environmental protection.[134]

The Commission verified that the Member States concerned had furnished all the needed data and, founded upon that data, that the steps were in line with the inclusive criteria and goals set down in Article 2 of the Decision and with the specified criteria,[135]

- Aid granted under Article 3: this must not expel the unusual between yield price and the price on the international market; coal may not be placed on the market at a cost

[132] European Voice. **Ruling Threatens Coal Sector Subsidy System,** Volume 3, Issue 20, 22. 05. 1997, p. 32.

[133] See, Commission, **Coal Industry and Market**, Brussels, 02.07.2002 Nouvelle version com (2002)176 final72 le Com (2002)176.

[134] See Report, Which covers the measures set out in Article 1 of Decision No 3632/93/ECSC, viz.: any direct or indirect measure or support by public authorities linked to production, marketing and external trade which, even if it is not a burden on public budgets.

[135] For all requests for authorisation it approved in accordance with Article 9 of Decision No 3632/93/ECSC.

lower than that entrusted for coal of a alike quality produced in third countries; the help must not deform competition between users;

- Aid granted under Article 4: necessity to give and esteem a closure plan.
- Aid granted under Article 5: this must not exceed the costs it is intended to cover; strictly restricted to the costs expressly mentioned in the Annex to Decision No 3632/93/ECSC.

The Commission lessen impact until possible the social and localised result of the rebuilding of mining activity, in confirmity with the second dent of Article[136]. It also verified that the asist was compatible with the suitable working of the common market.

Aid to the coal industry intend by supporting get at to coal reserves as pieces of the procedure of assurance security of energy supply.[137] Community coal production must be obtained on satisfactory economic terms. The rebuilding and activity-diminishing in the coal industry which have the chief feature of the State aid schemes implemented under the ECSC Treaty.[138]

The notice from industry experts comes as the European Commission is investiging the latest request for verification for aids to the interrupted industry, designed either to help improve the long-term feasibility of loss-making stones or close them down altogether. Berlin is seeking clearance for payments to its industry close to last year's €4.2 billion, of which €2.6 million was 'operating aid' to prop up loss-making pits and the other €1.6 billion assisted to pay for shutting other, less economical mines.[139]

3. 5. 2. Nuclear Energy Market

Nuclear energy makes a positive contribution to the Union's energy supply security. It produces only a small amount of CO2, and thus helps in the fight against climate change. It is used only for generating electricity, of which it provides more than a third in the Union. The future of the nuclear sector is uncertain in the Union. Some Member States with nuclear power

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[136] See, 2(1) of Decision 3632/93/ECSC.

[137] See, European Commission a Council Regulation on State aid On 25 July 2001.

[138] See, Case T-110/98 had not been considered by the Court. 23 Decision No 3632/93/ECSC of 28 December 1993 establishing Community rules for State aid to the coal industry, OJ L 329, 30. 12. 1993, p. 12.

[139] Peter Chapman. *"Battle Likely over Coal Subsidies"* **European Voice,** Volume 6, Issue 26, 29. 6. 2000, p. 4.

have decided to gradually shut down their power stations.They will be replaced by formal power stations and by out put units which use renewables.

Renewables will not replace nuclear power either. Despite the adoption by the EU of an ambitious Strategy and Action Plan to double its share of renewable energy from 6 to 12 percent of total energy demand, renewables are as much an alternative to fossil fuels as to nuclear power European Commission, Energy for the Future.[140]

Table 6: Nuclear Power in the European Community

	Worthwhile	Neither develop nor abandon/no particular risk	Unacceptable risk	Don't know
1978	44	9	36	11
1982	38	10	37	15
1984	43	7	38	12
1986	27	7	55	11
1987	31	8	50	11
1989	28	6	51	15
1991	25	30	34	11
1993	20	33	38	9
1996	16	42	30	12

Source: Debra Johnson. "**Journal of International Affairs**", Volume 53, Issue 1, fall 1999, p. 149.

Nuclear is needed, because "concerns about global warming have changed the perception of energy supply constraints. The question is particularly pertinent for nuclear energy." Because of the EU's reactors, the report noted, 312 million tons of carbon dioxide emissions are avoided annually, the equivalent of 7 percent of total EU greenhouse gas emissions.[141]

According to Current data 41 percent of the EU's energy comes from oil, with another 22 percent from natural gas, and a further 16 percent from solid fuels, primarily coal. The report predicts that unless the EU nations make structural changes in their energy systems starting now, fossil fuels will continue to dominate until at least 2030. Moreover, that prediction doesn't take into account the countries negotiating to join the Union. Many are in Eastern Europe or were part

[140] See, Renewable Sources of Energy, White Paper for a Community Strategy and Action Plan 599, European Commission, and Luxembourg: 26 November 1997.

[141] Europe, **The Uncertain Future of Nuclear Energy,** Volume 221, Issue 403, Feb 2001, p. 26.

of the Soviet Union and have outdated fossil fuel-burning power plants that will substantially increase total EU greenhouse gas emissions.

Nuclear power have important place in electricity production, about 35 percent of the electricity in the EU. France leads the union, with 77 percent of its electricity coming from nuclear, followed by Sweden with 50 percent, Germany with 29 percent, and the United Kingdom with 28 percent. One of the most political, and industry leaders themselves admit that they need to do a better job of marketing nuclear power to the public Since it emits virtually no greenhouse gases, nuclear power is one of the cleanest forms of energy.[142] It is predicted that the percentage of nuclear generated power was 23.5 in 1992, falling to a predicted 20.6 in 2010.[143]

It is should be declared that nuclear energy in fact only reached economic competitiveness after the 1973 crisis and the significant raise of oil prices. Before this, the absence of a original nuclear energy market forced every Member State to produce an simulated one by way of large government research programmes aimed more at the obtaining of main understanding than at the support of industrial projects. This stuation the Member States off the directly explained by the EAEC (Euratom) Treaty onto parallel technological roads, such as uranium enrichment systems, and emitted off a acute crisis in Euratom between 1965 and 1972.

The Euratom Treaty give for a well-working common nuclear energy market, characterised by: the revocation of customs duties, charges having equivalent effect and all quantitative restrictions on imports and exports of natural and enriched uranium and other nuclear materials,[144] and also the free movement and free establishment of individuals and companies in the common nuclear energy market,[145] the free movement of capital for the financing of nuclear activities,[146] the free definition of prices due to evenness supply and demand within the Supply Agency,[147] and the prohibition of discriminatory pricing practices designed to secure a privileged position for certain users. [148] Economic actors have to tell the Commission of major investment projects before their execution,[149]and thus the Commission can inform governments and economic

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[142] Ibid, p. 27.
[143] Modern Power Systems. ***Nuclear to Decline Beyond 2000,*** Volume 13, Issue 7, July 1993, p. 5.
[144] See, Art. 93 EAEC
[145] See, Art. 96 and 97 EAEC
[146] See, Art. 99 and 100 EAEC
[147] See, Art. 67 EAEC
[148] See, Art. 68 EAEC
[149] See, Art. 41 EAEC

actors in the Member States of the purpose and prospects for nuclear energy production in the Community.[150]

One fascinating characteristic of the Euratom Treaty is that it suggestion specific status and definite helps to joint undertakings, which are of early status to the development of the Community's nuclear industry.[151] It is so important to mention here that, the Council, acting unanimously on a Commission proposal, can bestow every joint undertaking all or some of the advantages listed in Annex III to the Euratom Treaty, such as recognition that public interest status applies to the acquisition of immovable property needed for the establishment of the joint undertakings or the exemption from all duties and charges when a venture is established.[152]

3. 5. 3. Renewable Energy

Environment has come to play an increasing role in shaping the decisions affecting current and future states of the energy system. It is important because, first, reduction of the level of emissions from fossil fuel combustion has been a major policy issue for nearly two decades. Second, safety risks, unresolved problem of waste disposal continue to be a major concern for the development of nuclear power, which has continued to grow rapidly in Europe in the last decade.. Third, there are problems over the sitting of new coal, hydro and nuclear plants. Finally, there has been the new concern with "greenhouse" gases and potential changes in climate caused by global warming. The only feasible method of reducing carbon dioxide emission is either to shift to less carbon-rich fuels and/or to reduce fossil fuel use. This raises the attractiveness of natural gas which produces considerably less carbon dioxide than coal and oil.[153]It is fact that, natural gas will be the fastest-growing energy form in Europe, with a higher rate of growth in consumption.[154] We see that, the European gas industry will be in a superior place to build the supply of gas in an environmentally favorable way. They were not optimistic enough about the positive effects on

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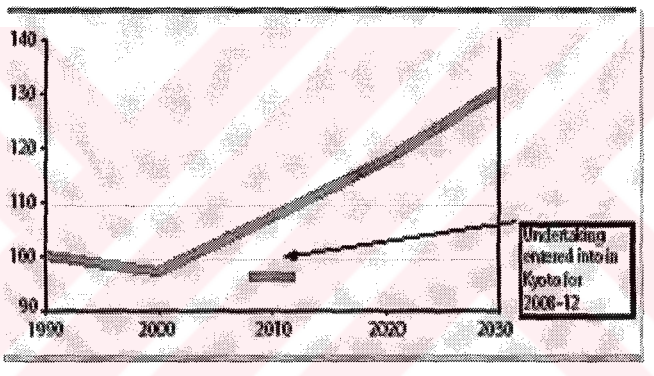
[150] See, Art. 40 EAEC
[151] See, Art. 45 EAEC
[152] See, Art. 48 EAEC
[153] Dieter Helm (Ed.), **Towards an Energy Policy,** Norwich: OXERA Publications, Volume 32, Issue 7, 2002, pp. 937-939.
[154] Bergmann Burckhard. " *Supply Prospects and Network Integration in the European Natural Gas Sector"* **OPEC Review: Energy Economics & Related Issues,** Volume 22, Issue 2, Junuary 1998, p. 159.

supply and prices of natural gas price remove control and the succeding rebuild of the natural gas industry.[155]

Common concern with environmental quality in late years has led many European governments to stress survey of long-term implications of energy activities so that fallow "sustainable development" in light of the necessity of some big developing countries too.[156] It is important development that, the Union has outlined an aspiring plan to double the contribution of renewables to 12 of EU energy production by 2010.[157] Further research and development will be crucial in finding a way to stability the possession of energy consumption with the need to defend the environment and reduce emissions. This challenge must be met together by governments and industry.

Figure 23: EU-30— CO2 Emissions (1990 = 100)



Source: European Commission.**Energy Let us Overcome our Dependence**, Belgium, 2002 p.12.

3. 5. 3. 1. CO2 Emissions

In the last decade, greenhouse gases (CO2, methane, etc.) For which man is responsible were acknowledged as a serious threat to the planet's climate. These gases were speeding up climate change.Among other things, they are causing the ice caps to melt, the oceans to rise and even greater increases in atmospheric temperatures. These phenomena are occurring faster and in even more significant proportions than initially predicted. The EU is responsible for 14 % of world CO2 emissions. At the Kyoto Conference in December 1997, it undertook to reduce

[155] The Energy Journal," *European gas industry",* Volume. 24, Issue. 4. 2003 www. Knoweurope .net/cgi/ quickDfull. rec.? action: byid & id002/00010031 (Download: 01.17..2004)

[156] Felix B Krieglstein. **European Environmental Law Review,** Volume 10, Issue 2, February 2001, pp. 51-56

[157] European Voice, ***EU States Split over Energy Policy Budget,*** Volume 4, Issue 40, 5. 11. 1998, p. 8

between now and 2008–12 its greenhouse gas emissions by 8 %, compared with the figures for 1990.

All the policies and actions which supply better security of supply or better environmental safety have a price. The governments have also the duty of minimising these costs, to obtain greater economic productivity. Market mechanisms should be chosen, in the structure of a specific, rational and carefully drafted regulatory system.[158]

Europe has an immense potential for applying such native energy resources. The improvement of environmental norms is important for the EU energy policy and proof to date analyze that environmental norms can go on to be enhanced in open markets."[159]The Commission has a goal to augement the part of renewables in the EU's energy supply to 12% by 2010. Now EU is stagnating at an average of around 6%, half of this figure. It is evident that unusual actions are needed. The Commission is hence taking a leading to raising the function of renewables in Europe. In the energy field, the Commission has taken a number of steps to harmony energy consumption with the safety of the environment.

- the Renewable Directives determine targets for Member States for electricity production from renewable energy sources
- the Directive on the energy performance of buildings
- the proposed Directive on support for cogeneration based on its environmental benefits
- The Directive on the promotion of the use of biofuels in transport.

Most of these initiatives will also enhance the development of energy sources in Europe and therefore cause to the security of energy supply. [160]

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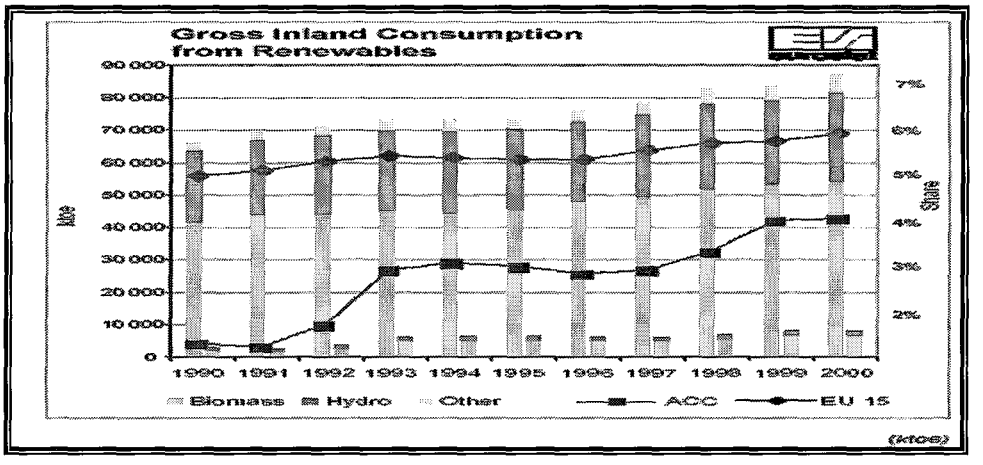
[158] Claude Mandil, *"Challenges for Energy Policy Corporate Strategies"* **Europe in the Global Energy System,** Cologne, 23 September 2003, p. 3.

[159] Loyola de Palacio, *"Sets out the Conditions for Successful Gas and Electricity Liberalization"* **Commission Press Release DN: IP/01/132,** 30. 01. 2000, p. 1-3.

[160] Loyola de Palacio, *"Challenges Towards a Unified European Energy Market"* **Round Table on Energy,** Nyenrode, Netherlands, 13 November 2003, p. 1-4. Commission Press Release DN: IP /03/536

Figure 24: Gross Inland Consumption From Renewables



EU 15	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Share	5.0%	5.2%	5.3%	5.5%	5.5%	5.4%	5.4%	5.6%	5.7%	5.8%	6.0%
Renewables	68 308	69 385	71 359	73 043	72 958	73 675	76 160	78 897	82 649	83 915	87 203
Biomass	41 608	43 846	44 086	45 147	44 397	45 618	47 909	49 501	52 019	53 244	53 970
Hydro	22 274	23 083	24 587	24 882	25 535	24 947	24 814	25 453	26 264	26 089	27 605
Other	2 424	2 457	2 686	3 014	3 025	3 111	3 438	3 743	4 367	4 583	5 627
ACC											
Share	1.3%	1.2%	1.7%	2.9%	3.1%	3.0%	2.8%	2.9%	3.4%	4.1%	4.1%
Renewables	3 035	2 683	3 618	6 168	6 333	6 324	6 202	6 262	6 946	8 094	8 019
Biomass	1 918	1 693	2 628	5 069	5 059	4 985	4 975	5 026	5 542	6 757	6 656
Hydro	1 117	990	989	1 099	1 274	1 339	1 227	1 235	1 406	1 330	1 354
Other	0	0	0	0	0	0	0	0	0	4	5

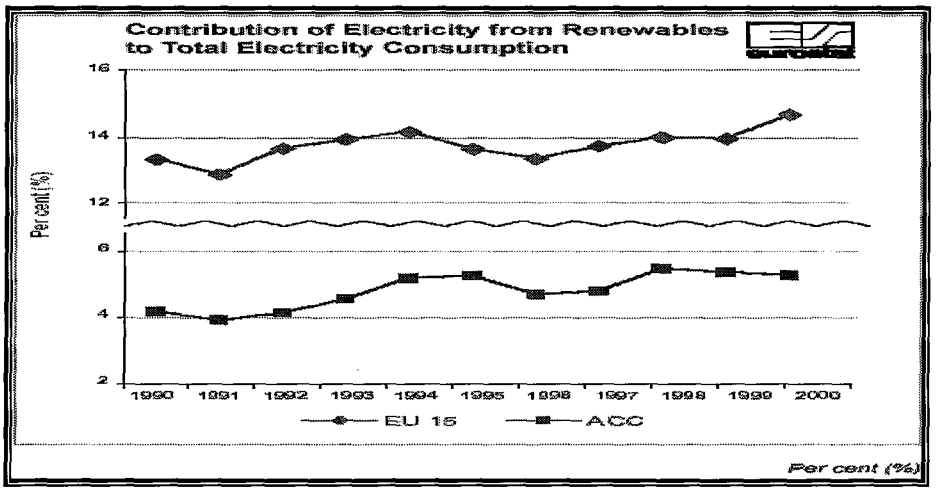
Data Source: Eurostat, Energy Statistics

Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators**, Luxembourg: European Communities, 2003, http:// www.europa .eu.int/ comm/ eurostat/ Public /datashop/print-product/ EN? Catalogue =Eurostat&product=KS-DK-03-001- -N-EN&mode (Download: 04. 01. 2004)

3. 5. 3. 2. Gross Inland Consumption from Renewables

In the EU it is so clear that15 gross inland consumption from renewables rose by 32% over the period 1990-2000, but still made only a little contribution (5% in 1990 and 6% in 2000) to whole gross inland consumption. In 2000, we see the most significant contribution was that of biomass (accounting for 62% of gross inland consumption from renewables), then followed by hydro (32%) and other (6%). it is necessary to say that. The other renewable energy sources (solar, geothermal and wind) raised by 132% over the period 1990-2000, chiefly due to the rapid raise of wind power. For the acceding countries, the portion of gross inland consumption from renewables in whole gross inland consumption was 4.1% in 2000, less than in the Member States. For these countries too, biomass had the highest contribution (83%), followed by hydro (17%). In the acceding countries, other renewable sources made a lower contribution to gross inland consumption.

Figure 25: Electricity from Renewables



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
EU 15	13.4	12.9	13.7	13.9	14.2	13.7	13.4	13.8	14.0	14.0	14.7
ACC	4.2	3.9	4.1	4.6	5.2	5.3	4.7	4.8	5.5	5.4	5.3

Data Source: Eurostat, Energy Statistics

Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003 http://www.europa.eu.int/comm/eurostat /Public/datashop/print-product/EN?catalogue=Eurostat&product=KS-DK-03-001-N-EN & mode . (Download: 12. 02. 2004)

3. 5. 3. 3. Electricity from Renewables

In the EU 15 contribution of electricity from renewables to whole electricity consumption appeared a little but regular raise over the period 1990- 2000. In 2000 the portion was 14.7%, compared with 13.4% in 1990. In 2000, EU 15 electricity generation from renewable sources was 388 TWh, with a large contribution from hydro power plants (83%). When we have looked datas it is evident that, in the acceding countries the contribution of electricity generation from renewables sources shrank compared with Member States, at 4.2% in 1990 and 3% in 2000. Also for these countries, the electricity generated from hydropower plants made a big contribution to the whole (97% in 2000).

One of the important problems is renewable energy sources cause very little pollution but are not yet profitable in the present context. It is high time that they were given a helping hand to develop. The Union cannot allow itself to neglect this indigenous energy source. The obstacles are, however, legionary. Apart from their cost, situations of access to the market are unfavourable.

A directive wills assurance renewables significant penetration into a liberalised electricity market.[161]

3. 5. 4. Defining Electricity

Electricity delivered to the consumer is composed of of energy, and transportation which contain transmission, distribution and system operation. Secondary services supply some unusual forms of energy needed by the system operator to secure the short-term balance, security and reliability of the system. Electricity is supplied to end users by bundling it with end user services. Also, there are other connect services e.g. construction and maintenance.

3. 5. 4. 1. The Electricity Market

Electricity Market is geographically divided by the complete area system itself. The restricted transmission capacities between public service form natural border to trade. Transmission capacities between utilities have chiefly been designed for credibility goals and not for commerce. Other conduct too donates to the division of the market. Consumption of uneconomic domestic resources was also supported by security of supply. The devision of both the electricity and necessary markets cause big production cost disdinctions. In the language of the time, the cost of non Europe. Especially security of supply definitely needed every public service be capable of to meet its demand based upon of its own generation capacity.[162]

Definite characteristics of electricity markets that make market power especially worying the definite reasons why electricity markets are sensitive to market power misuse.[163] "Electricity wholesale markets need to be fixedly studied since there is always probably to be a unit of gathering which may be impact," a sudden of cross-border mergers makes such manipulation even more likely. In such cases, we see "a higher degree of regulatory control" over wholesale markets, "for example the possibility of imposing a cap on wholesale power prices".[164]

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[161] European Commission. **Energy Let us Overcome our Dependence,** 2002 Belgium, p. 21.

[162] Smeers Yves. *"Computable Equilibrium Models and Restructuring of the European Electricity and Gas Market"* **Energy Journal,** Volume 18, Issue 4, 1997, p. 1.

[163] Frank Felder. *"Electricity Economics: Regulation and Deregulation"* **The Energy Journal,** Volume 24, Issue 3, 2003, p. 151.

[164] Peter Chapman. *"Price Controls are Likely for Electricity, Warns de Palacio"* **European Voice,** Volume 9, Issue 21, June 2003, p. 23.

Most governments have decided to speed ahead towards full competition. The Union's electricity liberalisation plan was designed to let countries open up their markets only gradually, however, many industry bodies have reservations about their actual ability to shop around for the cheapest source of power.[165]

The process of liberalising European electricity markets, encompassing a wide range of restructuring activities, has chiefly been incited to try raising the economic efficiency of the whole sector. This procedure may be familiar to start a development towards a maintanabil power sector by growing the use of renewable energy sources and improvement energy efficiency on the supply and demand side. The liberalisation not only implies opportunities but also danger for the invention of a maintaneable power sector. In the short-term, the market liberalisation tends to establish more danger than chance without government activity to delay these risks. In the long run, though, the productivity profit the sector and the impression of new market factors are probably to make public the opportunities of liberalisation and actively encourage changing shape regarding a maintanable electricity sector Many of these danger are as a result of market misrepresentation and defect caused by the delay in produce a wholly useful single European market.[166]

It is nature of the electricity that, Electricity cannot be stored, which make it difficult to suggest an uninterrupted adequite volume. Nor can a replace be found which enlarge the supply security problems. For these reasons the sector has customarily been concerned as a natural monopoly, which is best arrenged as a vertically integrated system regulated by the government and not subordinate to competition.[167]

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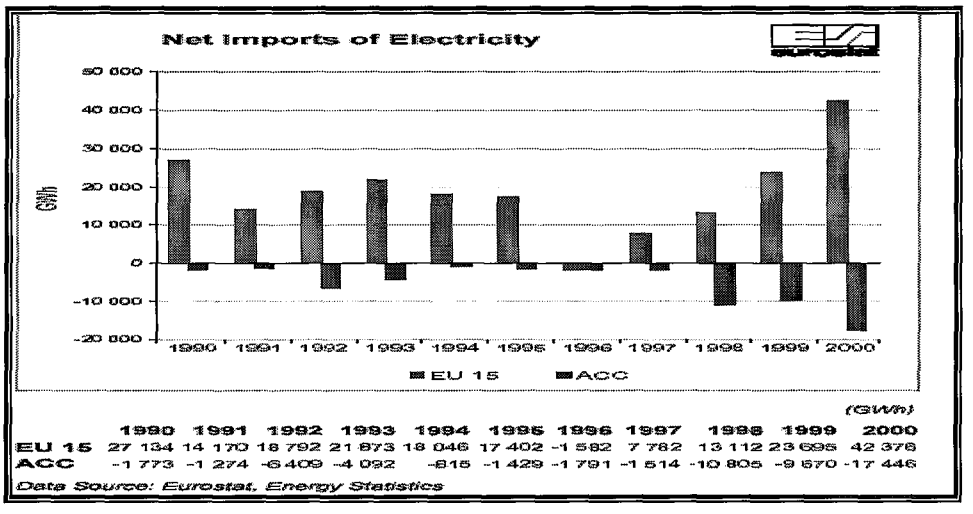
[165] Chris Johnstone. *"Energy Liberalisation Surges Towards Full Power Up"* **European Voice,** Volume 5, Issue 1, 7.1.1999, pp. 12-13.

[166] Mach Ringel. *"Process of Liberalising European Electricity Markets"* **Renewable & Sustainable Energy Reviews,** Volume 7, Issue 6, December 2003, p. 485.

[167] Adrienne Heritier. *"Market Integration and Social Cohesion: The Politics of Public Services in European Regulation"* **Journal of European Public Policy,** Volume 8, Issue 5, 2001, pp. 825–852.

Figure 26: Net Imports of Electricity



Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003 http://www europa.eu.int/comm/eurostat /Public/ datashop /print-product/ EN? catalogue= Eurostat & product= KS-DK-03-002--N-EN & mode (Download:12.23.2004)

3. 5. 4. 2. Imports of Electricity

The net electricity imports of the European Union show a variable trend in the period under consideration and considerable differences between Member States. The largest net exporter of electricity in the EU 15 is France and the largest net importer is Italy, followed by the Netherlands and the United Kingdom. Most of the acceding countries are net exporters of electricity, except Hungary and Latvia.

The goal of EU was to raise efficiency and to reduce costs by separating the operation from the infrastructure, i.e. the generation, the installation and management of transmission and distribution networks in the supply of electricity. In Europe the agenda of market reforms faced a unlike view of national electricity-management systems. There were two unusial sort of national system vertically mixed national monopolies such as existed in Britain and France, on the one hand, and distributed segmented systems such as in Germany, on the other, with its complicated system of public and individual ownership on different localised levels as localised monopolies.[168]

Rearrangement of the electricity sector from a traditionally centrally belong to and managed system towards a market-based dispersed system has become an important issue of

[168] Heritier, pp. 825–852.

argument in several countries in Europe. Among the pathfinder in this procedure are the United Kingdom, and more lately Norway and Sweden. The Netherlands has also take on some changes in this direction while the policy discuss in other countries is quiet in its early stages. The EU hopes that the single market for electricity will finally contain Norway and Switzerland. Alikely, Eastern European countries that have applied for membership of the EU will gradually become part of the single market.[169] In addition, new changes in Eastern Europe have placed the arrangement of the electricity sector in these countries in a new view. The Commission will suggest shortly extra steps, arrives to truly mixed markets which will aid all consumers."[170]

Monopoly of supply is generally accompanied by monopoly of generation. Electricity is traded but only by public sectors. This organisation is generally referred to as the closed area system. In which consumers cannot choose. The segmentation of both the electricity and supplies markets resulted in huge generation cost differences. In the language of the time, the "cost of non Europe" that is the cost of a fragmented vs. a single market, was likely to be high.[171]

Table 7: Electricity Sector Structure in OECD Countries

	Degree of Horizontal Integration			**Vertical Integration**
	Generation	**Transmission**	**Distribution**	
Austria	moderate	moderate	moderate	high
Belgium	high	high	moderate	low
Denmark	low	moderate	low	moderate**
Finland	moderate/high	moderate/high	moderate	moderate
France	high	high	high	high
Germany 1	moderate	moderate	ow	Mixed*
Greece	high	high	high	high
Ireland	high	high	high	high
Italy	high	high	high	high
Norway	low	high	low	low
Portugal	high	high	moderate	low
Spain	moderate	high	moderate	moderate
Sweden	moderate	high	moderate	low
Switzerland	low	low	moderate	low
Turkey	high	high	high	high
England & Wales	moderate	high	low	low

[169] Douglas J Smith. *"European Energy Sector Focuses on Single Electric Market and Renewable Energy"* **Power Engineering.** Volume 107, Issue 4, April 2003, p. 51.
[170] Renee Cordes. *"Full Power Ahead for Energy Market Liberalization"* **European Voice,** Volume 7, Issue 7, 22. 2. 2001, p. 12.
[171] Yves, p. 1.

* "Mixed" means that different utilities have starkly different degrees of integration.
** "Moderate" means that the four main activities (generation, transmission, distribution and supply) are notfully vertically integrated within each utility.

Source: *IEA.* **Electricity Market Reform an IEA Handbook,** Paris,IEA Publications, 2001, p. 28.

3. 5. 4. 3. The Important Role of Competition Policy in Electricity Markets

As we have seen, there are two areas in which competition policy may have a key role in the development of competition in electricity markets which are merger policy and subsidies.First, the opinions understand by competition authorities towards mergers and purchaise is cruciall in many countries in which the electricity market is at first highly concentrated. Entrance and geographical expansion of market boundaries, which can also lessen market power. Moreover, merger and acquisition activity may search for to reaggregate role of the market, such as production and distribution, which reform has sought to disaggregate so that further competition. A busy merger control policy may be the only effective fix against market power in a number of situations.

Second, competition authorities have a key role in promise that financial asistant do not deform competition in electricity markets. Subsidies have been common in monopolised electricity markets, including aid to other industries (coal), to specific generation technologies (nuclear and some renewables), and to some end user groups (energy intensive industries). The introduction of competition into electricity markets raises burden to take apart subsidies but do not necessarily get rid of them. Subsidies may be especially cause harm to competition in international electricity markets before disagreament betwen national policies may give an unjust competitive advantage to some electricity companies.

3. 5. 4. 4. Electricity Reforms

Regulatory reforms in the electricity supply industry have been watched in many parts of the world. In most countries, the industry had traditionally been described as a regulated monopoly, and reform has opened it to competition at the wholesale level as well as the retail level. The industry was also typically characterized as a vertically integrated structure, while reform has unbundled generation and supply from transmission and distribution. For success of Reforms needs to:

1. An duty to supply non-biased Third-Party Access (TPA) to the transmission and distribution networks;
2. Unbundling of transmission;
3. Liberalization of electricity trade so that electricity can be traded both through organized power exchanges and on a reciprocal basis
4. Fast introduction of full consumer choice;

Regulatory reforms to introduce competition into the industry, including the creation of a wholesale spot market and the unbundling of electricity generation from transmission, generally induced a decline in the industrial price and a raise in the price differential between industrial customers and residential customers, indicating that industrial customers benefit more from the reform.[172]

Reforms are predicted to raise the productivity of the market. However, the most important impact of reform is only anticipated to seem in the long-term due to better investment determination.There are several indicators to define the reform in EU countries, including the extent of retail access, unbundling of generation from transmission, and the introduction of wholesale spot markets.[173]

Market stakeholders; e.g. transporters, Government, consumers and regulators, have a role to play in ensuring security of supply and that demand is satisfied, the need for a competitive market is very important. The best way to secure that end-users are rightly protected both in the short and long term is through the continued implementation of liberalised, competitive markets for natural gas, where regulators will monitor developments and introduce or suggest corrective measures as appropriate.[174]

In a short-term outlook, reforms have mostly given their hoped for benefits. Large productivity growth has been reported several countries chiefly connected the corporatisation and privatization of the publich services. Final electricity prices have declined or stayed fixed in all countries checked and reduced. Market structure is a key factor of prices in the new electricity

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[172] Toru Hattori and Miki Tsutsui. "*Economic Impact of Regulatory Reforms in The Electricity Supply Industry: a Panel Data Analysis for OECD Countries*" **Socio-Economic Research Center, Central Research Institute of Electric Power Industry**, Tokyo, 12 March 2003, pp. 1-6.

[173] Hattori, pp. 2-6.

[174] International Energy Agency Worksop. **Gas Security of Supply,** Paris, 2003, p. 2.

markets. The implication for policy is that reforms require note to structural competition policies such as divestitures and/or the chance of national markets to international (or interstate) trade and competition. Regulatory reform alone is not enough for competition to appear.

The distribution of costs and benefits has a large impact on the social and political acceptability of reforms, in addition to its impact on efficiency. For instance, in a number of countries cost and price reductions together with the supply chain have not been fully returned in end-user prices. An important subject for the advance of reforms is the distribution of the costs and benefits of reform among end users, investors and other groups such as tax payers and market employees. This has raised wory about the justice of reforms and supported the introduction of retail competition and other measures to lower electricity prices. Also, the treatment of stranded costs and, where applicable, the form of privatization, have had an important impact on the distribution of the benefits of reform.

Credibility problems have been at most irregular in reformed markets and are only partly imputable to transition subject. Anyway, these problems, whenever they have materialised, have a large negative impact on the public sense of reforms. Thus, governments have an important function during the transition in ensuring that the proper protection to support reliability is stuated properly and in minimising regulatory danger. The change from the old to the new regulatory regimes raises a great dare for policy makers. Regulatory uncertainty while or shortly before the transition may have a negative impact on investment as possible investors delay their governing until the new system is specified. Also, the credibility of electricity supply may decline if the law and obligation of the new actors are not obvously and regularly defined.

Table 8: Functional Structure of the ESI

Function	**Key Economic Characteristic**	**Implications**
Generation	Limited scale economies at plant level Co-ordination economies at system levelComlementarity whit transmission	Potentially comperative
Transmission	Network externalities In general not a natural monopoly Large sunk costs	Investment incentives need unusual attention One grid but possibly several owners
Distribution	Often a natural monopoly Large sunk costs	No competition
System Operation	Monopoly (due to technical	No competition

	constraints)	
End user Supply	Limited scale economies No unusual features	Potentially comperative
Related Services: **Power Exchanges** **Financial Contracts** **Construction and maintenance of assets**	No unusual	Potentially comperative

Source: IEA. **Energy Market Reform Competition in Electricity Markets**, Paris, 2001, p. 18.

3. 5. 4. 5. The Electricity and the Gas Directive

The Council of the EU adopted a Directive on the internal market for electricity (EC 96/92) on 19 December 1996 (EC, 1996 Under the Directive, increasing shares of electricity markets must be opened to competition, based on size of user. Electricity and Gas Directives of 1996 and 1998 respectively firstly offered "free customers" the possibility of choosing their own suppliers. The minimum thresholds for opening the markets were fixed at 30% of demand in the electricity sector and 20% for gas. They have now been raised to 40% and 30% respectively. When transposing the Directives many Member States went beyond those thresholds and today, customers accounting for 2/3 of the demand for electricity and 80% of the demand for gas in Europe are free to choose their supplier. They conceal major differences between one Member State and other. For example, Italy was initially rather timid in the electricity sector but opted for a bolder opening in the gas sector.[175]

The two Directives also abolished statutory monopolies and imposed transparent, objective and non-discriminatory procedures governing the entry onto the market of new operators. Two Member States, Italy and Spain, have introduced national legislation containing structural measures, such as the requirement that the dominant operator must sell production capacity in the electricity sector, obligatory compliance with antitrust ceilings or programmes for the sale of quantities of imported gas. The EU's hard-fought electricity directive states that large

[175] See, Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity [Official Journal, L 27, 30.01.1997].

industrial companies which use more than 40 gigawatts of power an hour accounting for 22% of the EU market.176

New antitrust ceilings for production capacity and to fix a time limit for implementing them seems to be a step in the right direction, also because it takes account of the transitory and non-punitive nature of this type of instrument and may help to limit the market power of the dominant operator on the future Power Exchange.[177]

Table 9: Market Opening under the EU Electricity Directive

Date	Natural Electricity Consuptation)	Minimum size of Eligible year
February 1999	26	40
February 2000	30	20
February 2003	35	9

Source: IEA. **Energy Market Reform Competition in Electricity Markets,** Paris, 2001, p. 37.

A number of countries have opened, or will open, their markets beyond these limits.[178] The remaining EU countries have not announced plans to go further than needed by the Directive. Current and designed market opening in EU member countries is summarized.[179]

For example, Several EU countries (Austria, Belgium, Denmark, Ireland, the Netherlands and Portugal) have met this obligation by requiring the TSO to be a legally separated company that remains under the control and ownership of the incumbent utility. Access to the grid is via a transmission system operator (TSO) who must be a separate business from the generation and distribution businesses. An even weaker form of separation managerial separation has been adopted in France, Germany and Greece.

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[176] Barnard Bruce. "*Electricity Liberalisation Powers Ahead*" **European Voice,** Volume 3, Issue 35, 02.10. 1997. www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004058 (Download: 23. 02. 2004)

[177] Frank Felder. "*Electricity Economics: Regulation and Deregulation*" **The Energy Journal,** Volume 24, Issue 3, 2003. p. 151.

[178] According to the calculations made by the Commission pursuant to the second and third subparagraphs of Article 19 (1) of Directive 96/92/EC, the average Community share of electricity market opening, as effective in 1999, is 26.48%.

[179] See, Official Journal C 330, 01.11.1997, Electricity Market Opening Communication.

The Directive also contains significant provisions that may delay or affect the development of open markets. This means that a customer who has choice in one member-state may be prohibited from obtaining supply from a supplier in other member state where customers of the same type do not have choice. Member states may impose public service obligations to secure "security, including security of supply, regularity, quality and price of supplies and environmental protection". Furthermore, "to avoid imbalance in the opening of electricity markets" the Directive permits the imposition of reciprocity necessity. In addition, the Directive also permits member states to impose a requirement that up to 15% of fuels to be used in the generation of electricity come from indigenous sources. A summary of how EU member countries have complied with the chief necessity of the directive is provided in Table 10.

Table 10: European Electricity Market Reform

Country	Separation of Transmission	Entry into Generation	Market Opening %		Generation Ownership
			2000	2003	
Austria	Legal	Authorisation	30	50	Mixed
Belgium	Legal	Autorisation	35	100	Privasited
Denmark	Legal	Autorisation	90	100	Municipal/coop
Finland	Ownership	Autorisation	100	100	Mixed
France	Management	Autorisation	30	35	Public
Germany	Management	Autorisation	100	100	Private/municipal
Greece	Management	Authorisation	30	35	Public
Ireland	Legal	Authorisation	30	35	Public
Italy	Operational	Authorisation	30	40	Mixed
Netherlands	Legal	Authorisation	35	100	Municipal/privatised
Portugal	Legal	Tendering	30	35	Mixed
Spain	Ownership	Authorisation	54	54	Privased
Sweden	Ownership	Authorisation	100	100	Mixed
UK	Ownership	Authorisation	100	100	Privased

Source: Official Journal Electricity Market Opening Communication, C 330, 01.11.1997 and IEA. **Energy Market Reform Competition in Electricity Markets,** Paris, 2001, p. 42.

3. 5. 4. 6. Electricity Markets and the Relationship with Natural Gas

Developments in the natural gas market also have to be taken into consideration as gas and electricity markets are increasingly interrelated. The opening of gas markets and the related changes in gas prices have a potentially large effect on the market. Gas prices have a short term impact on the generation mix that is dispatched. In the long-term, investment decisions in generating capacity are also affected. The fuel inputs to the generation of electricity will result

from the combined action of changes in both gas and electricity markets. In addition, gas companies are actual, or potential, competitors in the electricity market. A wider energy sector perspective is important in assessing the institutional and other changes that are taking place in the market.

AIthough the European Union (EU) has been slow in developing a single electric supply market new EU mandates are hoped for to speed up this integration. In addition, by promoting the use of renewable energy the EU might well become the global leader in the reduction of emissions from power plants.[180] The directive leaves member countries a significant level of freedom in deciding how quickly to open their markets, it does require that they liberalize, at a minimum, 33 percent of the electricity demand as of February 2003. Currently Germany, Austria, Finland, Sweden and the UK have 100 percent of their markets open. The EU directive calls for all of the EU countries to have 100 percent of their electric markets open by 2007.[181]

3. 5. 4. 7. Liberalisation of Electricity and Gas Markets

European energy markets are going through a process of fundamental change at present. Instead of closed national or localised markets served by monopoly suppliers, the European Union aims to create a functioning internal market. There will be competition in the production and supply of electricity and gas, which means that customers will be able to exercise a right of choice of their supplier.

Following on from the White Paper,[182] two directives were adopted which established common rules for electricity[183] and gas[184] respectively. These set out a number of measures designed to provide a fully liberalised and competitive market in both sectors by 2007. They are based on a balanced approach concerning access to the systems, public service obligations and competition rules and on the broad application of the subsidiarity in order to take account of the different national electricity and gas systems, thus facilitating their incorporation into national law. The Directives provide for transitional derogations from their fundamental liberalisation necessity to enable commitments or assurances of operation to be met.

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[180] Smith, pp. 52.
[181] Smith, pp. 53.
[182] European Comission (95) 682).Energy Policy for the European Union.
[183] See, electricity Directive/96/92/EC.
[184] See, gas Directive/98/30/EC.

Responding to the instruction of the Lisbon European Council (March 2000) to speed up the liberalisation of the electricity and gas markets, the Commission produced a package of documents to be presented to at the Stockholm European Council in March 2001.[185] Liberalisation is also transforming some sectors, notably energy, from domestic market monopolies into global businesses. The partial opening of the electricity market has unleashed a wave of cross-border mergers and strategic alliances as companies seek to establish a global presence.[186]

It is important step for liberalizing market that, the Energy Ministers reached agreement on 25 November on entirelly open gas and electricity markets for non-household customers by 2004 and for household customers by 2007. "This is a radical change, with European countries moving from national monopolies to full liberalisation within a few years"The creation of the European energy market is a revolutionary step; it will boost the competitiveness of European businesses and benefit all citizens". The agreement reached by the Member States also seeks to strengthen public service obligations, in particular universal service and consumer protection. The markets will be opened by establishing independent regulators and separating transmission and distribution functions from generation and the provision of services. The Council also agreed the regulation on cross-border tarification and the development of trans-European energy infrastructure. According to the Commissioner, "the single energy market is an extra assurance of a safe, sustainable energy supply".

There are two market-opening alternatives: negotiated third party access where buyers are able to deal direct with power producers and its more restrictive alternative, the single buyer system where one electricity company is positioned as a middleman between buyers and sellers. [187] No one pretends that open markets are perfect. But liberalisation and competition in energy are in the interests of business, consumers and the environment. Europe should remember that

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[185] The internal market for gas and electricity: completing the internal energy market, included the Communication "Completing the internal energy market" as well as a Proposal for a Directive amending Directives 96/95/EC and 98/30/EC concerning common rules for the internal markets in electricity and natural gas, a Proposal for a Regulation on conditions for access to the network for cross-border exchanges in electricity, and a Commission Staff Working Paper "Completing the internal energy market" (SEC(2001)438).

[186] Barnard Bruce. "EU *Reaps Dividends of Market-Opening*" **European Voice**, 04. 05. 2000. pp. 1-2. www. Knoweurope .net/cgi7quickD/full.rec.?action:byid.&id002//0009575 (Download: 21. 01. 2004)

[187] Chris Johnstone. "*Slotting Final Pieces into the Liberalisation Jigsaw*" **European Voice,** Volume 4, Issue 46, 17. 12. 1998, p. 20.

markets are the worst form of economic organisation except all other forms that have been tried from time to time.[188]

EU states could have their electricity and gas markets opened by decree 'as a last resort' if they fail to press ahead with liberalisation,[189] the Commission would propose forcing rebellious states to open their markets under Article 86 of the EU Treaty. This controversial and little used measure allows the EU executive to impose market liberalisation on public sector companies providing services of general economic interest. Capital market reform as the most important part of the EU's liberalization agenda.[190] We see that liberalisation of the EU's natural gas market will came a lot more quickly than it did for elecricity.[191]

Energy liberalisation has become a central test of the EU's willingness to push through economic reform to meet its target of becoming the world's most dynamic economy by 2010. [192]. There will be competition in the production and supply of electricity and gas, which means that customers will be able to exercise a right of choice of their supplier.[193]

Although the European Union (EU) has been slow in developing a single electric supply market new EU mandates are expected to speed up this integration. European Directive on competition will take effect, requiring that all member countries open up their market to competition.[194] In addition, by promoting the use of renewable energy the EU might well become the global leader in the reduction of emissions from power plants. Under the directive all large and medium sized purchasers of electricity are able to choose their supplies from any country in the EU.[195]

The EU expects that the single market for electricity will eventually include Norway and Switzerland. Alikely, Eastern European countries that have applied for membership of the EU will

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[188] Roy Gardner. "*Competition Makes Markets Glow*" **Financial Times,** 25. 9. 2002, p. 23.
[189] Laurence Frost. "*Energy Chief Tells States to Stop Stalling*" **European Voice,** Volume 8, Issue 2, 17.01.2002, p. 5.
[190] Peter Norman. "*Prodi Warns France to Open Energy Markets*" **Financial Times,** 17. 1. 2002, p. 6.
[191] Tim Jones."*EU Cautious in Openning Valve of Gas Market*" **European Voice,** Volume 2, Issue 27, 2002, p. 21.
[192] Daniel Dombey; (et al.) *"EDF Drops Objection to Liberalization"* **Financial Times,** 1. 2. 2002, p. 10.
[193] See, Loyola de Palacio, "*Towards a Regulated Competition in European Energy Markets*" **World Economic Forum,** *New York,* 3 February, 2002. Commission Press Release DN: IP/02/189
[194] Jeremy Wilcox. "How the EMU will Affect the Energy Market" **Energy Journal,** Volume 212, Issue 9, September 1988, p. 23.
[195] EU directive opened up a single market for electricity within the member countries in February 19, 1999.

progressively become part of the single market. [196] To open up commercial markets in 2004, market has faced of French and German resistance.[197]

It is obvious that, The European experience with negotiated third party access has not been satisfactory. Most EU countries have chosen a regulated third party access model as the primary form of grid regulation. We have seen same concerns that negotiated third party access is not effective in preventing discrimination and places a burden on the companies willing to access the network. Paris preferred a 'single buyer' model, with a national buyer negotiating contracts on behalf of its domestic customers with foreign suppliers offering cheaper energy.[198] The Dutch wanted to bridge the considerable gaps between member states over assuranceing open access to markets, defining who should be allowed to choose between suppliers and how to treat long-term exclusive supply contracts.The major problem is to decide on the size of those gas users who will be able to shop around.[199]

3. 5. 5. Oil

As in the rest of the world, the importance of oil in EC energy balances has increased dramatically since the1950s, even allowing for the levelling off which has occurred since the 1980s. By 1960 oil accounted for 25 per cent of energy requirements in the original six. By the early 1970s it had risen to over 60 per cent before gradually declining and stabilising at just over 45 per cent in the mid-1980s. The major factors controlling demand have been the oil shocks of the 1970s, which demonstrated the EC's vulnerability to supply disruptions and price increases. In response member states shifted polices at different intensities, with some attaining major reductions in oil dependency. However, oil remains the largest single element of primary fuel requirement. [200]

Oil consumption is also projected to grow, even if its proportional share will remain stable. The consumption of oil products by road transport within the European Union has

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[196] Smith, p. 53.

[197] Karen Carstens. "*Single Market on Way for Gas and Electricity*" **European Voice,** Volume 8, Issue 43, 28. 11. 2002, p. 23.

[198] Fiona Mchugh. "*New Optimism Over Electricity Liberalisation*" **European Voice,** 15. 02. 1996. www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0009051 (Download: 17. 12. 2003)

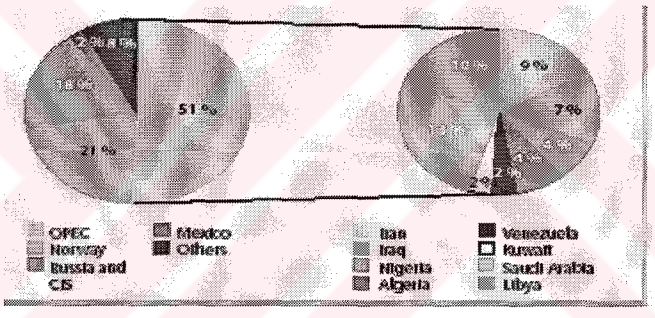
[199] European Voice. **Electricity Sparks Highlight Dangers for Gas Market,** Volume 3, Issue 09, 06.03.1997 www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005495 (Download: 3. 02. 2004)

[200] Gowan, pp. 243-250.

continued to rise and currently represents more than 40% of oil consumption as compared with 18% in 1973. Lowering the dependence of this sector on oil is thus an ecological necessity, and a technological challenge which the European Union cannot side-step.[201]

In applying the IEM to oil, the Commission tries to maintain these two aspects of past policy, but with the emphasis on market conduct. The Commission accepts that the oil industry is structured differently from other energy industries; nevertheless it sees a series of barriers persisting, including exploration and production monopolies; exploration and production-licensing procedures; oil field development situations; taxation of oil production; landing obligation; restrictions on imports of oil and its by products; flag protection for shipments of oil; restrictions on refining and marketing rights; differences in technical norms and rules; pricing systems; and indirect taxation situations.[202]

Figure 27: EU-15— Imports of Crude Oil from non-EU Countries in 1999



Source: European Commission. **Energy Let us Overcome our Dependence**, Belgium, 2002, p. 19.

3. 5. 6. Natural Gas

The EC gas industry has seen dramatic growth in the last twenty years considering that the industry has been rooted in town gas for most of its history and seemed in definite decline
The gas industry shares the characteristics of the exploratory production industries such as oil and the network utility industries such as electricity. On stability the industry is dominated not so much by production companies but by the transmission companies which import and carry gas. Production is widespread. The EC's past policy towards the gas industry has mainly been directed

[201] Loyola de Palacio, "World Oil Market Data" **Safety of Energy Supply and Sustainable Development Conference**,Madrid.15, July 2000. Commission Press Release DN:IP/00/271.
[202] Gowan, pp. 243-250.

towards ensuring adequate supplies and controlling its use in non-premium markets. The other concern has been on pricing for large consumers.

The IEM objectives for the gas market straddle the two components of the industry. To the extent that the gas is produced in the EC, then considerations related to oil production and barriers to that market would also apply to the gas industry. To the extent that the gas industry at the distribution level approximates to natural monopolies such as electricity, it is subject to same proposals on extending grid integration, encouraging competition and determining regulation. One of the Commission's main objectives is to see the creation of an EC-wide gas network. While applauding the widespread integration of the system of continental Europe and the joint ventures created, the Commission sees scope for greater links; a Number of countries is still not fully integrated into the European grid while one (Portugal) does not yet have natural gas supply. It wants direct access by transmission td distribution companies to the grid and possibly to large consumers. This latter potion opens the prospect of common carriage in the EC industry and with it the possibility of a pan-EC regulator for access subject.[203] Natural gas will discuss more in the next chapter. We will discuss security, competition and completing integral market in the gas sector which are main pillars of energy policy.

[203] Gowan, pp. 243-250.

4. COMPLETING OF INTERNAL MARKET

4. 1. The Gas Market

The collapse of the oil price in 1986 and its subsequent continuing decline in actual value undermined this argument in favour of restricted gas production. This development marked the beginning of the new turn-around in West European attitudes to the selfish use of its expanding gas reserves. [204] The period from the mid-1970s to the late 1980s was one of relative stagnation in the Western European gas market. Annual indigenous production barely changed and gas use raised only modestly. Throughout the period gas was in potentially long supply while energy policies were aimed at reducing the high level of dependence on expensive imported oil. The lack of dynamism arose from highly effective institutional constraints on both the supply and demand sides.We can say that Since 1989 there have, however, been a series of developments economic, political and technical which are serving collectively to establish a fundamentally different framework for the natural gas market in Europe.[205] There are differences in the process of gas reserves' development in Western Europe has been a highly dynamic one since the mid-1950s. Over every decade gross additions to investigated and probable reserves have exceeded the cumulative production of gas by at least a factor of three to produce a steadily rising "remaining reserves" for assessing the long term evolution of the gas system assuming away market imperfections.[206]

We see that, the regulatory strategies and institutional arrangements used by the European Union to create a single market.[207] For the European Union (EU) in general, it is designed that 28% of gas markets will be open to competition, but only by early in the 21st century.[208] There are few producers inside and outside; few large national players have a large market portion. On the

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[204] Peter R Odell. *"Prospects for Natural Gas in Western Europe"* **Energy Journal,** Volume 13, Issue 3, 1992, p. 41.
[205] Odell, p. 42.
[206] Yves, p. 4.
[207] Michelle P Egan. **Constructing a European Market: Standards, Regulation and Governance, London:** Oxford University Press, 2001, pp. 87-96.
[208] Ian D. McAvinchey and Andreas Yannopoulos. *"Stationarity, Structural Change and Specification in a Demand System: The Case of Energy"* **Energy Economics,** Volume 25, Issue 1, January 2003, pp. 65-92.

continent, long term take-or-pay contracts are dominant and « free gas » is restricted. However Europe is well situated with regard to gas reserves.[209]

4. 1. 2. Gas Directive

One potential benefit of the gas directive for supplies manufacturers is seen as increasing standardization of gas supply equipment specifications, as cross-border projects flourish. "Unity in specifications would be wonderful. [210]The EU Gas Directive came into force in August 1998. By that time individual member countries will be required to open up their gas markets to competitive supply at first. After 5 years, they must raise this to 28%, and after 10 years, to 33%. [211] However, the EU Energy Commission says it expects to see a weighted average EU gas market opening of around 70%. The EU gas supply market estimated that it's is worth 100 billion ECUs/year. The EU said that the achievement of a common position is a decisive step towards establishment of an internal market for energy.[212]

There is great success in gas market liberalization. For this success, we see the Gas Directive has important place. It provides the necessary framework for commercial forces to take their natural course, the fundamental push for change is coming from consumers demanding lower gas prices and the industry itself, as utilities begin to lose customers. This means that the average EU gas market opening has already exceeded the necessity and timetable of the Directive. [213]

The EU had hoped for success with directive incorporating the monopolists' concerns.[214] Under the directive all large and medium sized purchasers of electricity are able to choose their supplies from any country in the EU.[215] Even though the directive leaves member countries a significant level of freedom in deciding how quickly to open their markets, it does require that they liberalize, at a minimum, 33 percent of the electricity demand as of February 2003.

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[209] Patrice de Vivies, *"Regulation Dealing with Access to Supply in Dealing with Access to Supply in Liberalised markets"*, **IEA,** CRE Paris, 27 June 2003, pp. 3-7

[210] David Knott. *"EU Gas Directive Slows Investment"* **Oil & Gas Journal,** Volume 95, Issue 25, June 23.1997, p. 22.

[211] Anonymous. *"EU Agrees to Dilute Gas Directive"* **Oil & Gas Journal,** Volume 95, Issue 50; December 15. 1997. p. 22.

[212] ibid

[213] Thomas Victoria. " *New Gas Market Forces Strongly Affect Some European Countries"* **Pipe Line & Gas Industry,** Volume 83, Issue 5, May 2000, p. 41.

[214] OGJ, Dec. 9, 1996, p. 28

[215] See, An EU directive opened up a single market for electricity within the member countries. From February 19, 1999.

4. 1. 2. 1. The Increasing Importance of Gas

Natural gas is currently the fuel of choice throughout Europe and is continuing to raise its market portion in virtually all market sectors and in all EU Member States. Gas has raised its portion of EU energy supply to more than 21% in 1998 compared to 16% only ten years ago. Large differences remain, however, between Member States with a portion of less than 2% in Sweden and Greece and more than 46% in The Netherlands. [216]

Natural gas is set to continue its growth and raise its current EU energy market portion. With an hoped for 45% raise in demand from 1998 to 2020, it is expected that natural gas will raise its portion of EU energy supply from around 21% in 1998 to around 27% by 2020. Around two-thirds of this raise in demand will be due to power generation including combined heat and power production (CHP). The forecast raise in the use of gas in power and CHP generation is hoped for to raise the portion of gas use in this sector from 23% in 1995 (83 MTOE) to around 40% by 2020 (192 MTOE). European energy markets have historically been characterised by a collection of closed shop national systems, which have produced anover-supply of over expensive power. [217]

It is worth noting that in 1996, it took no less than 33 individual gas companies to produce around 94% of whole West European gas production from a very large number of fields. Only the three largest of these companies produced between 10 and 15%. The remaining 6% was produced by an even larger number of very small producers. While gas supply diversity may seem relatively restricted both within and outside the EU when considered on the basis of the number of producing countries. Similar situations already apply to various degrees to the external gas producing countries and are hoped for to further develop. This illustrates the potential for supply side competition within as well as outside the EU. It is obvious that, policies aimed at motivating economically viable domestic EU gas exploration and production activities should be encouraged and producer incentives should not in any way be inhibited by unreasonable constraints, barriers or excessive regulatory intervention.[218]

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[216] *Comission* (1999) 571. Why a Communication on security of EU gas supply? - Introduction and Background

[217] Jeremy B Sheldon and Angus Dodwell. " *Energy Liberalisation"* **Energy Briefing,** Summer 2002. pp. 1-4 http://www.ashursts.com/pubs/pdf/2063.pdf (Download: 23.12.2003)

[218] Sheldon, pp. 2-4.

Because of rising usage of gas in power generation, demand for gas is hoped for to grow by over 2% a year, about twice what is hoped for for oil over the next decade Other boost to gas, which pollutes far less than oil or coal, is increasing concern over global warming. Gas should be the biggest beneficiary of the Kyoto accord. But trade unions oppose and government face uphill struggle to review employe pensions and other entitlements for coal.[219]

Statoil expects gas demand in Europe to grow about 2%/yr for the longer term. This will give natural gas a 22% raise in market portion by 2010. The supply of natural gas to the continental European market is dominated by Russia, Algeria, The Netherlands and Norway. The UK may enter as a supplier. Statoil's current market estimation show that the countries in southern Europe are the most likely candidates for raised natural gas usage for power generation. Even though the prospects for raised gas usage in Europe are favorable, the possibility of supply shocks and the drive for reregulation of the downstream industry in some countries pose structural uncertainties. [220]

It can be said as Reason of increasing importance of gas that. First we have seen a clear tendency towards raised privatisation and competition in West European electric power sectors. The unbundling of production, transmission and local distribution into separate accounting units or wholely separate enterprises, and the introduction of competition in the provision of new generating capacity, are key elements of this tendency. Other important driving force has been the acknowledgment that the generation of electricity is not a natural monopoly, a notion that was powerfully rejected in the 1960s. [221]

It is clear that the decline in government intervention in the electricity sector and the rise of private management limit the possibility of reactivating large-scale investment projects. Given its low capital needs, gas will gain in competitiveness as the necessity for a capital return on investment in power generation raise. The retreat from interventionism has also meant that the protection of uneconomic domestic coal industries has come under fire in Germany, the UK and, to some extent, Spain, thus further strengthening the competitive position of gas in Western Europe.

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[219] Maria Kielmas. " *Gas Privatisation in Pipeline as France Prepares for Free Market"* **European Voice,** Volume 8, Issue 31, 5. 9. 2002, p. 20.

[220] Wendy Weirauch. "Natural *Gas* is on a Global 'Growth Track," **Hydrocarbon Processing,** Volume 75, Issue 3, March 1996, p. 27.

[221] Soderholm, pp. 201-226.

Secondly, environmental tendencys in West European energy economies both speak for gas-use in power generation. But to what extent have electric utilities de facto given a high priority to raised gas-use.[222] It is important to say that the growing concern for environmental issues has led to stringent SO_2 and NO_x regulations in many countries. In particular, the problems of SO_2 emissions have dominated the energy policy debate since the mid-1980s, and some countries have signed international agreements to deal with transboundary acid rain issues.The costs of meeting existing regulations for SO_2 and NO_x are normally lower for gas than for coal. Furthermore, in the future, gas is less likely to be heavily affected by tighter CO_2 policies, e.g. CO_2 taxes since it produces less CO_2 per kWh generated than do coal and oil . Thus, this reinforces the perception of gas as a low-risk option, given uncertainties about future environmental legislation.[223]

4. 1. 3. Resistance of National Energy Players

The French government was concerned that the EDF public-service model would not survive the liberalization of the energy sector, this specific model having already been under critical scrutiny in France itself. Yet, the strikes and social movements of 1995 appeared that the French still supported their notion of public service in principle. The growing market strength of dominant national players such as Electricité de France (EdF) and Eon in Germany is just the most visible part of the problem. However, in basically resisting liberalization. Paris preferred a 'single buyer' model, with a national buyer negotiating contracts on behalf of its domestic customers with foreign suppliers offering cheaper energy.[224]

Energy regulators across Europe have joined forces with the British government to step up the pressure on Brussels to investigate the merger of Eon and Ruhrgas, two of Germany's most powerful energy groups.[225]

The problem originated from how to open national energy markets up to EU-wide competition. France had resisted attempts to set deadlines on the matter. Electricite de France

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[222] See, UNIPEDE, 1997, p. 129.
[223] Soderholm, pp. 202-225.
[224] Electricity Sparks Highlight Dangers for Gas Market, **European Voice,** Volume 3, Issue 9, 06. 03. 1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005495 (Download:3. 02.2004)
[225] Matthew Jones. "*Regulators Press Brussels on Gas Merger*" **Financial Times**, 22. 8. 2002, p. 2.

(EDF) had invaded their markets while enjoying monopoly protection at home.[226] Energy supply was a public service demanding special treatment. At a minimum, reciprocity: if Spain opened its market to France, the least France could do was to open its market to Spain, if not to the whole EU. That is an idea that horrifies the European Commission, which regards bilateral deals in market matters as little better than jungle law that would undermine Europe's single market.[227]The European Commission plans to take France to court over its failure to introduce legislation to liberalise its gas markets.[228] EU leaders agreed to open up commercial markets in 2004 but put off the more sensitive household sector in the face of French and German resistance.[229] The European Commission upbraided the French government for its attitude on energy liberalization.[230] Efforts to provide cheaper domestic energy for the single market have so far foundered on opposition from France.[231]

France saw a two-fold danger: for one, in the absence of a Council policy, the ECJ could rule against the French import and export monopoly; second, the Commission could liberalize by issuing a directive bypassing the Council. In this situation the French government proposed the single-buyer model, which offered the best possibility for maintaining the existing practice [232] France, worried that wide liberalisation would push up prices for consumers of small amounts of electricity, has tried to slow the pace of market opening at every opportunity.[233]

Electricité de France (EdF), the state-owned monopoly which controls both the production and sale of electricity at the moment, the biggest concentrations exists in France, where French firm EdF controls almost 70 of the market - more than double the 33 limit for a single company

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[226] Loyola de Palacio, " *Towards a Regulated Competition in European Energy Markets"* **World Economic Forum,** New York, 04. 02 .2002_Commission Press Release DN:IP/02/189

[227] Economist. "*The Row over the EU's Market isn't over*" Volume 358, Issue 8215, 03.31.2001, p. 46.

[228] Daniel Dombey and Victor Mallet. *"Frances Faces Court over Gas Markets*" **Financial Times,** 4.5.2001, p.6.

[229] Karen Carstens. "Single *Market on Way for Gas and Electricity"* **European Voice,** Volume 8, Issue 43, 28.11.2002, p. 23.

[230] Daniel Dombey. *"EdF Fuels EU Row on Energy" Financial* **Times,** 30. 5. 2001, p. 27.

[231] Martin Blanks. "*EU's Plans to Liberate Energy Market Risk Running out of* Steam" **European Voice,**Volume 8, Issue 31, 2002, p. 18.

[232] See, Competition law prerogative in Art. 86.3 (ex 90.3),

[233] Fiona Mchugh. "*Hopes Rise for Deal on Electricity Date"* **Financial Times,** 09.05.1996, www .knoweurope .net/ cgi7quickD/full.rec.?action:byid.&id002/0004389 (Download:24.01.2004)

recommended by anti-trust watchdogs.[234] Electricité de France (EdF), has fiercely resisted plans to open up the market, arguing liberalisation would lead to heavy job losses and patchy service.[235]

The continued dominance of Electricité de France in its home market, and difficulties for new entrants in establishing themselves in Germany, created widespread fears that Europe lacked a level playing field.[236] GDF controls 98 of the country's gas market.[237] There would be no continuation of the 'asymmetrical markets. Most EU countries have moved well beyond their obligations under existing legislation to open the electricity market for heavy industry.But the continued dominance of Electricité de France in its home market, and difficulties for new entrants in establishing themselves in Germany, created widespread fears that Europe lacked a level playing field. This feeling was reinforced when French and German companies acquired subsidiaries in other, liberalised markets. [238]

The French model made the pendulum swing again towards the public sector approach. But in accordance with the principle of subsidiarity, EU countries should have the choice between both models[239].Germany is the only EU member country that has insisted it can do without state-appointed regulators to establish proper rules for network access as it liberalises its energy markets causing repeated complaints from other EU members.[240] Regulators are stabled to vice down on what they believe to be systematic violstions of EU single market laws in national privatization programmes.[241]

It was essential for the EU to set a clear timetable for liberalizing energy, an issue that has been blocked by France. The Commission would propose forcing recalcitrant states to open their markets under Article 86 of the EU Treaty. This controversial and little used measure allows the

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[234] Laurence Frost. *"Energy Giants' Control of Markets Risks Us-Style Crisis, Warns MEP"* **European Voice,** Volume 8, Issue 21, 30. 5. 2002, p. 25.

[235] Fiona McHugh. "No Deal on Horizon for Electricity" **European Voice,** Volume 1, Issue 131, 4. 12. 1995 www .knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0003098 (Download: 24. 01. 2004)

[236] Daniel Dombey, Tobias Buck. " *EU Sets 2007 Deadline for Energy Market Liberalization" **Financial Times,*** 5. 6. 2003, p. 8.

[237] Maria Kielmas. " *Gas Privatisation in Pipeline as France Prepares for Free Market"* **European Voice,** Volume 8, Issue 31, 5. 9. 2002, p. 20.

[238] Dombey, p. 8.

[239] Joachim Grawe. "*Liberalisation and Internal Market*" **Modern Power Systems,** Volume 15, Issue 8, Augst 1995, p. 3.

[240] Uta Harnischfeger. "*Berlin Set to Install Gas Market Regulator"* **Financial Times,** 16. 4. 2002, p. 10.

[241] Tim Jones. "*Regulator launch privatisation probe*" **European Voice,** Volume 4, Issue 25, 1998, p. 1.

EU executive to impose market liberalisation on public sector companies providing services of general economic interest.[242]

4. 1. 4. Effect of Combined Heat and Power in the Energy Market

High energy efficiency obtained with cogeneration, most cogeneration projects are demand site measures and not supply side projects. In these cases savings are dependent on the operation of the energy consumer. This will vary depending on economic activity, product needs, time of day/year, etc. Therefore exactly how much energy saving and thus greenhouse gas reduction, is achieved by a cogeneration project is difficult to assess precisely.[243]

The European Commission's target to double the use of cogeneration in the Member States of the EU by the year 2010 sets a major challenge for Europe's Policy Makers and gives the European cogeneration industry, a substantial opportunity.

Natural gas is designed to be the fastest growing of all fundamental fuels, gaining market portion in all European end-use and power generation sectors. A large raise in gas-fred power generation will be the fundamental driver of growth in gas demand.[244]High energy efficiency obtained with cogeneration, most cogeneration projects are demand site measures and not supply side projects. In these cases savings are dependent on the operation of the energy consumer. This will vary depending on economic activity, product needs, time of day/year, etc.[245]

Cogeneration has a major role to play in the future. CHP is a technology which can be competitive in a liberalized energy market and at the same time it satisfies all the aims of the European Energy Policy. For these reasons, the EC will take all measures to explore the existing energy saving potential of CHP and to dismantle existing barriers to its development.[246] Power producers will be defined as eligible customers, regardless of the gas volume they consume. However, member states will be allowed to introduce a threshold for combined heat and power

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[242] Peter Norman. *"Prodi Warns France to Open Energy Markets"* **Financial Times,** 17.1. 2002, p. 6.
[243] Cogeneration in Europe. **European Power News**, Volume 25, Issue 11, November 2000, p. 1.
[244] European Gas Market Expanding, **World Oil**, Volume 215, Issue 8, August 1994, p. 13.
[245] Cogeneration, **European Power News,** Volume 25, Issue 11, November 2000, p. 1.
[246] Energy Saving Potential of CHP, **European Power News**, Volume 23, Issue 1, January 1998, p. 5.

(CHP) producers, as long as it does not exceed the level set for other eligible customers in order to maintain a balanced power market.[247]

The power and CHP sector is hoped for to become the largest single gas consuming sector, symbolizing nearly 45% of all gas consumption by 2020. Gas presents significant advantages in power generation including lower investment costs; high efficiency plants; lower emissions and short construction lead times. [248]

4. 1. 5. Increase of Gas in the EU Power Generation

We can say that, the driving force behind the gas demand growth in the EU is the raised consumption of natural gas for power generation. Electricity production is hoped for to cause to more than 50% of incremental gas demand between 2000 and 2030. More generally, in all world area except the CIS, over 40% of incremental gas demand results from the expansion of gas for power generation. In contrast, the largest part of incremental gas demand in the CIS results from final gas uses). This particular situation in the CIS comes from the fact that although gas-based electricity production raises significantly, at an average rate above 4%/ year, the replacement of old gas-fired Power generation includes here electricity generated by CHP power plants. Plants with more efficient combined cycle gas turbines limit considerably the rise in gas use for power generation.

According to forecast of Commission it is estimated that, between 2000 and 2010, natural gas is designed to account for the largest portion nearly 70% of the raise in electricity production in the EU. As a result, some 27% of electricity should be produced from gas-based power generation and CHP plants in 2010. The favourable outlook for gas is designed to continue in the Reference scenario up to 2020: over this period, the designed raises in actual gas prices will not remove the competitive advantage of natural gas compared to other generation fuels or energy forms. On the contrary, expectations for the period 2020-2030 are that advanced coal technologies may account for the bulk of incremental electricity demand, the net result being a stabilisation of the portion of natural gas based electricity production at 2010 level. In contrast, the portion of gas-

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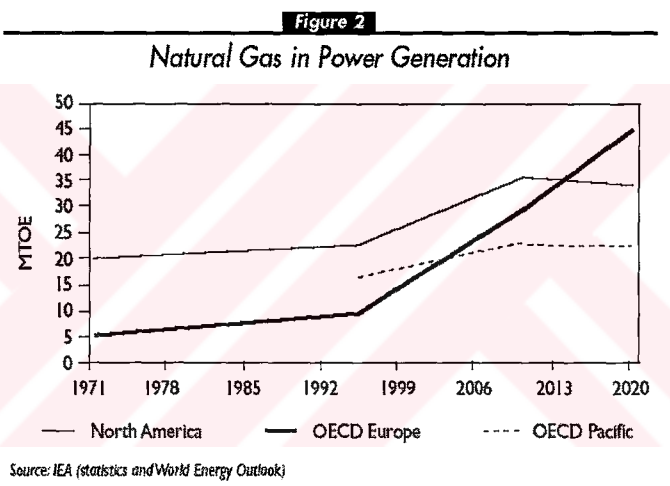
[247] Thomas Victoria. *"Competitive in a Liberalized Energy Market"* **Pipe Line & Gas Industry**, Volume 81, Issue 2, February 1998, p. 17.

[248] See, *Comission* (1999).571Why a Communication on security of EU gas supply? - Introduction and Background.

based power generation continues to rise steadily over the projection period in the other area. At the world level, the portion of gas use for electricity generation and combined heat and power production is hoped for to rise to 28% in 2030 from 18% in 1990 and 19% in 2000.[249]

When we concentrate on Cedigaz estimation that power generation will account for around 65% of the designed raise in western European gas demand. Power generation will consume nearly 150 Bcm/y by 2005 and 180 Bcm/y by 2010. Out of the estimated 130 GW of new power generating capacity which will need to be installed by 2010, around 70 GW is hoped for to be gas-fired, power plant will account for about two-thirds and cogeneration one-third.[250]

Figure 28: Natural Gas in Power Supply



Source: IEA Regulatory Reform .**European Gas Energy Market Reform,** Paris: 2001, p. 26.

The power generation sector is adds a new dimension to gas security. Most mature gas countries have high shares of gas in the household, commercial and industry sectors. If, as hoped for, similar levels of gas penetration were to be reached in power, the economies in question could at some stage become exposed to gas supply related risks. The diversification factor that natural gas usually offers for the energy mix could then become negative. For comparison, if oil were to regain a significant portion in power generation in addition to its near monopoly in the

[249] WETO. **Energy Outlook,** Paris, 2003, p. 86.
[250] Thomas Victoria. " *New Gas Market Forces Strongly Affect Some European Countries"* **Pipe Line & Gas Industry,** Volume 83, Issue 5, May 2000, p. 41.

transport sector.With gas, the case is less serious given its lighter presence in the whole energy balance and its substitutability in almost all its applications. But given Europe's supply situation, it is serious enough to warrant monitoring.

Europe in promoting cogeneration, was worried that allowing cogeneration plants to shop around for supplies would have opened up too much of its domestic gas market to competition in the initial stages of liberalisation. That concern has been answered by a safeguard clause which allows countries to redefine eligible customers if more than 35% of their home market is exposed to competition in the first stage of liberalisation. This would leave them free to push the market opening below the 35% level.[251]

4. 2. Market Maturity

Terms maturity determines the market outcome when competition and TPA is introduced. Only mature markets can offer the customer choice between suppliers and the kind of liquidity in both commodity and capacity that are needed to get competition going.With high levels of maturity it can be assumed that there is less need for investment in incremental infrastructure, and that there is already some room in the existing system to provide part of the capacity needed to fulfil growing demand. At the same time, the volume risk connected to forward investment may be somewhat less, because of the higher number of outlets.

Natural gas, however, is different in that it is not an essential good. The heat, warmth, or coolness, the electric power or the feedstock that is gained from it can be obtained from other sources of energy. There are profitably obtainable substitutes to natural gas. The notion of maturity in gas is very different. Electricity being an essential, non-substitutable form of energy, maturity in power supply is attained with the full coverage of the country by the grid infrastructure, and with the necessary production and transport capacity in place to cover the demand of the whole economy and population at all times. Maturity in gas should thus be measured in terms of how much gas penetration can be achieved under economic conditions in competition with other sources of energy.

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[251] Dismay over Presidency's New Gas Proposals, **European Voice,** Volume 3, Issue 4, 04. 09. 1997, p. 31. www. knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004309 (Download:24. 01. 2004)

Maturity is assumed to be achieved when gas pointed of the commercial and household markets is advanced and can only be marginally improved, because these sectors entail the highest costs in terms of infrastructure distribution and supply flexibility. Considering this, the state of maturity of the gas market at the downstream is generally high, though not the same everywhere.

Maturity does not mean saturation, and there is still considerable scope for growth in Europe, particularly in power generation. But the anticipated demand growth from the power sector would, by contrast, require comparatively little investment in downstream transport infrastructure, with shorter amortisation times.

4. 2. 1. Market Integration

Market integration in the EU is thus supported by the enforcement of the three chief competition instruments, namely: antitrust,[252] merger control,[253] and state aid control.[254] All these instruments interact and support every other in promoting competition, notably in liberalised markets for efficient allocation of economic sources and promote wide internal market. We need to introduce and maintain a supply structure favourable to competition. This is an area where typically Regulators have less power than Competition Authorities to act. [255]

Notwithstanding national differences, given the highly interconnected gas transmission systems in most of Europe, and given the fact that already today more than half of whole European natural gas consumption is traded over at least one border, there are strong interrelationships and interdependencies between these national markets.In the long-run this option should be exploited. It is important to declare that, the natural gas industry is subject to a number of goverment regulation and controls.[256] After liberalization, European markets are going reasonably well because European gas suppliers are still expanding their infrastructure. [257]

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[252] Articles 81, 82, and 86 EC Treaty.
[253] Regulation no: 4064/89.
[254] Articles 87 and 88 EC Treaty.
[255] Mario Monti, "*European Commissioner for Competition Policy Applying EU Competition Law to the Newly Liberalised Energy Markets*" **World Forum on Energy Regulation, Rome**, 06 October 2003, SPEECH/03/447.
[256] Rolf Golombek, Eystein Gjelsvik, "*Effects of Liberalizing in the Natural Gas Markets in Western Europe*" **Energy Journal,** Volume 16, Issue 1, 1995, p. 85.
[257] David Knott. *"EU Gas Directive Slows Investment"* **Oil & Gas Journal,** Volume 95, Issue 25, Jun 23. 1997. p. 22.

With liberalisation, national markets will tend to integrate more. Cross-border trade will grow, and as a result, wholesale gas prices across Europe will converge.This is positive. It would offer a larger outlet potential for the large-scale long-term gas purchase agreements that are necessary to underwrite new supply projects. In normal times, it should also help to keep gas price levels low. In cases where a supply constraint occurs locally or regionally, it will help to bring in alternative supplies from other European markets and level out the price effect. But it also means that changes in the gas price at localised or national level will have price effects in other countries. Countries also differ in the environmental standards they impose as well as in the taxes they levy on the use and treatment of energy. For the purpose of integration, it would be desirable to harmonise these over time.For the facilitation of trade, harmonisation of the technical aspects of gas supply is also desirable, for example gas qualities.

4. 2. 2. Market Flexibility

It is obvious that once the monopolies of energy supply, distribution and sales are dismantled and companies are able to trade more freely in a marketplace where there is greater price transparency, inevitably the next step is to identify and exploit the natural synergies that exist between different energy delivery systems. [258]

Downstream convergence is occurring in some cases where companies are able to exploit marketing synergies that exist at the energy delivery point at the customer's meter. Upstream convergence is chiefly based on the pricing relationship that exists between gas and electricity because gas is a fundamental fuel used to generate electricity. This relationship offers companies the opportunity for arbitrage between the two markets, enabling them to choose whether to produce electricity or gas, depending on which one will fetch a better price at a given time. [259]

Continental utilities such as state-owned Electricite de France and Eon of Germany also have been able to buy big British electricity suppliers. UK power companies, by comparison, struggle to break into tightly controlled continental markets.[260]

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[258] Michael Lind. "Liberals *at the Gas Station"* **New Leader,** Volume 82, Issue 5, 05. 03. 1999, p. 7.
[259] Thomas Victoria. "New Gas Market Forces Strongly Affect Some European Countries" **Pipe Line & Gas Industry**, Volume 83, Issue 5, May 2000, p. 41.
[260] Andrew Taylor. "*Regulator Calls for More Open EU Energy Markets*" **Financial Times,** 30. 10. 2001, p. 7.

4. 2. 3. Market Liquidity

Market liquidity, is a key factor for effective competition. Without abundance in both commodity and system capacity it becomes difficult to generate competition. We see the immense advantage of cheap and direct access to plentiful natural gas sources. Countries inherited very mature gas infrastructure systems from the earlier era. In putting the described regulatory systems in place, they succeeded in creating very liquid market places in which not only producers are competing against every other but are competing with traders as well, as with gas on offer from other gas holders e.g. dual-fuel end-users, storage holders. The regulatory regime is only one factor determining liquidity. Abundance of supply and demand flexibility is the other chief components. Liquidity determines the scale and scope of the benefits of a liberalised market for endusers. With the objective of getting aspiring that is project to make the EU the world's most succesfull economy.[261]

It is crucial to declare that "A regulatory instrument allowing formal decisions to be adopted on issues such as cross-border tarification needs to be in place. Of course, any such mechanism must secure the fixed involvement of national regulators, while the Commission should act to deal with cross-border issues that can only be effectively dealt with at the European level".[262]

There are two criteria, Firstly, in terms of quantitative; the Council decided that member states should initially open up 20% of their gas markets. Five years after the directive has been in force they must open up a minimum of 28%, and 10 years later they must open up 33%.[263]

In terms of the qualitative criterion, the first threshold of gas consumption that will make a customer eligible to get gas from an alternative supplier will be 25 MMcm/y, which represents opening up 33.6% of the average gas market in the European Union (EU). Five years after the directive has been in force the threshold will be reduced to 15 MMcm/y, symbolizing 36.4% of the EU average, and after 10 years the threshold will be further reduced to 5 MMcm/y, symbolizing 42.3% of the EU average.[264]

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[261] Peter Norman. *"Prodi Warns France to Open Energy Markets"* **Financial Times,** 17.1.2002, p. 6.
[262] Loyola de Palacio *"Further Liberalisation of Gas and Electricity Markets"*_Brussels, 16 January 2001, pp. 1-5. Commission Press Release DN: IP/01/59
[263] Thomas Victoria. **Pipe Line & Gas Industry,** Volume 81, Issue 2, February 1998, p. 17.
[264] Victoria, p. 18.

4. 2. 4. Investments in the Market

For investment the Caspian Sea region offers a huge supply potential in principle, but its realization requires the solving of key issues. For instance, before gas companies can contract significant volumes and build the necessary transport infrastructure e.g. the Tran Caspian pipeline project the region needs a settlement of the transit issues which inspires confidence in potential investors, a perspective of minimum political stability, and the development of the upstream sector. This is likely to require still some time. Last but not least, prices have to be competitive with Russian and Algerian gas. Both countries are well aware of this and are in a process of diversifying their supply routes e.g.Yamal I.[265] The opening up of the gas markets in Western and Central Europe may help to further reduce the risk of physical gas supply interruptions in that it invites external producers to actively take part in the downstream gas markets. Vice-versa, the participation of downstream actors in the upstream will enhance integration and interdependencies.

The likelihood of a vertical integration of downstream actors with upstream actors becomes evident also from the already perceptible need to redistribute volume and price dangersin future long-term agreements. With the price volatility liberalization will generate, gas purchasers will be asked to portion more of the price risk, and vice versa producers more of the volume risk. At the same time, gas purchasers may be asked for a stronger involvement in the transport systems linking the production fields to their markets. Furthermore, the efficient development of reserves in Algeria, Russia and elsewhere will require more foreign involvement. Algeria has already opened its upstream sector somewhat, notably to BPAmoco. In Russia, this has been resisted so far although Gazprom has signed so-called strategic alliances with, notably, ENI and Shell. Generally, liberalization of the upstream sector seems to be inevitable if enough investment is to be attracted for the kind of production development needed to supply Europe's potential demand 30 years ahead from now. There is therefore a need to secure that investments will be made on time to allow for supplies and that adequate measures are in place in case of a supply crisis also taking into account the reduced number ofupstream suppliers.[266]

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[265] International Highlights. **Pipeline & Gas Journal,** Volume 227, Issue 12, 2000. p. 12.
[266] New Opportunities in Store for Gazprom. **Pipeline & Gas Journal**, Volume 226, Issue 11, 1999. p. 14.

The existing three chief external suppliers, Norway, Russia and Algeria are hoped for to remain the most important external gas suppliers to Europe for the time horizon up to 2020. so EU should invest these areas for security reasons. It is not unlikely that by 2020, Russia, Norway and Algeria may still cover about 90% of whole EU gas imports. However, before 2020 it should be hoped for that gas imports from these countries will no longer only be made under contracts with the traditional state-controlled companies and entities (Gazprom, GFU and Sonatrach) but a wide range of producers including EU/western oil and gas companies engaged in upstream gas exploration and production. Gasprom has long sought the pipeline to expand gas exports into Europe, at a time when spare capacatiy is falling in its existing pipelines across Eastern Europe,which also suffer from theft and political tensions.[267]

The best prescription to reduce or manage geopolitical dangers and to secure security of supply for Europe in a situation in which gas will have to be produced further afield and transported over longer distances is one that is based on free trade; integration of markets and closer and strengthened co-operation with external suppliers and transit countries. European union countries need to invest from private sector.[268] A reciprocal integration and opening of upstream and downstream markets will attract capital and thus provide new ways of financing projects. It is therefore important for the EU to promote the implementation of market rules upstream such as access to energy resources and to the network and thereby to promote supply-side gas-to-gas competition among individual producing companies. This would also help facilitate the establishment of a European gas price, which could provide a reference and commercial basis for planning and implementing future investment projects. [269]

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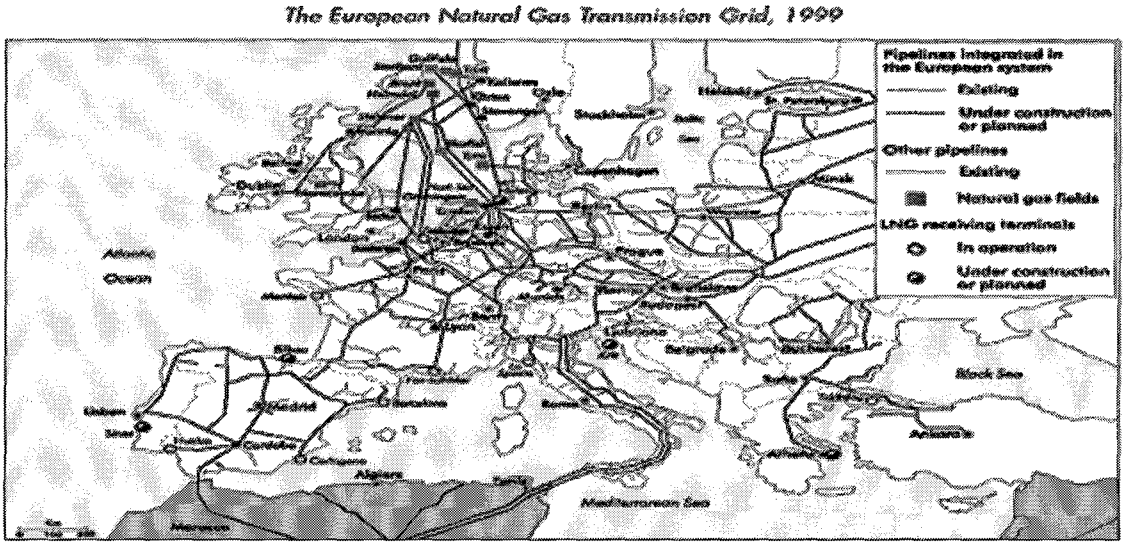
[267] Andrew Jack and Arkady Ostrovsky. "*German Energy Companies Set to Back Construction of Gas Pipeline From Russia*" **Financial Times**, 10. 10. 2003, p. 9.

[268] Ruuda Marit. " *Europe Needs Enormous Energy Investments"* **Euro Observer,** 6 November 2003, http://euobs.com/?aid=13447&rk=1 (Download:16. 2. 2004)

[269] Vivies, p. 2.

Map 1: European National Gas Transmission Grid



Source: www.eurogas.transmissiongrid%/20htm.endownload (Download: 20.11.2003)

4. 2. 5. European Energy Market

The introduction of market opening for electricity and gas continue to be a success. Provided that Member States correctly transpose the new Gas and Electricity Directives, customers will benefit from a more transparent market with, in general, lower prices than otherwise.

As from mid-2004 all business customers throughout the European Union will be free to choose their electricity and gas supplier, from 2007 also household will have free choice of supplier. the opening of the market must take place within the general framework of ensuring the security of energy supply of the Union.

Security of supply means both the continued availability of energy resources and security of provision to customers. There is no scarcity of conventional energy sources in the world, but the European Union is getting more and more dependent on imports, to the tune of 70% by 2020. A substantial amount of these imports are from countries which are not fully politically stable. This situation needs to be clearly managed. Improvements have already taken place, among others there is more solidarity and more of a common energy policy in the European Union than there was at the time of the oil crisis in the beginning of the seventies.

Maintaining security of supply will continue to be a key challenge for the internal market. Over the next 20 years, in the EU, we need to build or renovate as power stations as we have in service today. Around 600 GW, that means 750 large power stations. Similarly heavy investments we have to face in pipelines, LNG terminals and storage in order to secure that sufficient natural gas is brought from third countries to the EU market. Investment in new transmission electrical lines within Europe is also essential. [270]

4. 2. 6. Spot and Futures Markets

New financial and hedging instruments are emerging in the gas market which are likely to change the traditional perception and management of risks. Such new risk covering and sharing instruments may underpin the financing of future gas supply for Europe complementary to take-or-pay contracts. Linking the gas price to the oil spot market seems to provide no more security or predictability in prices and project economics than linking it to the spot price of gas as it develops or partly to the European electricity pool prices. However, due to inter-fuel competition and the possibility of substituting gas by oil in most market sectors, oil prices are likely to remain important also in relation to gas prices in the future.

In order to have a liquid market, there needs to be a sufficient number of buyers and sellers so that either can buy or sell an amount of his commodity without that one transaction substantially altering the market price. In order to allow this to happen, the market needs to be transparent. This requires a level playing field for information.

It is a market in which goods are traded short-term. It can be observed that when a spot market's liquidity rises, the frequency of trades raises, and the amount of the commodity traded per trade declines. Rapid, accurate transmission of price signals throughout the industry leads to a better balance of supply and demand.

Spot markets have developed for several reasons. The principal factors for many market participants are supply optimization, based on the need to balance demand and supply on a monthly or daily basis. Trading exists as a complementary activity to the core business with a

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[270] Loyola de Palacio. *"European Commission, Commissioner for Transport and Energy Challenges Towards a Unified European Energy Market"* **Round Table on Energy Nyenrode (Netherlands),** 13 November 2003 Comission Press Release DN: SPEECH/03/536

view to diversifying supplies and hedging positions. With market growth, new traders enter with profit making as the fundamental objective. Namely commodity characteristics, hedging needs and structure of competition in the spot-market are identified as the chief determinants of the success of futures trading in a particular commodity.Efficient futures markets discharge at least two important fuctions.Firstly, by providing market determined future prices.Secondly, futures markets provide a risk sharing instrument for producer and consumer facing uncertain price of commodity. [271]

Futures contracts provide an independent transparent pricing signal for the market, which can be used as a pricing index for other contracts. The future price of a commodity may be the best indicator of its hoped for spot price in the future.The distribution of economic benefits and dangeris an important element in many of the regulatory issues facing the gas industry, but market forces will ultimately constrain the ability of regulators to allocate economic benefits[272].Risk transfer is the other chief function of the futures market. Participants in the futures market are generally hedgers or speculators. Hedgers use futures to offset and minimise the dangersof price fluctuations. Speculators are willing to accept the risk in the hope of making a profit.

But spot and futures markets do not only bring economic benefits. A major drawback is that they tend to detach themselves from the actual supply and demand situation.Traders are specialised in trading and seeking opportunities for trade, though often lack an in-depth knowledge or expert understanding of the underlying market. As a result, the significance of occurrences in the market is often overinterpreted which can trigger disproportionate reactions that are economically inefficient or can be damaging.

With the market price risk that arises from a liberalized and competitive gas (and/or electricity) market, there is a need for price management tools. A risk management strategy is required when there is price volatility that threatens to exceed the financial risk tolerance limits of a company. Risk management tools help reduce volatility in earnings, and they have the advantage of helping a company manage working capital and cash flow more accurately, lend assurance to investment and acquisition decisions, and improve financial leverage. Risks to

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[271] Eirik Schroder and Singh, Balbir. *"Developing Futures Markets for Electricity in Europe"* **Energy Journal,** Volume 13, Issue 3, 1992, p. 3.

[272] Thomas Lyon. *"Natural Gas Policy: the Unresolved Issues"* **Energy Journal,** Volume 11, Issue 2, April 1990, p. 23.

energy supply can be managed through a combination of actions in both the supply and demand side of energy policy[273] The chief emphasis in reorganization is on the establishment of spot-markets which allow for efficient pricing that reflects the demand and supply conditions prevailing in the system. Given the stochastic nature of demand and supply for energy, it is reasonable to expect volatility in market prices for the producers and the consumers in this sector. This development is in contrast to the "certain world" of fixed prices and long term contracts which dominates the centrally organized energy sector in these countries. Spot price information in countries where spot markets exist, freely available and the fact that futures markets are under development for contracts indicates the peresence of trading opportunities for contracts.[274]

4. 2. 6. 1. The Wholesale Spot Market

A wholesale power market is established in order to facilitate competition among generators and encourage new entrants into the market. Therefore, it is generally hoped for that the wholesale power market will lead to lower retail prices through the lower wholesale prices induced by competition. However, it is becoming more readily accepted in policy circles that the wholesale electricity market is considered to be particularly vulnerable to the market power of large generators, which is causing higher prices. In countries where different states or provinces have different policies as to the wholesale spot market, the variable takes a value of one if at least one state or province establishes such a market. [275]

4. 2. 6. 2. System Operation

System operation refers to the co-ordination of transportation services to secure that the system is constantly in state of static electrical equilibrium. In particular, equilibrium requires that power supplied equals power demanded at every node of the network. This state is achieved by controlling inflows and outflows of energy over the network and by procuring the complementary ancillary services necessary to maintain the technical reliability of the grid.

Regardless of the market framework (monopoly or competitive), system operation always remains a monopoly. Interconnection and its associated benefits of raised reliability and lower

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[273] European Commission.www.europe eu.int/rapid/start/cgi/guestenlesh?p.action.gettxt:gt&doc:ip 02653/ o/ A GD (Download: 18. 11. 2003)
[274] Schroder, pp. 4.
[275] Hattori, pp. 1-6.

costs are only possible under a centralised system operation. However, this intrinsically monopolistic function can be unbundled from transmission ownership, in which case an independent system operator is in charge of system operation.

4. 2. 6. 3. Harmonization

A harmonised system for cross-border tarification needs to be developed in order to prevent obstacles caused by the current system of different national tarification systems. To this end, at the same time as adopting this Communication, the Commission has put forward a proposal for a regulation on conditions for access to the network for cross-border exchanges in electricity. Less progress has been made in the gas sector, chiefly because the Gas Directive was implemented 18 months after the Electricity Directive. Therefore , there have not yet been any plans to adopt legislative measures in that area.

According to Directive 92/96, harmonization will be important to the integration of the national gas markets in Europe. Harmonization efforts should in particular be applied either by the gas industry itself or by national and supranational authorities in the following areas:

- energy taxation, including the levy of royalties and concession fees;
- environmental regulation and standards;
- Differences in technical standards, specifications and practices that constitute barriers to gas trade.
- differences in gas quality
- differences in the technical codes and standards for design and construction of pipes
- gas metering and accounting
- Load balancing.

For some of these technical areas, full harmonization is maybe not attainable. For example, full harmonization of gas qualities may be difficult. In these cases, standard practices should be developed for the day-to-day dealing with these problems. It will have to be secured that remaining technical barriers are not being exploited to discriminate between shippers or other market players and that charges made to shippers are cost-reflective and not discriminatory. Preferably, third parties should be allowed to provide alternative services to those offered by

transmission system operators to overcome quality and other technical differences in cross-border gas exchanges.[276]

Harmonization should enhance competition because it helps to facilitate market entrance of new players and traders. It is necessary to declare that, lack of harmonisation among national regulations may result in barriers to trade. First, if some countries are more open than others within a common trade area, there may be reciprocity concerns that could make international electricity trade more difficult. Second, nationally set environmental standards e.g. post- Kyoto commitments to reduce CO2 emissions may not be effective once international electricity trade is engaged. Third, differences in taxation may also distort and discourage trade.

4. 3. Derogations

The aim of derogations is to guarantee a specific protection in certain cases, for example, for natural gas undertakings with specific economic and financial difficulties deriving from take-or-pay commitments, or in Member States where gas has been introduced newly and huge investments need to be recovered emergent markets. In the first case, derogations will be granted on a case by case basis, and the Commission will play a decisive role, whereas in the second case, derogation will automatically expire after ten years from the first delivery of natural gas. [277]

The critical question underlying the issue is whether scope or scale economies would be sacrificed upon the advent of competition, thereby resulting in substantive inefficiencies that more than balance the benefits resulting from raised competition.[278] An inquiry into this question requires knowledge of the cost characteristics in gas transmission and specifically whether natural monopoly is the natural structure of the natural gas industry.Deregulation brings opportunities If EU governments fulfil their promises.[279] But also deregulation can lead to a slowdown of

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[276] See, Directive 96/92/EC concerning common rules for the internal market in electricity, and Report - COM (1998) 164 final Second report from the Commission to the Council and the European Parliament on harmonisation requirements.

[277] See,European Commission Directive 96/92/EC

[278] D. V. Gordon, K. Gunsch and C. V. Pawluk, *"A Natural Monopoly in Natural Gas Transmission"* **Energy Economics,** Volume 25, Issue 5, 2003, pp. 473-485

[279] Renee Cordes. *"Gas Sector Prepares for Liberalization"* **European Voice,** Volume 5, Issue 40, 4. 11. 1999, p. 21.

activities. The utilities have to get an understanding of the new rules before they begin once more to invest.[280]

Table11: Deregulation of Gas sector

Austria	No decision yet
Belgium	47 in 1999; 100 by 2010
Denmark	No decision yet
Finland	90 planned (with initial derogations for wholesale market)
France	Only expected to comply with minimum EU requirements
Germany	100 planned
Greece	No decision yet (may apply for a derogation)
Ireland	75 of market opened (new legislation planned for the end 1999)
Italy	No decision yet
Luxembourg	43 planned initially
Netherlands	45 planned in 2000, 100 in 2007
Portugal	No decision yet
Spain	46 in 1998, 100 planned for 2013
Sweden	No decision yet
UK	Already 100 liberalised

Source: Gas sector prepares for liberalisation. **European *Voice*** ,Volume 5, Issue 40, 4.11.1999, p21.

A 15-Year struggle to liberalise the inefficient, heavily-subsidised, state-owned monopolies which were choking Europe's economy is finally paying dividends. And the size of the pay-off has surprised even the most ardent supporters of deregulation.[281]

[280] David Knott. "*EU Gas Directive Slows Investment*"**Oil & Gas Journal**, Volume 95, Issue 25, June 23 1997, p. 22.

[281] Barnard Bruce. " *EU Reaps Dividends of Market-Opening*" **Financial Times**, 04. 05. 2000, p. 5.

"Politically, for most member states, deregulation has been a success story but for the French, it's very difficult to get this across to the general public and impossible to get it past the EdF unions".[282]

With EU legislation likely to proceed slowly without a deadline, it is these piecemeal measures driven by market logic that are likely to bust open the French market. The great danger, however, is that a market opened up by competition officials and the marketplace will belarger on one side and insufficiently regulated. In other words, California.[283]

Full deregulation, in essence the removal of all specific rules, is occasionally developed as an alternative means of introducing competition. Full deregulation lifts constraints on the prices and grid services, allows choice to allconsumers and does not impose any constraints on the vertical structure of companies. Under this approach, the vertically integrated structure of the industry remains unchanged. Network activities are not regulated. Market power and anticompetitive behaviour are controlled ex post through the application of competition law. The negotiated third party access models being implemented in Germany and, with a more significant degree of unbundling,[284] we can classify the deregulation process in Europe like:

- The gas directive of 1998 has not caused to the creation of a single European gas market
- There is a large difference between theoretical and actual opening in some countries
- The new gas directive should give more tools to achieve the single gas market. In particular, there is a need to:
- suppress existing entry barriers in some countries
- secure non discrimination between operators
- secure that transits are cost reflective and regulated and that there is no pancaking[285]

Several European countries have initiated processes of deregulating their electricity sectors, and are now placing raised emphasis on market prices and principles of efficiency in

[282] Tim Jones. "*Dark Days for Electricity Sector Dim Hopes of French Volte-Face Major Feature*" **Financial Times,** 01. 02. 2001, p. 7.
[283] Jones, p. 7.
[284] See, The Directive 96/92/EC.
[285] Vivies, p. 5.

production, transmission and distribution. The aim of this process, as promoted by the European Commission, is to transform electricity markets in Europe into an integrated market.

4. 3. 1. Designing Markets and Regulation

Two issues have polarized the debate on the organization of wholesale energy markets. First, there is the question of whether mandatory or voluntary energy pools should be preferred. There is a growing consensus that competitive bilateral energy trading is an essential part of an efficient modern market. Voluntary pools or power exchanges are increasingly dominating the scene, and mandatory pools are receding. Although pricing and scheduling rules show significant variation across systems, these differences do not seem to have a significant impact on the functioning of power exchanges. Second, some markets have instituted so-called capacity payments to provide extra incentives for investment in generation while, in other markets, generators are paid only for the energy actually provided. We can conclude that, under most circumstances, market incentives to invest are sufficient to secure adequate investment and that capacity payments are not generally needed. Market integration in the EU is thus supported by the enforcement of the three main competition instruments, namely: antitrust (Articles 81, 82, and 86 EC Treaty), merger control (Regulation no: 4064/89), and state aid control (Articles 87 and 88 EC Treaty). All these instruments interact and support each other in promoting competition, notably in liberalised markets.We can forecast that, future liberalization is likely eventually be along the lines of the British model. There, competition so well established "households treat it like supermarket shopping". Legislation kicked off the process but was soon overtaken by market developments.[286]

4. 3. 2. Regulatory Reform

In a competitive gas market, security of gas supply i.e. product availability and regularity becomes a competitive parameter in itself contributing to the quality of the product or service offered by individual gas suppliers and thereby influencing the reputation of reliability of these. In this context, eligible gas customers should only be willing to pay for the security of supply, which they need. This will elucidate the real costs of gas security and lead to an explicit gas security

[286] Tim Jones, *"Regulators Face Key Test as Chill Winds of Competetion Blow Through Gas Sector"* **European Voice**,Volume 6, Issue 18, 4. 5. 2000, p. 16.

pricing hence providing new incentives for commercial optimisation of gas security instruments and assets such as storage. [287]

There are fundamental differences between general competition law and sector specific regulation. While the general competition law applied to mergers is prospective, the law applied to behaviour deals with a problem after it has arisen rather than anticipating issues with rules which apply regardless of actual behaviour. There is a fundamental difference on where the burden of proof lies, how specific the rules are and the penalties for violating the rules. Regulatory intervention is so essential in electricity and gas markets in the European Union is their current state of liberalisation. It is vital that liberalisation is accompanied by the appropriate regulatory measures to ensure that it progresses smoothly.[288]

Therefore, governments need to consider carefully the application of general competition law to open the market, at least in the early stages. New market entrants are particularly vulnerable to the power of established incumbents. There is also the issue of how to deal effectively with captive consumers. Such consumers are unlikely to find it easy or cheap to tackle problems through general competition law and the courts, and it is easier if there are clear rules which their suppliers need to follow.

However, the competitive elements of the market clearly do not need as intrusive an approach as the non-competitive elements, once the market is established, and governments need to keep the arrangements under review. If it is possible to dismantle special rules, this should always be considered. The more rules, the more likelihood of distortion of optimal market decision making. Other, very important, function of general competition law is the control of mergers, alliances and joint ventures. The economies of vertical integration mean that companies may have a natural incentive to re-integrate, especially vertically. When power sector reforms have sought to disaggregate the industry, as in the competitive pool model of competition, re-integration is a problem. In the competitive pool model, vertical re-integration is likely to re-

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[287] Matthew Jones. *"Regulators Press Brussels on Gas Merger"* **Financial Times**, 22. 8. 2002, p. 2.

[288] Mario Monti. *"Policy Applying EU* Competition *Law to the Newly Liberalised Energy Markets"* **World Forum on Energy Regulation,** Rome, 06 October 2003, http:// europa. eu.int/ rapid/ start/cgi/ guesten. ksh?p_action.gettxt=gt&doc=SPEECH/03/447|0|RAPID&lg=EN (Download:11.1.2004)

introduce incentives for grid owners to discriminate against competitors. General competition law can play a key role in preventing discrimination. [289]

It is fact that, regulatory reforms in energy market have been observed in many parts of the world. In most countries, the industry had traditionally been characterized as a regulated monopoly, and reform has opened it to competition at the wholesale level as well as the retail level. The industry was also typically characterized as a vertically integrated structure, while reform has unbundled generation and supply from transmission and distribution.There is now a need for a detailed evaluation on the economic impact of the reforms, because such reforms appear to be costly and there seems to be a growing controversy as to their benefits. [290] But there are increasing concerns over the growth of dominant energy companies in energy markets.[291]

4. 3. 3. What are the Benefits of Reform?

Reform primarily reflects a concern that economic efficiency is not as good as it might be in the market, and hence prices to consumers are higher than what they might be.The inefficient performance of the old regulatory framework has given cause for concern.

Effective liberalization needs a strong regulator and independent competition body for liberalization of market.[292] The chief objective of market reform is to raise economic efficiency. This requires minimising the cost of electricity supply and ensuring that electricity prices are in line with costs. Experience from other industries shows that, to keep costs and prices down, competition is the most effective way for establishing sustained incentivesUnder competition, productivity grows, costs and prices decline, and innovation and product diversity flourish. The expectation is that these benefits will also result from the introduction of competition in the market.the largest hoped for benefits of reform in the market are: Competition puts a downward pressure on the profit margins of generators and suppliers and provides an incentive to reduce costs. As a result, prices under competition tend to be lower.

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[289] IEA, **Electricity Market Reform, an IEA Handbook,** Paris, 1999, p. 27.
[290] Hattori, pp. 1-6.
[291] Matthew Jones. *"Regulators Press Brussels on Gas Merger"* **Financial Times,** 22. 8. 2002, p. 2.
[292] Daniel Dombey . *"Europe Struggles to Pass Test of Openning up Energy Sector"* **Financial Times,** 27. 8. 2001, p. 4.

Reform facilitates inter-system competition and trade in energy, resulting in a better allocation of resources and, ultimately, a reduction in the cost of supplying energy. This is a significant benefit of reform in much area. In the EU, the Electricity Directive aims to develop the EU internal electricity market by integrating the national EU electricity systems. Reform is hoped for to reduce the large (and inefficient) electricity price differentials that exist across area.

Another benefit is savings in investment costs: better investment decisions are hoped for, particularly in generation, as investors assume the dangers of their investments and incentives to over-invest correspondingly disappear. The large generation capacity reserve margins now observed in some countries, as large as 50%, can be hoped for to adjust to more normal levels as the costs of non-economical investments cease to be borne by consumers.

It can be say that one of the important advantages is higher labour productivity: better use of manpower is hoped for, particularly in distribution activities, as raised regulatory oversight, incentive regulation and, in some cases, privatisation, and build up pressure for a more efficient use of resources.

Competition also means that regulators do not need to provide regulatory incentives to promote efficiency. The evidence from many regulated sectors suggests that regulation is an imperfect substitute for competition in providing incentives for efficiency. A number of factors seem to cause this, including information asymmetries between the regulator and the regulated firms and regulatory capture.

Generally reform needs to be carefully targeted at the largest inefficiencies in supply. Power generation became the first target of reform because it offered the largest potential for improvement. Costly planning errors, leading to excess generating capacity suggested that efficiency could be improved. Generation accounts for about half of the whole cost of electricity and it does not exhibit significant economies of scale so that competition is a possibility.

4. 3. 3. 1. What are the Costs of Reform?

A monopolistic network remains essential to supply a large majority of end-users. In consequence, extensive resources have to be devoted to the regulation and restructuring of the network. Regulating the grid is a costly activity. Resources are needed both to develop new

regulations and to implement them in areas such as pricing, allocation of access rights and antitrust enforcement. Regulation also commits the resources of market players as they try to impact the market of regulations and enter into legal battles regarding their implementation. In addition, a detailed regulation of the electricity grid has costs in terms of foregone economic efficiency. Regulatory loopholes and imperfections seem almost unavoidable given that regulators haverestrictedaccess to information in key areas such as costs or technical constraints.

The unbundling of activities along the vertical supply chain also results in transaction costs. A web of contracts and intermediaries replaces the previously vertically integrated structures. Some of the costs of contracting and intermediation already existed or have their counterparts in the integrated model.However; the whole cost of these activities is hoped for to rise.

It has been suggested that structural policies, such as unbundling and divestitures, may lead to foregone economies of scale and coordination but the evidence suggests that foregone economies may not be significant. For instance, there are economies of vertical integration that may be lost when transmission is unbundled from generation. Unbundling generation from transmission has the potential cost of yielding sub-optimal investment decisions in either activity. However, these indirect costs of vertical deintegration seem little in the light of the international experience. Generation and transmission can be substitutes for each other since the services provided by a transmission line can also be provided by a power plant located where the line would deliver energy.

It is clear that the horizontal restructuring of the market does not seem to have a significant impact on the internal efficiency of electricity companies. It is sometimes claimed (e.g. in antitrust cases) that horizontal restructuring may have efficiency costs because of foregone economies of scale. While there is general agreement that a minimum efficient scale exists for every market activity, this minimum generally allows for several companies to compete within the same market.

4. 3. 3. 2. What is Driving Reform?

It has been declared that increasing economic globalisation also encourages reforms. In a closed economy, inefficiencies in any part of the economy can be more easily absorbed by other economic sectors to the extent to which they are also shielded from competition, and excess costs

can be passed on to consumers in the form of higher prices. But in an open economy, industries exposed to competition cannot remain competitive if they pay more for their inputs than their ("foreign") competitors. Globalisation thus creates extra pressure to raise efficiency in supply. Also, a global economy helps reform by fostering the emergence of international energy companies that have the resources, the willingness and the dynamism to compete in the newly liberalised markets.

Finally, the fact that reform has been successful in some countries provides an impetus for reform in other countries. Regulatory know-how can be imported, at least partly, and the biggest uncertainties and concerns that surrounded the first reform experiments are no longer apresent.

4. 4. Regulators' Tasks

Both European Regulatory and Competition Authorities strive to tackle the remaining barriers to an effective market, fully respecting security of supply and environmental objectives. the energy regulator, raise pressure on other European Union countries to open electricity and gas markets to more competition.[293]

The strengths of the regulatory and the competition approaches have the same objectives and reinforce each other. Only the instruments used by Regulators and Competition Authorities differ. However, some questions are more akin to be dealt with competition rules, while others can be better treated with regulatory instruments. EU competition rules are designed not only to protect the efficient allocation of economic resources, but also to promote the creation of an EU wide internal market by dealing with situations that affect trade among Member States. Barriers to competition affecting trade among Member States can derive, for instance, from contractual arrangements, such as territorial sales restrictions.

"A regulatory instrument allowing formal decisions to be adopted on issues such as cross-border tarification needs to be in place. Of course, any such mechanism must secure the permanent involvement of national regulators, while the Commission should act to deal with cross-border issues that can only be effectively dealt with at the European level."[294]

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[293] Taylor, p. 7.

[294] Loyola de Palacio. " Calls for Further Liberalisation of Gas and Electricity Markets" Brussels, 16 January 2001. Comission Press Release DN: IP/01/59.

Much of the debate on economic regulation has revolved around the relative role of markets and hierarchies and the juxtaposition of those two modes of governance vis a vis each other.[295] The regulatory framework with free entry to the transportation industry, gas pipelines operating under an open-access scheme with an obligation for the transportation concessionary to allow indiscriminate access and use of the available transportation capacity.

4. 4. 1. European Regulators Group for Electricity and Gas

The natural gas industry in Western Europe is subject to a number of government regulations and controls. In France, the state owned Gaz de France still has a legal import monopoly and virtually a monopoly over transport. In the Netherlands, the state owns 50% of Gasunie, the sole company which is involved in gas trading and transport.[296] The Union has newly decided to complete the internal market for electricity and gas: by 1 July 2004 all commercial customers, and by 1 July 2007 all consumers will be able to freely choose their energy supplier.[297]

The new European Regulators Group for electricity and gas will cause to effective market opening in practice by promoting consistent approaches to market regulation throughout the Union.[298] The Commission published a working document made efforts to liberalize the natural gas industry in 1988.[299] The document, which encompassed a number of new initiatives like harmonization of taxation, price transparency and interconnection of grids, made it clear that the position of the Commission from the mid 1980s to largely exclude the energy sector from the Single European Market had been changed.[300] The proposals from the EU met opposition from several Member States as well as from part of the gas industry. Four years later the Commission issued a Draft Directive.[301]

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[295] ibid.
[296] Golombek, p. 86.
[297] European Commission, **Commission Creates European Regulators Group for Electricity and Gas** Brussels, 12.11.2003, DN: IP/03/1536
[298] Frank Felder. "*Electricity Economics: Regulation and Deregulation*" **The Energy Journal.** Volume 24, Issue 3, 2003. p. 151.
[299] See, Commission of the European Communities. **Liberalization of the Natural Gas Industry and the International *Energy Market*,** Brussels (1988).
[300] Golombek , p. 85.
[301] See, European Community. **a strategy to Liberalize the Gas *Market*,** Brussels, 1992.

4. 4. 2. Regulators Stage for Liberalizing Markets

We can declare that, the first stage took place in 1990 and 1991 when the Directive on price transparency and the Directive on transit of gas between high pressure transmission grids were passed. the case where no traders exploit arbitrage possibilities and some producers have restricted access to the markets. In this equilibrium net prices differ across markets.

In stage 2, we see a model that competition accomplished by a new way of organizing natural gas transportation. Traders are introduced The fundamental idea was that pipeline companies agree to carry gas--which is owned by other agent--in return for payment.Other principal elements were a transparent and non-discriminatory licensing system and separation within vertically integrated undertakings of management and accounting.[302]

Finally, on the basis of an evaluation of stage 2 a further liberalization was designed The idea was to "complete the internal market for gas and electricity." welfare implications from a liberalization of the West-European natural gas markets are discussed. a radical liberalization could raise economic welfare in Western Europe by 15% to 20% in the long run. [303]

All show that producers sell gas either to large users in the manufacturing industry and to gas-fired thermal power plants, or to local distribution companies. European market for natural gas in which traders exploit all arbitrage possibilities and all producers can sell gas in all markets. the impact on the complete European market of changes in costs for production, transport, and distribution[304]. The EU's hard-fought electricity directive states that large industrial companies which use more than 40 gigawatts of power an hour accounting for 22% of the EU market - should be free to choose their suppliers by 1 January 1999.[305]

4. 4. 3. Independence of the Regulator

Independence from government and political actors may also be desirable to secure long-term stability of regulatory policies, to avoid the use of gas policies to achieve general policy

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[302] Unbundling.
[303] Golombek, p. 87.
[304] Golombek, p. 88
[305] Barnard Bruce. *"Electricity Liberalisation Powers Ahead"* **European Voice,** Volume 3, Issue 35, 02. 10. 1997.www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004058 (Download: 23. 02. 2004)

objectives e.g. more revenues from taxation or lower inflation and, generally, to protect investors and utilities from political interference. The importance of political independence for an adequate regulatory performance is likely to depend on a number of country specific factors. The crucial issue is to what extent political interference is an actual threat. This is influenced by the institutional design of every country. For instance, the role of courts in reviewing regulatory decisions, which is crucial in this regard, changes from country to country.

Nevertheless, political independence becomes a priority whenever there is public ownership of gas utilities. In this case, the government simultaneously faces responsibilities as owner and as regulator. Instituting a politically independent regulatory body avoids potential conflicts of interest between these two areas of responsibility. Germany is the only EU member country that has insisted it can do without state-appointed regulators to establish proper rules for network access as it liberalises its energy markets - causing repeated complaints from other EU members.[306]

Independence from regulation may be important, at least in the beginning, in order to secure that the specificities of the natural gas sector are properly taken into account in the first years of transition away from the old market system. Alternatively, if a joint electricity/gas body is set up, it is important to secure that it has the appropriate expertise to deal with gas.

4. 4. 4. Regulatory Institutions in the New Competitive Environment

Several factors in modern society serve to weaken the sovereign regulatory public authority and that the strong governance assumption, therefore, is highly questionable. Given, for instance, that the relevant market now often extends beyond the boundary of any single regulator and that national differences in resource endowments, and industrial structure and institutional traditions vary extensively, nation states frequently find it difficult to agree on common regulatory principles.

Regulatory responsibility needs to be clearly defined and vested with an appropriate body that is at the very least independent from the companies that are being regulated. For example, where the government owns the utility, it is important to avoid short-term budgetary pressures, as well as to secure a degree of transparency and consistency in decision-making. Some countries

[306] Harnischfeger, p. 10.

have gone further and set up independent authorities in order to keep the day-to-day regulation of the gas sector free from political interference. While this approach has arguably proved successful in many cases, accountability remains a problem.

These are the key changes that need to be considered in the adaptation or development of an appropriate institutional framework. It is necessary that, separation of the regulator from the regulated regulatory procedures must be transparent and competitively neutral in order to keep a level playing field for competition. Regulators have to be independent from the regulated. Otherwise, conflicts of interests are unavoidable and regulation is bound to deteriorate. Careful design of regulatory institutions is needed to secure effective independence of the regulator from the regulated entities.

Second, the relationship with competition authorities has to be clarified and effective communication channels between gas regulators and competition authorities.

Third, structural obstacles and political resistance to the development of a competitive market in gas often results in regulatory agencies actively promoting pro-competitive reforms.

And fourth, gas markets benefit from a stable or, at least, predictable regulatory framework. Creating an expectation of a stable regulatory framework may be better achieved by independent regulatory agencies, which are less subject to political change than other parts of government.[307] If no alternative to the state-based authority model is developed, society may develop a regulatory deficit--whether through poorly governed hierarchy or imperfectly regulated markets which may lead to considerable welfare loss. Such regulatory deficit is likely to particularly affect the environment as many environmental problems have international effects and affect multiple sectors of society. [308]

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[307] This was generally the case of regulatory agencies in the US before liberalization. However, to the extent that regulators also act as advocates of pro-competitive reforms, the impact of their actions on the expectations of market players is ambiguous.

[308] Atle Midttun. *"The Weakness of Strong Governance and The Strength of Soft Regulation: Environmental Governance in Post-Modern Form"* **The European Journal of Social Sciences**, Volume 12, Issue 2, June 1999, p. 235.

4. 5. Energy Taxes

European Commission proposals to harmonize energy taxation at a high level across the European Union would not only cut pollution, they would create 118,540 extra jobs across the EU, a University of Bath report has claimed.[309] Energy tax harmonisation represents a fundamental target within the European Union. In fact fiscal harmonisation is a crucial step towards the creation of a single market. The new proposal of the Directive of the European Union, lays down the obligation of minimum levels of taxation in all European member states.[310] The problem, will a national government willingly sacrifice tax revenue for the greater good of the European Union and its single market.[311]

4. 5. 1. High Taxes Support Green Policies

Taxation and tariff policy are important instruments for promoting energy efficiency. The Commission's tax proposal concerning the broadening of the minimum tax base for energy products is an example of this. It provides for a minimum base and possible tax-exemptions for energy efficiency investments. Member State measures in this area are also important and their use in promoting energy efficiency will be encouraged. Carefully designed tariff structures for energy supply and distribution can also improve efficient end use and will therefore be promoted. [312] But tax reform raised energy prices by 7 percent per year for 15 years, and recycled the revenues to industry and and households.[313]

A simple way of raising government revenue, fuel taxes now play a pivotal role in Europe's twin campaigns of reducing pollution and easing congestion on its clogged motorways. [314] Therefore , governments make no excuses for levying fuel taxes and motorists only have the occasional gripe. It is clear that costs of Europe's heavily taxed energy already are high. The wisdom of raising them even more would be questionable even if the reasons were good.

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[309] European Power News, Volume 25, Issue 9, September 2000, p. 3.
[310] Dorigoni S, F Gulli. *"Energy Tax Harmonisation in the European Union: A Proposal Based on the Internationalisation of Environmental External Costs"* **European Environment,** Volume12, Issue 1, January-February 2002, pp. 17-34.
[311] Economist,. *"Singular Market"* Volume 333, Issue 7889, 11. 12. 1994, p. 69.
[312] *Anonymous. "EU Energy Paper Shirks Markets"* **Oil & Gas Journal,** Volume 993, Issue 25, June 19, 1995, p. 18.
[313] David Gee. " *Making Pollution Pay"* **New Statesman & Society,** Volume 8, Issue 348, 4. 14. 1995, p. 30
[314] *Anonymous. "EU energy paper shirks markets"* **Oil & Gas Journal,** Volume 1993, Issue 25, June 1995, p. 19.

Industry's complaints that it could suffer a competetive disadvantage if European companies had to pay energy taxes while their rivals in the US and Japan did not.[315] But It seem that there will be no change in European Goverment' policy on oil taxation for economic and environmental reasons.[316]

Table 12: Minimum Levels of Excise Duty on Energy Products

Motor fuels 4	Current minimum rate	Minimum rate from 1/1/2004	Minimum rate from 1/1/2010
Petrol (€/1000 l.)	337	421 5	421
Unleaded petrol (€/1000 l.)	287	359	359
Diesel (€/1000 l.)	245	302 6	330 7
Kerosene (€/1000 l.)	245	302	330
LPG (€/1000 kg.)	100	125	125
Natural gas	100 (€/1000 kg)	2.6 (€/gigajoule)	2.6 (€/gigajoule)

	Current minimum rate	Minimum rate from 1/1/2004
Diesel (€/1000 l.)	18	21
Kerosene (€/1000 l.)	18	21
LPG (€/1000 kg.)	36	41
Natural gas	36 (€/1000 kg)	0.3(€/gigajoule)

	Current minimum rate	Minimum rate from 1/1/2004 (business)	Minimum rate from 1/1/2004 (non-business)
Diesel (€/1000 l.)	18	21 11	21
Heavy fuel oil (€/1000 kg.)	13	15	15
Kerosene (€/1000 l.)	0	0	0
LPG (€/1000 kg.)	0	0	0
Naturalgas (€/gigajoule)	N/A	0.15	0.3
Coal and coke (€/gigajoule)	N/A	0.15	0.3

[315] Chris Johnstone. " *Industry Fights Energy Tax Restrictions*" **European Voice**,Volume 5, Issue 5, April 1999, p. 29.

[316] Peter Ford.**Christian Science Monitor,** Volume 92, Issue 205, 9. 13. 2000, p. 1.

Electricity (€/MWh)	N/A	0.5	1.0

Source: Commission, **Taxation: Welcomes Council Adoption of New EU Rules,** Brussels, DN: IP/03/1456,27/10/20.

This is a simple and effective tool for inducing changes in behaviour. It also makes it possible to incorporate into the price of energy damage caused to the environment. Fiscal disparities must not exist in a single European market.There is a risk of competition between tax systems and distortions of competition. So the Union must provide itself with a common tax framework for energy. Some Member States do not want this and that is a pity. As long as energy prices do not reflect their real cost for society, consumer choices and behaviour will not change.[317]

4. 5. 2. Price in the European Fuels Market

It is passible that the European gas markets will be well awared with storage capacity and surplus pipe capacity for short-term trade and replacement for the short- to medium-term.Target is whether an efficient controling structure will be set up to permit for a quick evelotion of common trade, and if there will be enough gas amount suggest short-term to set the ball rolling. Over the long-term, the issue will be turned, i.e. can storage and short-term replecebility stay in balance with increasing demand and can this keep competition active.

At present, the degree of storage, of volume sales under interruptible supply agreement and of native manufucture in the OECD European gas markets are high.[318] They should give an enough foundation for vulnerable trade and market elasticity in relation to extensive demand. But it cannot be supposed that this connection will automatically support itself above the medium to long-term with the fast growing demand in gas. Since storage useful capacity in Western Europe is anticipated to be changed with whole gas consumption over the next decade.[319]

A number of evolvement that could lessen the role of the marginal customer in the liberalised market seem may be at this phase turning to the critical topic of the capacity for quick

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[317] Loyalo de Palacio "EU Presidency Representative Declared That the EU is Unlikely to Agree on a Framework for an EU-Wide Energy Taxation Policy Before the End of the Year", Greece, 5 December 2002, http://www.f-e-e.org/redirect.htm?http://www.f-e-e.org/cgi-bin/fee/cal/event.cgi?ActİD=1753

[318] Norway, though integral part of Western Europe and Member of the European Economic Area as well as of the OECD and IEA is a pure gas exporting country with an insignificant inland gas market.

[319] See Eurogas, **Security of Supply of Natural Gas in Western Europe**, Brussels, and March 1998, Annex 1.

fuel subsisting, fuel-switching role be in very unusial forms in the industry, the power generation and the commercial sectors, precise numbers on the volume for quick subsiding from gas to other fuels are not valid. Numbers provided by the European gas industry on interruptible gas supply volumes for the European Union give a signal of the significance of short-term fuel substituting skill, which can be crudely estimated at over 15% of the EU's whole annual gas consumption.[320] When we consider as well that most gas supplying companies possess a ample part of interruptible agrements with customers they not at all stop in actuality because of absence of impessively feasible exchanging capacity, at the same time that there is space for extra plant exchanging in the power generation sector, the EU's display whole short-term exchanging capacity can be carefully estimated at someplace between 5 and 10% of whole annual gas consumption. One has to concider as well that this is an average figure and single country conditions will not the same. But generally it symbolize a easy passible to defent against upstream market power, if by change cross-border shortterm trade will be promote to get to activate the competelly potential.[321]

Presently, economics and productivity prefer single-fired volume based on natural gas. Now, most of the gas development in power generation will be on the basis of the meaning of new CCGTs, because of their low investment and operation costs and Europe's high emission and efficiency standards. The long-term result of this would be adiminising in the part of gas amount that can be changed away from at short-term. But it could be fine that the new market supply sufficient stimulus to built multi-fuel capacity.

Besides the issues of the growth in dual-fuel capacity and of fuel price, there is also a cost issue involved with the operation of switching. In a dual-firing combined cycle plant, switching from gas to fuel oil reduces the plant's efficiency and raises maintenance costs. For an electricity utility the switch from a gas fired plant to different fuel type plant can create associated costs in having to switch to more expensive plants in the merit order of dispatching. This could lead to a potentially smaller role of the marginal customer in the future. The effect will be that the ceiling for natural gas pricing may come to lie on average somewhere above the heavy fuel oil price

[320] By interruptible gas supply contracts the buyer gets the gas at a discounted price throughout the year. In exchange for this the supplier may interrupt the gas flow at mutually agreed times.The buyer will usually hold non-gas capacity in reserve to bridge the interruptions.The volumes of interruptible gas supply contracts can thus be used as indicator for short-term fuel switching capacity.

[321] See, Eurogas, **Security of Supply of Natural Gas in Western Europe**, Brussels, March 1998, and Annex 2.

level. This ceiling is not absolute, and short-term price peaks for gas will always be possible, but it protects against longer periods of high prices.

But the tendency in industry and power generation in the direction of clean and high productivity gas firing installations will move the possible for extra dual-firing installations into the condensed fuels, which come at a higher price. Oil indexed gas supply contracts may decline in favour of contracts with different indexations, for example through "indifference pricing" by which the operating and capital costs of a gas-fired power plant and a coal-fired power plant are compared and the gas price set equal to the difference between whole costs for the coal plant (including fuel costs) and the operating and capital costs of the gas-fired plant, so that the buyer is indifferent between the two alternatives. But such pricing is likely to remain restricted to when new capacity is being built. Once the contract runs out, it remains to be seen whether the pricing principles will be maintained.

In the worst case, i.e. in the case of restricted interruptibility and high cost of back-up fuels, given the relatively high concentration of players in European gas production, suppliers could be tempted to restrict their whole sales of gas at the marginal price (heavy fuel oil) into the dual-fuel market to the volumes that only these dual-fuel customers would consume themselves. But that would be difficult in practice given the competition between merchant suppliers, other traders, producers, and self-interrupting consumers on a competitive market. If it would work out, the other consumers would then buy their gas at a higher price level. However, such a strategy is likely to be self-defeating in a relatively short span of time since it would provide precisely the market incentives to raise interruptibility or to bring in alternative supplies. And if gas prices are not competitive with those of the competing fuels (operational and other costs taken into consideration) in the growth sectors like power generation, the initial potential for extra demand will not materialise, which in turn will depress the gas price.[322]

Liberalisation should enable the sharing of the benefits of the overcapacities between power suppliers and consumers across Europe, though tight cross-border transmission capacities in electricity may limit its potential somewhat.This means that gas supplies to power plants can be interruptible, which opens opportunities for arbitrage between electricity and gas.When the difference between the market price of electricity and the price of gas at the power plant, plus

[322] IEA. **Gas market,** Paris, 2003, p. 31.

variable production costs, is positive, the power generator will generate electricity from gas. When this will produce from other source or buy the electricity on the market.[323] The value of gas consumed on the market could therefore increasingly be determined by the market price of electricity.

Since most of the growth potential for natural gas lies in power generation, gas prices to generators will need to be competitive with the electricity market price if this demand potential is to be realised. Europe's overcapacities in power generation capacity and the resulting depressed electricity price levels in most of Europe mean that for some time, gas to power needs to be priced low. In the long-term, though, if generation over capacities is allowed to completely disappear, gas-fired electricity may become the price setter.

However, even under favorable conditions, one cannot discount that over some periods of time the marginal price could reach the price level of light fuel oil or even exceed it. But even then the majority of gas consumers may still enjoy lower prices than under the present systems. It should be mentioned here, that if such a scenario were to cause too high gas prices for too long, governments could ultimately resort to fiscal interference. For example, by lowering taxation of fuel oils during periods of high gas prices, a government could trigger a downward adjustment of gas prices. But it should be clear at the outset about the long-term effects on the energy mix and the consequences of this for other policy objectives.

4. 5. 3. The Pricing of Transmission

A key aspect of the regulation of the network is the pricing of transmission. Nodal pricing provides incentives for an efficient use of generation and transmission assets. For example, the price of electricity and gas varied greatly not only from country to country but also within Germany. In 1996, energy costs at the car manufacturer's plant in Aspern, Austria, were nearly 45% higher than at its factory in Luton, north of London. Electricity prices in the UK tumbled by 7.4% in the year to April 1997, while those in Italy rose 5%, burdening its businesses with the most expensive electricity in the industrialised world, according to National Utility Services.[324]

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[323] Ibid, p. 32

[324] Barnard Bruce *"Electricity Liberalisation Powers Ahead"* **European Voice,** Volume 3, Issue 35, 02.10.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004058 (Download: 23. 02.2004)

With energy bills accounting for 20% of European industry's costs, leading firms are increasingly putting pressure on their governments to provide them with cheap alternative sources of gas of the kind their US rivals already enjoy.[325]

Oil prices alone have been closely linked to spot prices before domestic taxes are added, while electricity and gas prices are closely regulated and linked by formulae to other energy prices. The oil price has therefore remained much more volatile than other energy prices.[326]

As to the key point of assessing what is a sustainable price for oil, the Commission had made a very clear-cut estimation: a price around 20 $ a barrel would permit the necessary investments in OPEC and non-OPEC areas to meet increasing demand. Speaking about price stability that oil is often involved in the political issues of this area. At this time of growing geopolitical uncertainties, it is more important than ever that oil-consuming countries are ready to face threats to their external oil supplies. Strategic oil stocks are critically important in this respect. [327] First, Europeans traditionally drove smaller cars with lower fuel consumption over shorter distances so their bills tended to even out compared with the gas-guzzlers once favored by their American counterparts. Secondly, unlike the United States, Europe didn't produce its own oil until crude began to gush from the bottom of the North Sea in the mid-1970s.

Europe took the brunt of the Arab oil embargo of 1973 and the subsequent quadrupling of prices by OPEC the following year. It was a hard learned lesson that taught governments and consumers that the era of cheap oil was over. The decision to tax it accordingly became part of conventional thinking and continues to this day notwithstanding the subsequent weakness of the oil price. Oil is worth about the same now in actual terms as it was in 1973, but government taxes are still rising. It would lead to considerable price raises for small customers, as captive clients[328] Oil may be worth only $14 a barrel but European consumers are paying the equivalent of nearly $180 per barrel at the *gas* station. [329] With energy bills accounting for 20% of European industry's costs, leading firms are increasingly putting pressure on their governments to provide them with

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[325] Tim Jones. "Gas Market Deal Stuck in Pipeline" **European Voice** 26.09.1996, Volume 2, Issue 35, 26. 09. 1996. www.knoweurope.net/cgi7quickD/full.rec.?action:byid...,&id002/0003758 (Download:18. 1. 2004)

[326] McAvinchey, pp. 65-92.

[327] Steve Roth ,**Opening up the Energy Market and Securing Energy Supply in Europe,** The Sanderstolen Conference Tisleidalen, 8 February 2002, http://www.hri.org/news/europe/midex/2002/02-02-08.midex.html (Download:4.07.2003)

[328] Heritier, pp. 825–852.

[329] Barnard Bruce. "*Europe's Supreme Gasoline*" **Europe**, Volume 12 , Issue 385, April 1999, p. 37.

cheap alternative sources of gas of the kind their US rivals already enjoy.[330] The development of international electricity and gas trade depends on market players having access to international interconnectors at a reasonable price. Pricing and allocating international transmission capacity raises similar issues to those raised by domestic transmission. First, pricing has to avoid the "pancaking effect" of transmitting power across various electricity systems, meaning the accumulation of two or more national transmission charges when this accumulation of charges is not justified by the cost of the transmission services provided. Second, pre-existing contracts and international agreements between utilities and system operators may conflict with an efficient allocation of transmission capacity.[331]

4. 5. 4. Cost of Production

Cost of production plays the dominant role to define a natural monopoly. Cost of production is realized if no combination of multiple firms can collectively produce industry output at lower cost than a monopolistIn the single output case, the existence of economies of scale is a sufficient condition to secure cost of production. However, in the multiple output case the conditions for cost of production are more elaborate requiring cost complementarities or product specific scale economies and economies of scope. [332]

The interest by applied economists in subadditivity is in measuring the benefits from dividing up a monopoly industry into a number of smaller firms. If cost of production has succed, no cost benefits will be realized by raised competition. From other point of view, without subadditivity lower costs of production could be realized by splitting up a monopoly industry into a number of smaller firms.

4. 5. 5. Stranded Costs

The issue of stranded costs is not as important in gas as in electricity, except maybe for the issue of take-or-pay contracts. Only the costs which were incurred as a result of the transition to a competitive market and which are related to a public service obligation deserve to be considered

[330] Tim Jones. "Gas market Deal Stuck in Pipeline" **European Voice**, Volume. 2, Issue 35 26.09.1996. www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&rid002/0003758 (Download,1812004)
[331] IEA. **Energy Market Reform**. Paris, 2002, p. 60.
[332] Gordon, pp. 473-485.

as stranded. Costs incurred from poor management or that have already been compensated by the company's previous rate of return should not be considered as stranded.

A clear policy decision should be taken as to how stranded costs are to be assigned and how they are to be recovered. If (some of) the costs are to be recovered from consumers, the mechanisms for recovery should be transparent from the outset and not interfere with efficient pricing. Long-term take-or-pay contracts under specific circumstances constitute a stranded asset. Long-term take-or-pay contracts are typical for the gas industry in Europe and elsewhere. Long-term contracts contain clauses on price and volume. Take-or-pay clauses contain an obligation on the buyer to pay for a certain portion of the off take volume even if he does not take it. To a restricted extent, volumes not taken but paid for can be ordered at a later time. In more new contracts, volumes are also specified more flexibly. This gives European transmission companies generally more possibilities in managing take-or-pay obligations when sales become lower than initially hoped for nevertheless, it cannot be excluded that a take-or-pay contract will become a liability in a liberalized market.

4. 5. 6. Price Volatility

Price volatility is other feature of competitive markets. The term "price volatility" is used to describe rapid price fluctuations of a commodity. Volatility is measured by the day-to-day proportion difference in the price of the commodity. The degree of variation defines a volatile market, not the level of prices. Gas price volatility has grown with competition in almost all the above named countries. But overall, and on a longer period, prices have declined. Hence, price volatility is not necessarily associated with high prices. The impact of price volatility varies among consumers. Prices to residential customers tend to be much more stable than for commercial or industrial users because their bills usually reflect average prices over a given period usually a month which do not fluctuate as much as daily prices. On the other hand, power generators, other large users and traders who often rely to some extent on short-term markets are dealing with fluctuating natural gas prices. They have developed or are developing new skills and forms of risk management to counter market dangersand add greater value to their business.[333]

[333] Steve Roth ,**Opening up the Energy Market and Securing Energy Supply in Europe** The Sanderstolen Conference Tisleidalen, 8 February 2002, http://www.hri.org/news/europe/midex/2002/02-02-08.midex.html (Download:4.07.2003)

Natural gas prices werepowerfullyaffected by oil shocks and were shown to have similar time-series properties as oil prices in 1973–1999. Demand and supply for both crude oil and natural gas were highly price inelastic in the short run. Demand for crude oil underwent a deep structural change in 1973–1999. High energy-taxation in oil-importing countries, along with oil shocks, caused to the significant reduction in the demand elasticity by compressing, through energy saving and substitution, long-run demand for oil to a non-elastic region. Income elasticities were significant for both crude oil and natural gas demand. Long-run supply price elasticity for crude oil fell sharply after the oil shock, reflecting a change from a competitive to a market-maker structure. The same elasticity for natural gas rose, however, reflecting a elastic supply reply to a switch in demand toward natural gas.[334] Electricity wholesale markets need to be rigidly monitored since there is always likely to be a degree of concentration which may be manipulated; a spate of cross-border mergers makes such manipulation even more likely. "A higher degree of regulatory control over wholesale markets makes for example the possibility of imposing a cap on wholesale power prices".[335]

[334] Krichene, pp. 557-576.

[335] Peter Chapman. *"Price Controls are Likely for Electricity, Warns de Palacio"* **European Voice,** Volume 9, Issue 21, 5. 6. 2003, p. 23.

5. COMPETITION

5. 1. Integration of the European Energy Markets to Increase Competitiveness

The gas market is relatively inflexible because of this price indexation, deliveries under long-term contract and its transport via gas pipeline. Between now and 2010 a price increase in gas of about 20 % is expected.We must therefore ensure that there should be real competition between suppliers. As in the case of oil, reserve stocks could help the Union to arm itself against excessive vulnerability.

There are parallel coorelation between energy kinds. For example, the price of natural gas is indexed to that of oil.There are historical reasons for this. Since it was geologically close to oil, the oil companies exploited it. Indexation enabled it at the beginning to be introduced progressively. Nowadays this mechanism can no longer be economically justified. It could ultimately be replaced by the law of supply and demand for gas. But there would have to be real competition between suppliers following liberalisation in the Union.

One of the critical factors for the international competitiveness of European businesses is the cost of energy, in particular in the context of the growing globalisation of markets. The reforms have been a considerable success and should be celebrated to establish real competitive market. The considerable fall in wholesale energy prices has been passed on in its entirety to industrial customers. Millions of electricity customers have benefited, and millions more could benefit too, by simply switching supplier.It would be fundamentally wrong to reform the trading rules to subsidise electricity generation. Artificially stimulated wholesale prices will simply extend or exaggerate the current over-supply.[336]

Over the past decades, numerous and significant changes have occurred within the natural gas industry, stemming largely from the deregulation of gas markets and pricing. [337]In conjunction with enhanced competition in the marketplace, there comes an expectation to supply product to more distant markets as a means of supporting further growth in production capacity and profitability. As gas transmission costs represent a significant portion of the total price of natural

[336] Roy Gardner. "*Competition Makes Markets Glow*" **Financial Times,** 25. 9. 2002, p. 23.
[337] Gordon, pp. 473-485.

gas in many markets, it is not surprising that there is pressure to reduce gas transmission tolls as part of the move towards a more competitive commodity marketplace.

Compared to the USA, European industry pays far more for energy. For instance, it is estimated that in the chemicals sector European companies pay up to 45% more than their US competitors. Apart from differences in tax treatment, the lack of competition is a key factor in explaining the cost differential. For instance, it is expected that full liberalisation of the European internal electricity market will provide substantial benefits which would amount to 10-12 billion ECU per annum, or twice as much as gains anticipated from the opening already agreed. The introduction of third party access in gas would also lead to a cost reduction of 900 million ECU per annum and substantial additional gains could result from gas-to-gas competition. For better price member states must bury their differences and agreed a figure for financing the EU's energy policies in future.[338]

A key challenge for Energy Policy is therefore to ensure further integration of the Community energy market, based on the principle of open and competitive markets. This is crucial for European competitiveness. It is also essential for achieving flexibility, efficiency and long-term security in the energy sector and for enhancing economic and social cohesion. The increased competitivity aimed at by the integration of the energy markets must not develop against the legitimate expectations of non-industrial consumers in favour of energy equipment and services guaranteeing increased safety, quality, and durability, available at affordable prices. This process of integration is not incompatible with public service obligations undertaken on the basis of clearly defined criteria, transparently applied in the general interest.[339]

5. 1. 1. The Theory Gas Competition

With sufficient capacity and trade in storage and interruptible gas volumes, producers would be unable to impose prices above the value of gas in its marginal use. Absence of upstream competition should not be a crucial issue, only if there is a really open and highly flexible market with widespread trade of both gas and capacity, including spot trade. Yet a producer monopolist would have to accept the marginal price, i.e., the price the consumer with the cheapest alternative to gas would accept to keep consuming gas. The marginal price in an open system is determined

[338] EU States Split over Energy Policy Budget, **European Voice,** Volume 4, Issue 40, 5. 11. 1998, p. 8
[339] See, Fourth Report of the Competitiveness Advisory Group of Comission, December 1996.

by the consumers who would stop consuming gas at a slightly higher price and switch to an alternative fuel.The marginal consumer could be a multi-fuel plant or an electricity producer with a choice between several plants based on different fuels. In a truly open market, the dual-fuel marginal gas consumer would not be hindered from buying more gas than he needs at the marginal price, and from reselling that surplus gas at a profit on the market. The consumers that do not have the capability to switch would buy gas on the spot market or at a price influenced by the spot market. Thus, most gas would be traded slightly above the marginal price level, assuming sufficient liquidity for trade. In periods of extremely high demand, e.g. a harsh winter, spot prices would increase to reflect the fact that capacity and/or the commodity is becoming scarcer. If prices exceed what the marginal customer is willing to pay, he will stop consuming and sell his reserved volumes and capacity on the market.

A producer monopolist's only possible price strategy to obtain a gain in price would be to reduce supply until most consumers with a capability to switch in the short-term to heavy fuel oil or coal will have done so. In this case, the marginal consumer would become the one with capability to switch to light fuel oil or to distillates, which come at a higher price and, thus, the whole market would trade at a higher price level.

There would, however, be significant practical difficulties involved for the producer monopolist/oligopoly.They would consist of the difficulty of reducing supplies or restricting new supplies to the extent needed, and at the same time avoiding the almost inevitable gas competition that the higher gas prices would induce. In other words, the supply reduction would have to be substantial to exclude potential heavy fuel oil consumers a difficulty in itself within a cartel , and the increase in prices obtained would trigger alternative supplies, e.g. LNG, which would then compete with the necessary supplier(s), reduce the latter's price gains and their market share.

There could be time delays between the incoming new supplies and the price increase. But gas utilities tend to negotiate new contracts years in advance of when they require the supplies. Different contracts will start at different times and when new contracts will come at higher prices; the remaining portfolio need not necessarily be affected by it. This offers a cushion against price shocks. In practice the flexibility of such a security allows the buyer with time to explore as many potentially competing supply options as possible, and renders producer power difficult.

Producers will also have to take into account market development and interfuel competition. If they price their gas too high, it will become uncompetitive and the potential demand growth will not materialise, which in itself could bring prices down for some time until excess volumes contracted ahead are consumed.

5. 1. 2. Competition Policy in the Energy Sector

Liberalisation is very important, but it does not mean less government involvement. At least two conditions need to be fulfilled in order to achieve a structure favourable to competition in the electricity and gas markets.

As a first condition, we need to introduce and maintain a supply structure favourable to competition. competition rules used to protect or even improve the supply structure of electricity and gas markets removing any obstacles that prevent suppliers from competing with each other. To remove the restrictive clauses from the existing gas supply contracts as well as the commitments for future market behaviour. "Long-term contracts with competitive pricing are essential for investment,Governments need to be wary of short-term measures aimed at lower prices - they may shake investor confidence and lead in time to supply shortfalls."[340] In this sense, effective supply competition is the other side of the medal to effective customer choice. Protection of competition and of the supply structure is the rationale behind antitrust rules, but also behind merger control and State-aid rules.Mergers can have pro-competitive effects, for example if they allow new operators to enter national markets dominated by former legal monopolies.Mergers can, however, also have negative effects on competition for example if they strengthen the dominant position of a former monopoly. Regarding State-aid control, this also enables the Commission to ensure effective and undistorted supply competition by preventing firms from enjoying unfair financial advantages over their competitors. At the same time, antitrust rules can be used not only to protect, but also to improve the supply structure. [341]

If durability were not an issue, competition and efficiency at one time would not affect competition and efficiency at any other time.The durable character is important: the price at which

[340] David Buchan and Daniel Dombey. *" Power Games"* **Financial Times,** 14. 3. 2002, p. 18.
[341] Mario Monti, *"Applying EU Competition Law to the Newly Liberalised Energy Markets"* **World Forum on Energy Regulation Rome,** 06 October 2003 DN: SPEECH/03/447.

the consumers are willing to buy the good today depends on what they expect it to be tomorrow and on the intertemporal benefits they can thus obtain by buying it today. [342]

The second element relates to accompanying measures to promote the creation of a real European gas market.To do this companies have responsibilities. Gazprom will also be free to sell to other customers in Italy without having to seek ENI's prior consent. Both companies also declared that they would not make use of territorial sales restrictions in future gas supply contracts. EdF already enjoyed an unfair competitive advantage, because it could supply pan-European customers electricity in the UK, while British rivals could not supply electricity in France.[343]

The settlement demonstrates that the validity of long term supply contracts a common feature in the gas industry is not put into doubt as long as they do not contain anti-competitive clauses. It too would not make use of territorial resale restrictions in future contracts and that it would enter into commercial discussions with its customers to amend the existing contracts. territorial sales restrictions without which the creation of a true European gas market for the benefit of European customers would remain incomplete. [344]

5. 1. 3. A Competition Model of Natural Gas

A competition model of natural gas is the model first served to assemble and organise the scattered information of the time. It was then used to appraise departures from perfect competition equilibrium conditions in the market and explore the evolution that could be induced by these deviations. Take or pay clauses provide a natural illustration of this type of analysis. [345] The application of general competition law is important for a sample model. Not only does it remove special rights which may limit market entry, but it also provides a further tool with which to support the evolution of competition, supplementing and, sometimes, instead of the sector specific rules reviewed in the last section. For example, general competition authorities can play a useful role in setting access pricing rules, prosecuting abuse of dominant positions including

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[342] Francisco R Parra. *"Oil and gas: Crises and controversies 1961-2000"*. **The Energy Journal,** Volume 24, Issue 1, 2003, p. 103.

[343] Guha, Krishna and David Buchan. *"Blair Makes Pledge to Lead Fight on Liberalising EU Energy"* **Financial Times,** 20. 8. 2002, p. 2. (UK edition)

[344] Mario Monti, *"Applying EU Competition Law to the Newly Liberalised Energy Markets"* **World Forum on Energy Regulation Rome,** 06 October 2003 DN: SPEECH/03/447.

[345] Yves, p. 7.

that practised against new entrants and captive customers, and preventing anticompetitive contracts, mergers and joint ventures. Special competition rules for the sector should be avoided.[346]

It is so important to mention here that, the dramatic changes of recent decades have moved the sector towards free markets. Ownership of the industries has been moved from the public to the private sector; competition has been introduced both in generation and supply. Even the quintessentially monopolistic networks have been vertically segregated, with non-monopolistic functions such as storage and metering separated and subject to competitive forces. These were exactly the two areas in which required the energy regulator, to take account of government guidance.[347]

The regulatory role in relation to energy markets is the important.This role is indispensable for at least two reasons. First, because in these network industries the network constitutes a natural monopoly, that is to say, the duplication of the network is not economically feasible. Since supply of electricity and gas requires transport through those networks, regulatory intervention is needed to frame the activity of the network operator, even in cases where there is not a vertical integration of the network operator with a supply business. The second reason why regulatory intervention is so essential in electricity and gas markets in the European Union at the moment is their current state of liberalisation. It is vital that liberalisation is accompanied by the appropriate regulatory measures to ensure that it progresses smoothly. Efforts to act on energy efficiency and control of demand are very important. "[348]

Market integration in the EU is thus supported by the enforcement of the three main competition instruments, namely: antitrust[349], merger control[350] and state aid control,[351]). All these instruments interact and support each other in promoting competition, notably in liberalised markets.

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[346] *IEA.* **Electricity Market Reforms an IEA Handbook.**Paris, OECD/IEA, 1999, pp. 32-33.
[347] Dieter Helm (Ed.), *"Towards an Energy Policy"* **Norwich: OXERA Publications,** Volume 32, Issue 7 , 2002, pp. 937-939.
[348] Mario Monti, *"Applying EU Competition Law to the Newly Liberalised Energy Markets"* **World Forum on Energy Regulation** Rome, 06 October 2003, pp.1-3 DN: SPEECH/03/447.
[349] Articles 81, 82, and 86 EC Treaty.
[350] Regulation No: 4064/89.
[351] Articles 87 and 88 EC Treaty.

Competition should be introduced in all links of the gas and elecricity chain so as to minimize the potential for market power in any given part of the chain. EU competition rules are designed not only to protect the efficient allocation of economic resources, but also to promote the creation of an EU wide internal market by dealing with situations that affect trade among Member States. Barriers to competition affecting trade among Member States can derive, for instance, from contractual arrangements, such as territorial sales restrictions.[352]

5. 1. 4. Objectives for Liberalisation

The experiences of those countries are that regulatory reforms have yielded identifiable benefits in the form of increased customer choice, broader ranges as well as better quality of services, and lower end-user prices. Over the past decade until a few months ago, average gas prices to end-users in most of these countries have fallen or held stable while supplies have increased.

The reason for the way gas is priced in these countries is different from the traditional market value pricing that still prevails on the European Continent, and which is based on cross-subsidisation between customers. If not by straight regulation, competition has brought about a separation of the transport and storage element from the the gas with separate prices and pricing mechanisms for each element. Roughly speaking, there are main elements of prices and costs: transmission, distribution, flexibility and the commodity itself. Depending on the customer's location, choice of services, load factor, duration of contract and gas price indexation, total bundled price levels have changed from those under the old oil indexed "all in" pricing. Consequently, some customers may perhaps not be better off, but where competition was allowed to develop sufficiently.

We can say that liberalisation is dependent on satisfying three conditions:

- consumers must have the freedom to choose their own supplier; this is known as *competition on the demand side* and is often referred to as "opening up the market";

[352] Monti, pp. 1-3

- alongside the former national monopolies there must be a number of producers/suppliers on the market who will be free to determine their own market strategies; this is known as *competition on the supply side*;
- access to the networks must be transparent and non-discriminatory; this is essential if there is to be interplay between free demand and a number of suppliers.

These conditions need to be put in place at the same time. If emphasis is placed on only one of the three - on the opening of the market, for example - ambiguous situations arise where customers actually have only limited possibilities of finding alternative suppliers. [353]

5. 2. Structural Policies

In some countries, horizontal restructuring has occurred implicitly through the integration of national or regional electricity markets. The lack of sufficient energy generation and transportation infrastructure can have catastrophic implications with respect to the quality and security of supply.[354] Integration of various national markets yields a less concentrated market because it increases the number of players and the relative size of all players is smaller in the larger market. Particular difficulties as follows:

- Differential rates of market opening continue to reduce the scope of benefits to customers from competition, leading to higher prices than otherwise to small businesses and households, and also promote distortion of competition between energy companies by allowing the possibility of cross-subsidies at a time when companies are restructuring themselves into pan-European suppliers;
- Disparities in access tariffs between network operators which, due to the lack of transparency caused by insufficient unbundling and inefficient regulation, may form a barrier to competition;

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[353] Mario Monti. "*The Single Energy Market: The Relationship Between Competition Policy and Regulation*" **House of Deputies 10th Commission on Productive Activities, Commerce and Tourism,** Rome, 7 March 2002DN:SPEECH/02/101 http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/02/101 |RAPID&lg=EN (Download: 5.12.2003).

[354] Loyola de Palacio. "Towards a regulated competition in European energy markets" Brussels, 3 february 2002 Comission Press Release DN: IP/02/189.

- the high level of market power among existing generating companies associated with a lack of liquidity in wholesale and balancing markets which impedes new entrants.[355]

5. 2. 1. Impact of Competition on Employment

The European Union is of the opinion that the creation of the internal market will in the long term have a positive influence on both quantitative and qualitative aspects of employment, thereby contributing to the EU's general objective of restoring the conditions for full employment.

Opening the markets has, however, led to staff reductions following restructuring of the sector. The Commission has also noted a qualitative change in the skill profile required. There are fewer jobs for semi-skilled and skilled technical staff, whilst new jobs have emerged in non-technical areas such as customer services. This phenomenon may also be attributed to the development of new technologies. Restructuring has been handled relatively well, with consultation of both sides of industry. It is essential to ensure that this continues to be the case, particularly in the candidate countries.[356]

5. 2. 2. Horizontal Agreements

Horizontal agreements harmfull to competition and vertical arrangements have negative effects on supply competition. With respect to the vertical restraints, we concentrate currently on territorial sales restrictions and clauses having similar effects, such as profit splitting mechanisms, which are particularly prevalent in gas markets. All these restrictions limit the possibilities for the buyers to resell the gas and thus to create more supply competition in the gas markets.[357] "As the companies integrate horizontally, we hope they will play into our hands." [358]

The purpose of horizontal restructuring is to mitigate market power in the potentially competitive functions in energy supply, especially generation and end user supply. Many

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[355] Loyola de Palacio. "Liberalisation and Regulation of the Energy Market" **"Confederação da Indústria Portuguesa"** Lisbon, 18 October 2002, Comission Press Release DN :IP/02/496.

[356] Ari Rabl, Joseph V. Spadaro. **"***The Externe Project: Methodology, Objectives and Limitations***" Workshop Proceedings,** Paris, 15-16 November 2001,pp. 47- 65.http://www.ecolo .org/documents/ documents_in _english/ externalities- nea3676.pdf (Download: 12. 2. 2004)

[357] Mario Monti. "*Applying EU Competition Law to the Newly Liberalised Energy Markets*", **World Forum on Energy Regulation** Rome, 06 October 2003, DN: SPEECH/03/447

[358] David Knott. **"***EU Gas Directive Slows Investment"* **Oil & Gas Journal,** Volume 95, Issue 25, June 1997, p. 22.

reforming countries have adopted measures to reduce horizontal concentration in generation and in end user supply. These measures include mandated divestiture of generation assets and the split of generation companies at the time of privatization, generally intended to reduce market power. Policy aims to establish a critical mass of competitors and often also a sufficient number of "comparators" for regulatory purposes to set the market value of assets, which helps to handle the transitional issue of placing a value on stranded assets. The feasibility of structural measures to increase competition depends on whether the utilities are publicly or privately owned. If the starting point is a government-owned industry, a government mandated split of companies may be feasible.

5. 2. 3. Empowering the End User

The ability of end users to choose a supplier creates a fundamental pressure on all the players along the supply chain that is virtually impossible to replicate by regulation. The value of consumer choice in disciplining market players is that it provides consumers with an effective bargaining tool; the tool may be effective even if the options that it provides (e.g. switching supplier) are not systematically used. Even if this pressure is not directly observable (many consumers may choose to remain with the same supplier), indirect effects on price structures, price levels, product diversity and service conditions are potentially significant.

The opening of the energy markets will be accompanied by clear, stringent public service obligations, protection of final customers, universal service, possibility of rules for balancing the electricity transmission system, security of supply, investment planning obligation, etc. The universal service obligation will apply to all households and small businesses, which will have the right to be supplied with electricity of a specified quality at reasonable prices.[359]

5. 3. Barriers to Competition

The unequal market opening that has resulted is leading to distortion of competition; Tariffs and conditions for third party access to networks are unreasonable in some cases, insufficient unbundling exists and where independent regulators have insufficient powers.

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[359] See, Loyola de Palacio. "*The Opening of the Energy Markets*" Brussels, 26 November 2002, Comission Press Release, DN:IP/02/1733

The high level of market power among existing companies in many Member States, associated with a lack of liquidity in wholesale gas and electricity markets, impedes new entrants. Insufficient interconnection infrastructure exists between Member States and, where congestion exists; there are often unsatisfactory methods for allocating this capacity which favour vertically integrated incumbent companies.[360]

We can say that liberalisation and competition in energy are in the interests of business, consumers and the environment.[361] All nonnatural gas producing EU countries-is the formation of gas "cartels" by a small number of operators, mainly outside the EU. Such a formation, they , induces practices such as longterm contracts, destination section, and identical delivery prices for all destination countries. These physical obstacles to competition are compounded by the fact that however large the official opening of the EU's gas market, few countries have really set up what should be the simple basis for competition, namely independent grid managers to guarantee third-party access and a specialized regulator with all the power required to oversee the grids and the market.[362]

5. 3. 1. Vertical Restraints and the Single Market

The ongoing integration process of the Single Market adds an extra dimension to the analysis of vertical restraints. The exact title of the Cecchini Report, "The cost of Non-Europe" is a clear reflection of this.[363] The efforts made since the entry into force of the EEC Treaty in 1958 had not exhausted by the mid-1980s all the potential gains to be expected from the full economic integration of the economies of the Member States. Now that more steps have been taken to eliminate the remaining obstacles to the free movement of goods, services and factors of production, it is still apparent that further efforts are necessary to achieve the maximum possible level of integration. This integration has taken on wider significance, since a successful single market giving European companies the possibility of economies of scale and scope whilst still

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[360] See, Davies, Eric. **Gas and electricity: mixed report on liberalization,** Brussels: ProQuest Information and Learning, 2002.

[361] Roy Gardner. " *Competition Makes Markets Glow*" **Financiaf Times,** 25. 9. 2002, p. 23.

[362] Doris Leblond. "*Coming Year to be Crucial for the EU's Gas Market.*" **Oil & Gas Journal,** Volume 101, Issue 28, July 21. 2003, p. 35.

[363] See, Paolo Cecchini , Michel Catinat and Alexis Jacquemine, **The European Challenge, 1992: The Benefits of a Single Market,** Ashgate: 1988.

being subject to effective competition, is seen as the springboard for competitiveness in increasingly global and competitive world markets.

It is obvious that competition is vital to obtain the economic gains from the single market. These gains will only come if firms compete more with each other and enter each other's market. The gains come from:

- Static productivity where competitive pressures reduce the price in high price Member States to levels nearer those in lower priced Member States. Prices may be lower because of "natural" cost advantages or greater competitive pressures.
- Dynamic productivity where the process of increasing competitive pressures will spur firms to greater efficiencies. The simplest to explain is perhaps economies of scale from having a larger market, but many gains are likely from the simple increase in competition especially in markets previously sheltered by barriers or not subject to effective pressure from competitors.

The Single Market Programme was based on the assumption that the removal of non-tariff barriers should lead to increased competition which would in turn put pressure on prices. Competitive pressures were expected to take price reductions beyond the limits allowed by economies of scale, which would imply a reduction in price-cost margins throughout the economy and in particular, in those sectors more directly affected by the Single Market. The final result from these competitive pressures on prices was expected to be a process of price convergence for goods across different Member States, to the advantage of consumers.

5. 3. 1. 1. Regulation and Vertical Separation

The vertical separation aims to eliminate discrimination against competitors by vertically integrated companies. It is essential that the elements of the market which are opened to competition be allowed to function and interact as liberalised markets, not subject to interference.[364]

It should be emphasized that some degree of separation between regulated and competitive activities is likely to be needed to manage regulation effectively. For instance, the

[364] IEA. **ElectricityMarket Reform an Iea Handbook,** Paris: ,OECD/IEA, 1999, p. 60.

regulation of transmission revenues requires, at least, separate and transparent accounting of transmission. Stronger forms of separation facilitate a more effective ring fencing of regulated activities.There are good arguments for taking different approaches to TPA in transmission and distribution. Third party access is a major task for European Regulators. [365]

The advantage of separation of transmission and distribution is that it permits trade to flourish at the intermediary level of distribution, increasing competition, arbitrage opportunities and market liquidity. If a fully integrated national transport system is retained, the emphasis needs to be on creating conditions that allow cheap and easy use of the system so as to guarantee a sufficient number of traders. A vertical separation of transmission and distribution is preferable to a vertically integrated supply system. Where distribution companies exist that are not integrated with a large gas merchant, there would be more independent players, and thus more room for trade.

5. 3. 1. 2. Investment Incentives under Vertical Separation

Structural policies, such as unbundling and divestitures, may lead to foregone economies of scale and coordination but the evidence suggests that foregone economies may not be significant. For instance, there are economies of vertical integration that may be lost when transmission is unbundled from generation. Generation and transmission can be substitutes for each other since the services provided by a transmission line can also be provided by a power plant located where the line would deliver energy. Unbundling generation from transmission has the potential cost of yielding sub-optimal investment decisions in either activity. However, these indirect costs of vertical deintegration seem small in the light of the international experience. A concern with ownership separation of transmission and sales is that it may lead to inefficient investment decisions. "At the moment this could allow producers to take control of transport and distribution in a clear case of vertical integration. Instead of increasing competition there is the risk that the opposite will happen," a ban on building direct connections was included in the directive to open up Europe's electricity market, which provided the model for gas, and insists it should be replicated in the gas directive.[366]

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[365] Monti., p. 1.

[366] Chris Johnstone. " *Minnows Face Defeat in Power Battle*" **European Voice,** Volume 4, Issue 6, 12. 2. 1998, p. 27.

On balance, for gas transmission, unbundling of accounts may be preferable to operational and ownership separation, because of the serious potential consequences for future investment if vertically integrated companies are in effect prohibited. The reason is that in fast growing gas markets the contracting of large volumes from producers goes hand in hand with the design and construction of the transport system needed to bring the new volumes to the market[367] This can even apply in saturated markets when a supply stream dries up and needs to be replaced, or when there are economic or other motivations for a diversification of supplies.

A vertical integration of downstream actors with upstream actors becomes evident also from the already perceptible need to redistribute volume and price risks in future long-term agreements. With the price volatility liberalisation will generate, gas purchasers will be asked to share more of the price risk, and vice versa producers more of the volume risk. At the same time, gas purchasers may be asked for a stronger involvement in the transport systems linking the production fields to their investment.

5. 3. 1. 3. Vertical Restraints to Harm Competition

Introducing vertical restraints can be a means to dilute competition upstream between manufacturers that do not compete directly face to face but through their retailers. In that case we can talk about competition between "vertical structures". There are at least three different ways in which vertical restraints can restrict competition.

5. 3. 1. 4. Distribution or Manufacturing Cartels

With respect to the vertical restraints, we concentrate currently on territorial sales restrictions and clauses having similar effects, resale price maintenance, profit splitting mechanisms, which are particularly prevalent in gas markets. All these restrictions limit the possibilities for the buyers to resell the gas and thus to create more supply competition in the gas markets.

Territorial sales restrictions in supply contracts between gas producers and European wholesalers. These clauses prevent wholesalers from reselling the gas outside the countries where

[367] Limited free capacity in existing systems; technical-economic limitations to expansion of capacity in existing pipes; different location of points of production and/or consumption.

they are established. They have the direct effect of restricting or even eliminating intra-brand competition under certain circumstances. For that reason, distributors may be interested in the enforcement of agreements with their suppliers to restrict competition at the retailers' level. When distributors have market power, this interest is particularly likely to emerge if entry in distribution is difficult. Vertical restraints can also be used to help enforce collusive price agreements between manufacturers. For instance, resale price maintenance can facilitate collusion as price cuts at the retail level are easier to detect.

5. 3. 1. 5. Vertical Restraints as Instruments of Foreclosure

Vertical restraints can be introduced with the effect of hindering entry by other potentially more efficient competing manufacturers. This may clearly be the case if existing producers reach exclusive agreements with the distributors of a certain product available in a given area. The existence of some sort of barrier to entry or any other factor limiting the number of retailers is a necessary condition for this foreclosure to occur. However, this is also possible if economies of scale or of scope are important in retailing, when signing exclusive agreements with existing retailers would make entry harder for entrants at the level of production, because they would have to face higher distribution costs than incumbent firms.[368]

5. 3. 1. 6. Vertical Restraints as a Means to Dilute Competition among Producers

It is obvious that in oligopolistic markets the introduction of vertical restraints within vertical structures can reduce the degree of inter-brand competition even further. For instance, exclusive dealing sometimes allows manufacturers to raise their margins by increasing wholesale prices. In that case, if retailing takes place under non-competitive conditions and there are barriers to entry, retailers will tend to respond to those higher wholesale prices by increasing final prices to consumers too. Alternatively, apart from reducing intra-brand competition, exclusive territories implemented by more than one producer can also dilute inter-brand competition by reducing the incentives that manufacturers have to undercut each other's prices. Thus, besides reducing intra-

[368] A similar argument can be made about the foreclosure of producers by distributors when the latter are strong enough.

brand competition in oligopoly markets, vertical restraints can dampen inter-brand competition. [369]

It is important development that European Union have agreed to open one-third of Europe's gas market to competition, in a compromise that falls far short of original plans for a single European gas market. [370] The new agreement requires member states to open 20% of their gas markets to competitive supply at first. After 5 years, they must raise this to 28%, and after 10 years, to 33%. [371]

5. 3. 2. Retail Competition

Full market opening, unbundling of transmission activities, regulated access to the network and liberalization of electricity trade is known as "retail competition". Under retail competition, transactions among generators, end users and a number of possible intermediaries, such as retailers, power exchanges and intermediaries take place freely inside the "physical" restriction forced by the network. Therefore, on the demand side, end users are free to select their supplier and to deal their contracts; on the supply side, generators can sell their electricity to any other market actors.The fundamental emerging alternative to the vertically integrated monopoly is the retail competition mode.[372] Most other approaches to reform can be described as a constrained version of retail competition.The retail competition model has the following characteristics:

Transactions between generators, end users and a number of possible intermediaries, including retailers, power exchanges and brokers, take place freely. Thus, on the demand side, end users are free to choose their supplier and to negotiate their contracts; on the supply side, generators can sell their electricity to any other market players. Network activities and prices are regulated and, in particular, there are provisions to ensure non-discriminatory third party access to the network, often including some form of separation of network activities from generation and end-user supply. There is an independent system operator, which means that the system operator

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[369] See, Besanko and Perry. "*Exclusive Dealing in a Spatial Model of Retail Competition*", **International Journal of Industrial Organisation,** Volume 12, 1994, pp. 297-329 and Rey and Stiglitz "*The Role of Exclusive Territories in Producers' Competition*", **Rand Journal of Economics,** Volume 26, Issue 3, Autumn 1995, pp. 431-51.

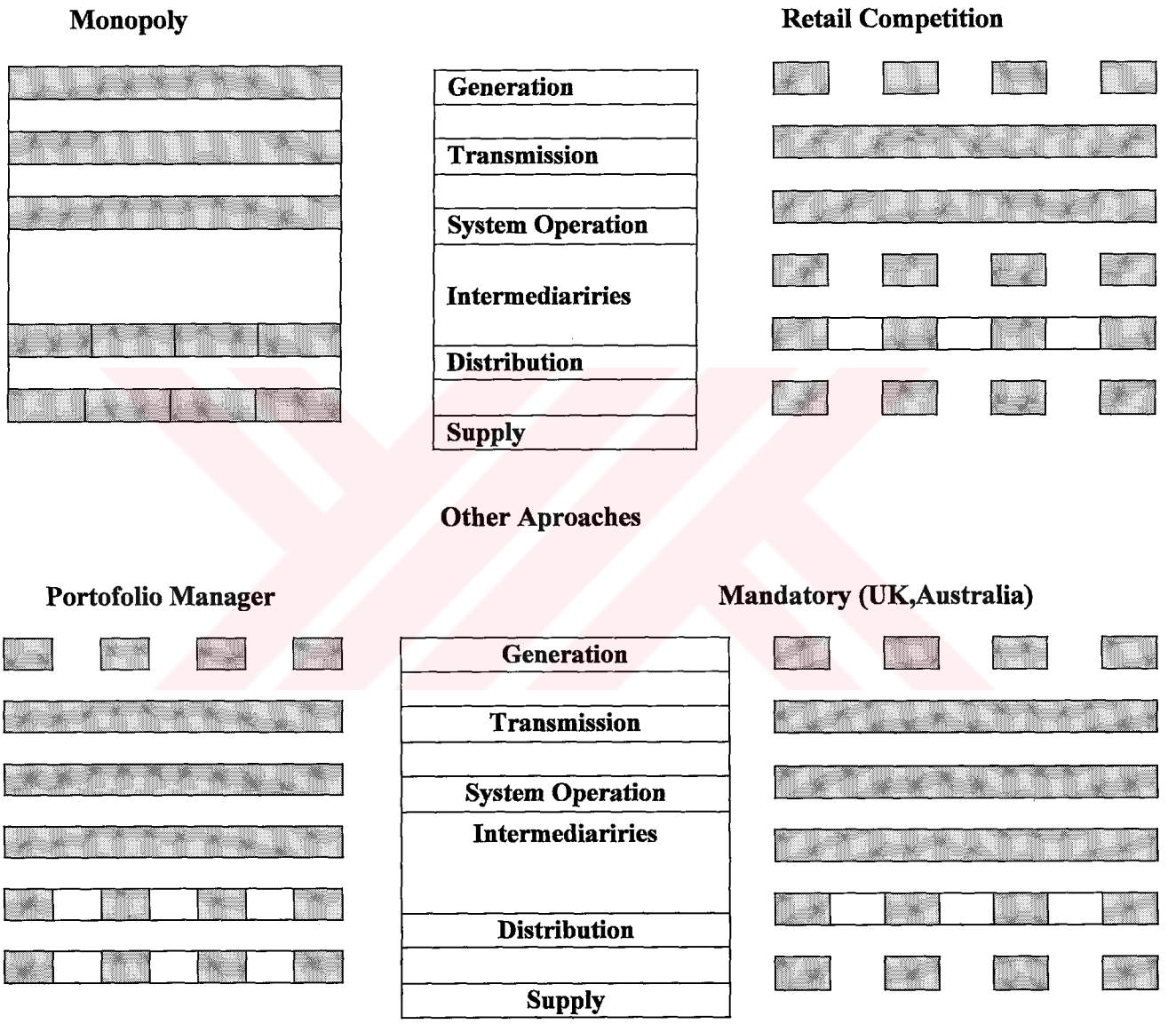
[370] Anonymous." *EU Agrees to Dilute Gas Directive*". **Oil & Gas Journal,** Volume 95, Issue. 50, December 15 1997, p. 22.

[371] ibid, p. 23.

[372] The "Retail Competition" Model is sometimes referred as the "Bilateral Contracts" model.

is not owned or, at least, not controlled by the owners of generation assets. Objective is to improve the transparency of gas and electricity prices charged to industrial end-users in order to increase consumers' freedom of choice without creating obstacles to confidentiality.[373]

Figure 28 Monolopy vs Retail Competition



Source: IEA. **Competition in Electricity Markets,** Paris: 2001, p. 57.

[373] Council Directive 90/377/EEC of 29 June 1990, concerning a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users.Amended by Commission Directive 93/87/EEC of 22 October 1993.

Retail competition aims to promote competition as much as possible in the market ESI, but acknowledges the need to continue regulating the network. Retail competition relies on end-user choice together with competition among generators as the two key forces disciplining the market. In older approaches, only competition among generators was allowed to play a significant role. By letting the demand side be an active market participant, the retail competition model seems to offer the best chances of success in addressing inefficiencies in the generation and end-user supply segments of the market, whilst maintaining a strong regulatory approach to transmission.[374]

5. 3. 3. Gas Transportation and Natural Monopoly?

In the 'history of natural gas', monopoly constellations or potentials thereof have often been converted by governments into regular legal monopoly areas by the creation of protection fences or nationalisation. Examples are numerous and range from the concentration of the transmission and distribution industry into a single state-owned player, such as the former British Gas in the UK or Gaz de France in France, to the former exclusion from the general competition law of the concession and demarcation contracts in Germany's electricity and gas sector granting or allowing suppliers formal or de facto exclusivity of supply in their respective supply areas. [375] The political will does not exist to allow the Commission to use its powers to push through energy liberalisation without the approval of ministers. To open national energy markets up to EU-wide competition that EU competition law should ensure that "companies that still benefit from a monopoly situation in their national market will not unduly benefit from that situation."[376]

But from a modern perspective on competition policy, it is important to explore whether the supply of natural gas constitutes a natural monopoly a priori, or to what extent there is competition or potential for competition. Other sectors provide examples of market constellations in which alleged natural monopolies were broken by market growth or technological progress. Sometimes the threat of market entrance of a potential competitor or the existence of a market/supplier in substitutes can force a monopolist into a price policy to such extent that he

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[374] Loyola de Palacio, *"Opening up of the Markets"*, **The European Commission,** Brussels, 9 July 2002, Comission Press Release DN: IP/773 http://www.f-e-e.org/redirect.htm?http://www.f-e-e.org/cgi-bin/ fee/cal /event. cgi?Act ID=773 (Download:3. 12. 2003)

[375] Van Miert. *" to Hold Fire on Electricity Monopolies"* **European Voice,** Volume 2, Issue 12, 21. 03.1996, pp. 1-3.

[376] Economist, "The Row over the EU Market isn't Over" Volume 358, Issue 8215, 03. 31. 2001, p. 46.

will be unable to exert much market power.[377] This also applies to the gas market. Some European gas companies even argue that from a pure economic perspective there is no such thing as a gas market but rather an energy market, since no gas buyer is interested in the gas itself but in the heat or electricity, which he can also generate from other sources of energy. through the futures market, the producer can simulate a monopolistic lease market, achieving larger profits than in the absence of futures market.[378] Article 37 , which obliges "member states to reform their monopolies of a comercial charecter" so that they end discriminatory marketing or procurement practices. [379]

5. 4. Networks

The opening up of markets and removal of obstacles to system use, trade and investments will yield new sources of supply, flexibility and supply security. Cross-border co-operation and synergies in terms of optimising national security back-up capacities can be more fully exploited while the same degree of overall security can be achieved at lower costs.[380]

Working in a hormany of gas networks with different technical and operational characteristics is essential and must be pursued with a view to ensuring a level playing field and smooth functioning of the internal market for gas and thereby also to enhancing security of supply. Some degree of harmonisation at EU level of technical or commercial practices may be required.[381]

Communication, transparency and a properly co-ordinated exchange of information, in full respect of EU competition rules, is key to enabling liberalised markets to operate under normal conditions as well as to respond to supply disruptions or exceptional demand conditions. With the integration towards a European gas market, security of supply in gas becomes a matter of common interest. There is therefore not only a role for Member States but also for the

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[377] See, Martin. S. **Advanced Industrial Economics,** London: Blackwell Publishers, 1993, chapter 4.
[378] Tim Jones, "*Energy Monopolies Weighed in Balance*" **European Voice,** Volume 3, Issue 15, 1997, p. 13.
[379] Ricardo BRaineri *and* Andres TKuflik. *"Secondary Market and Futures Market for the Provision of Gas Pipeline Transportation Capacity"* **TheEnergy Journal,** Volume 24, Issue. 1, 2003. p. 23.
[380] COM (99)571 Why a Communication on security of EU gas supply? - Introduction and background
[381] In accordance with article 27 of the Gas Directive (98/30/EC), the Commission is currently preparing a first report to the European Parliament and the Council on possible gas market harmonization requirements.

Commission more than in the past to closely monitor gas market developments with regard to security of supply aspects. [382]

5. 4. 1. Access to the System

Natural gas undertakings and eligible customers will be able to have access to the system so as to conclude supply contracts with each other under objective and non-discriminatory conditions. To this end Member States may choose either or both procedures, negotiated or regulated third party access:

- Under negotiated TPA, natural gas undertakings and eligible customers will negotiate access to the system with the relevant natural gas undertakings so as to conclude supply contracts. Natural gas undertakings should publish the main commercial conditions for the use of the network annually.
- Member States opting for regulated TPA shall take the necessary measures to give natural gas undertakings and eligible customers a right of access to the system on the basis of published tariffs.

Member States shall ensure that each transmission, storage distribution and LNG undertaking will not discriminate between system users and should not abuse information obtained from third parties in the context of providing negotiating access to the system.

Table 13: Network Access in EU Countries

Regulated Third Party Access	Negotiated Third Party Access	Single Buyer
Austria	Germany*	Germany
Belgium*	Belgium*	(Transitional)
Denmark	Greece	
Finland		
France		
Ireland		
Italy*		
Luxemburg		Italy*
Netherlands		
Portugal*		Portugal*
Spain		

[382] See, Council Directives 90/547/EEC and 91/296/EEC, should be repealed in order to avoid any disparities between systems, publication requirements or dispute settlement procedures in relation to access to networks.

Sweden United Kingdom		

* Combines the two systems.
Source: Competition in Electricity Markets. **OECD/IEA**, 2001, p.40, EU DG XVII

A EU Commission and IEA access to the networks is crucial in developing an effective competitive market. Therefore, the Commission will also propose published and regulated access tariffs to become the norm. Regulation of tariffs will take place in all countries through a specific and independent energy regulator. Furthermore, we must ensure that the company responsible for the operation of the transmission network is fully independent from generation and sales. Only fully independent transmission system operators will grant access to all on non-discriminatory terms. [383]

There can be a conflict between the interest of the customer as part of a collectivity and his interest as an individual agent making his own choices; and obviously it is difficult to devise arrangements for bringing these interests together. It would be helpful for the discussion, though, if all parties involved in it would acknowledge that this problem exists and that the solutions for it require some sort of balancing approach.[384]

The EU directive calls for all of the EU countries to have 100 percent of their electric markets open by 2007.[385] A set of trading rules, mainly tariffs for cross border transactions and the allocation and management of interconnector capacity. A lot of progress on these issues has been made on a voluntary basis, under the Commission's lead, through the co-operation of industry, consumers and national regulators. [386] The adoption of legislation that will contain rules on cross border transmission tariffs and on allocation of interconnector capacity, so that these issues are henceforth decided upon at European level."[387]

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[383] Loyola de Palacio. " *The Creation of a Fully operational Energy Market"* **World Economic Forum** Davos, 29 January 2001, Commission Press Release DN: IP/01/34.
[384] Niek Ketting. "*Currents and Sparks in Europe"* **Electric Perspectives,** Volume 20, Issue 4, Jul/Aug 1995, p. 12.
[385] Smith, p. 54.
[386] See, Electiricity and gas Directive 96/92/EC.
[387] See, Loyola de Palacio. "Sets out the conditions for successful gas and electricity liberalization "30/01/2001, Commission Press Release DN: IP/01/132.

Non-uniform tarification, congestion of interconnections may restrict access to networks, thereby acting as a brake on the development of the internal market in both sectors. The problem as it affects the sectors may be solved by constructing new capacity and allocating the available capacity in such a way as to ensure a competitive internal market. In this respect, the Florence Forum has drawn up guidelines on the distribution of electricity, although these are not binding. The abovementioned proposal for a regulation also raises the issue of congestion in the sector. [388] This is less of a problem for the gas sector. However, the Madrid Forum is conducting a general examination of the current situation in this sector.[389]

As far as third-party access is concerned, there are three modes of achieving non-discriminatory access to electricity: regulated party access negotiated party access and the so-called single-buyer model. Most countries have opted for regulated third-party access, whereby tariffs for network access and use are fixed by relevant authorities and applied to all users. Germany chose negotiated third-party access, whereby each user negotiates the terms of access with the system operator. [390]

In terms of measures ensuring access to the networks and reducing the risk of discriminatory behavior, it must be said that the Directives were fairly timid: they defined the principle of third party access, but left the Member States to choose between regulated or negotiated access, and they confined themselves to requiring the simple separation of accounts.[391] Third party access should be on the basis of fixed and regulated tariffs, set or approved by an independent regulatory authority. [392] The main purpose of this section is to illustrate the role of traders and market access in a liberalized European natural gas market where transport, storage and load balancing services are offered at fixed rates.[393]

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[388] See, The Florence Forum.
[389] See, The Madrid Forum.
[390] Heritier, pp. 825–852.
[391] Mario Monti *"The single energy market: the relationship between competition policy and regulation"* **House of Deputies 10th Commission on Productive Activities, Commerce and Tourism,** Rome, 7 March 2002, SPEECH/02/101.
[392] "Loyola de Palacio calls for further liberalisation of gas and electricity markets"_Brussels, 16 January 2001 Commission Press Release DN: IP/01/59
[393] Golombek, p. 93.

5. 4. 2. Free Access and Infrastructure Capacity

To avoid the fragmentation of the market, all companies must have free access and be able to develop markets across the EU as easily as they can within their own Member State. Obviously, the availability of infrastructure connecting the different Member States is important in achieving this aim. The Commission is currently reviewing the situation regarding infrastructure capacity, and will shortly put forward a European plan seeking to eliminate existing bottlenecks. [394]

5. 4. 3. Information Access

Information regarding supplies, demand and prices is critical to participants in a competitive market. Those who have access to good, timely information can often trade on this at the expense of those who do not. In liberalized markets is that good, openly accessible information i.e., market transparency reduces transaction costs and enhances the development of the market. It is important to encourage the provision of good, timely and easily accessible information as early as the market opens up in order to ensure a level playing field and enhance market development.

5. 4. 4. Priority of Access

In principle, transport capacity should be released according to "first-come-first-served". Provided that a secondary capacity market exists, someone who urgently requires transport capacity could in case of transport bottlenecks buy it from capacity holders that are willing to sell at a higher price. Alternatively, there may be a possibility for swap deals. Over time, market participants will learn to apply cost-effective risk management against capacity constraints.

A possible and economically efficient approach consists of establishing an auctioning system for capacity, in particular in the case of bottlenecks. Capacity would be priced at market value. Where demand is low, prices are likely to be low. Consistently high prices would reflect capacity constraints and provide economic incentives to expand capacity.

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[394] European Voice, "Loyola de Palacio Sets Out the Conditions for Successful Gas and Electricity Liberalization", 30/01/2001.

Nevertheless, in specific circumstances, access priority could be given to specific customers, such as distribution companies that could otherwise not fulfil their public service obligations, hospitals or households, though perhaps with a penalty charge in cases of urgency as an incentive to take appropriate preventive measures. In cases in which a country maintains integrated gas and pipeline companies and applies a negotiated TPA system, the transport system remains a strategic and commercial tool.

Access to the networks is crucial in developing an effective competitive market. Therefore, the Commission will also propose published and regulated access tariffs to become the norm. Regulation of tariffs will take place in all countries through a specific and independent energy regulator. Furthermore, the Commission must ensure that the company responsible for the operation of the transmission network is fully independent from generation and sales. The effective, transparent and non-discriminatory access regime to energy transmission and distribution networks is important . Only fully independent transmission system operators will grant access to all on non-discriminatory terms. [395] Since gas and electricity networks are natural monopolies, third party access to the networks is a pre-requisite for effective competition in energy markets. Without such a regime, alternative suppliers cannot reach customers.Liberalisation and competition in energy are in the interests of business, consumers and the environment.[396]

5. 4. 5. Negotiated Third Party Access

Under negotiated third party access, eligible consumers or generators/suppliers can negotiate network access with the incumbent utility. Prices and access terms are agreed freely among them and are confidential. The system operators must be involved in the negotiations and must publish an indicative range of transmission and distribution prices on an annual basis.[397]

"Negotiated third party access" under which the price is negotiated on a case-by-case basis; and regulated access, whereby transmission and distribution charges are published up

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[395] European Voice, Loyola de Palacio sets out the conditions for successful gas and electricity liberalisation ,30/01/2001.

[396] Roy Gardner. *"Competition Makes Markets Glow"* **Financial Times,** 25. 9. 2002, p. 23.

[397] See, Directive on the Internal Market for Electricity (EC 96/92) on 19 December 1996 (EC, 1996).

front.[398]Negotiated third party access where buyers are able to deal direct with power producers and its more restrictive alternative, the single buyer system where one electricity company is positioned as a middleman between buyers and sellers.[399]

Negotiated third party access could offer the advantage that it avoids imposing difficult structural changes. Under negotiated access grid or pipeline owning gas merchant companies would have to establish at least internally their cost structure in order to be able to publish their fundamental conditions for access and related services. This could be done individually by each company or for a group of similar grid companies. For example, in Germany, the natural gas industry is looking into generally applicable cost-based tarification methodologies as part of the negotiations it is conducting with the consuming industry associations on an agreement on gas transport tarification. Germany's insistence on negotiated, rather than regulated, access has made that market hard to penetrate without an army of lawyers. Governments should ensure that grid or pipeline operators are legally independent and closely regulated. They should also push for the separation of production from distribution, and for the break-up of supply monopolies.[400]

By protecting developing markets and leaving implementation to member states, the Dutch EU presidency is hoping to break the logjam over the liberalisation of Europe's market for natural gas.[401] "To more protectionist governments by allowing them a choice of liberalisation model: a 'negotiated' system whereby producers, suppliers and customers negotiate the price of access to networks case-by-case; or a 'regulated' approach where transmission and distribution charges are published up front." [402]

For the sake of efficiency it will have to be ensured that negotiations and the granting of access proceed swiftly. In other words, clear, efficient and mandatory procedures of negotiation and access should be set in order to avoid undue delays or barriers to access, or so that a party can

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[398] Electricity Sparks Highlight Dangers for Gas Market. *European Voice*, Volume 3, Issue 09 06/03/1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005495 (Download:30.2.2004).

[399] Chris Johnstone. *"Slotting Final Pieces into The Liberalisation Jigsaw"* **European Voice** Volume 4, Issue 46, 17. 12. 1998, p. 20.

[400] Economist, Volume 357, Issue 8195, 11. 04. 2000, p. 24.

[401] Tim Jones. *"Dutch Optimistic over Gas Liberalisation Plan"* **European Voice,** 20.03.1997, Volume 3, Issue 11. www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005403 (Download: 12. 8. 2004)

[402] Tim Jones. *"Plan to Open Half Gas Market Within Decade"* **European Voice,** Volume 3, Issue 13, 03.04.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005308(Download: 11. 12 .2003)

exploit its dominant position in the negotiations. Speedy dispute settlement procedures are also essential, irrespective of regulated or negotiated third party access, but in particular with negotiated third party access as it are prone to disputes about all kinds, e.g. capacity price, flexibility price, time and duration.

Negotiated and regulated TPA is related to security of supply: how much commercial and investing entrepreneurship does a country wish to maintain to develop its gas transmission system; what transactions costs does it want to avoid. With negotiated TPA a gas merchant company would keep a larger degree of freedom in using its transport system for strategic and commercial purposes. The drawback would be less short-term trade and a lesser scope for a multitude of individual transactions, but gas supply would remain more transparent from a security of supply perspective.

5. 4. 6. Regulated Third Party Access

Regulated TPA to gas transmission leads sooner or later to open access, which is most effective in promoting trade and competition. In the case of a dominant, integrated supply structure such as in France, regulated TPA may also be easier to implement and more efficient in terms of immediate market opening. Regulated third party access also requires a considerable degree of regulation. For example, the cost structure in gas supply needs to be known and defined in detail so as to enable fair tariff setting by the legislator/regulator.

But there is no guarantee that a fully competitive market will provide adequate security. For example, when price becomes the overriding factor in the consumer's choice of a supplier this will work against diversification and security.

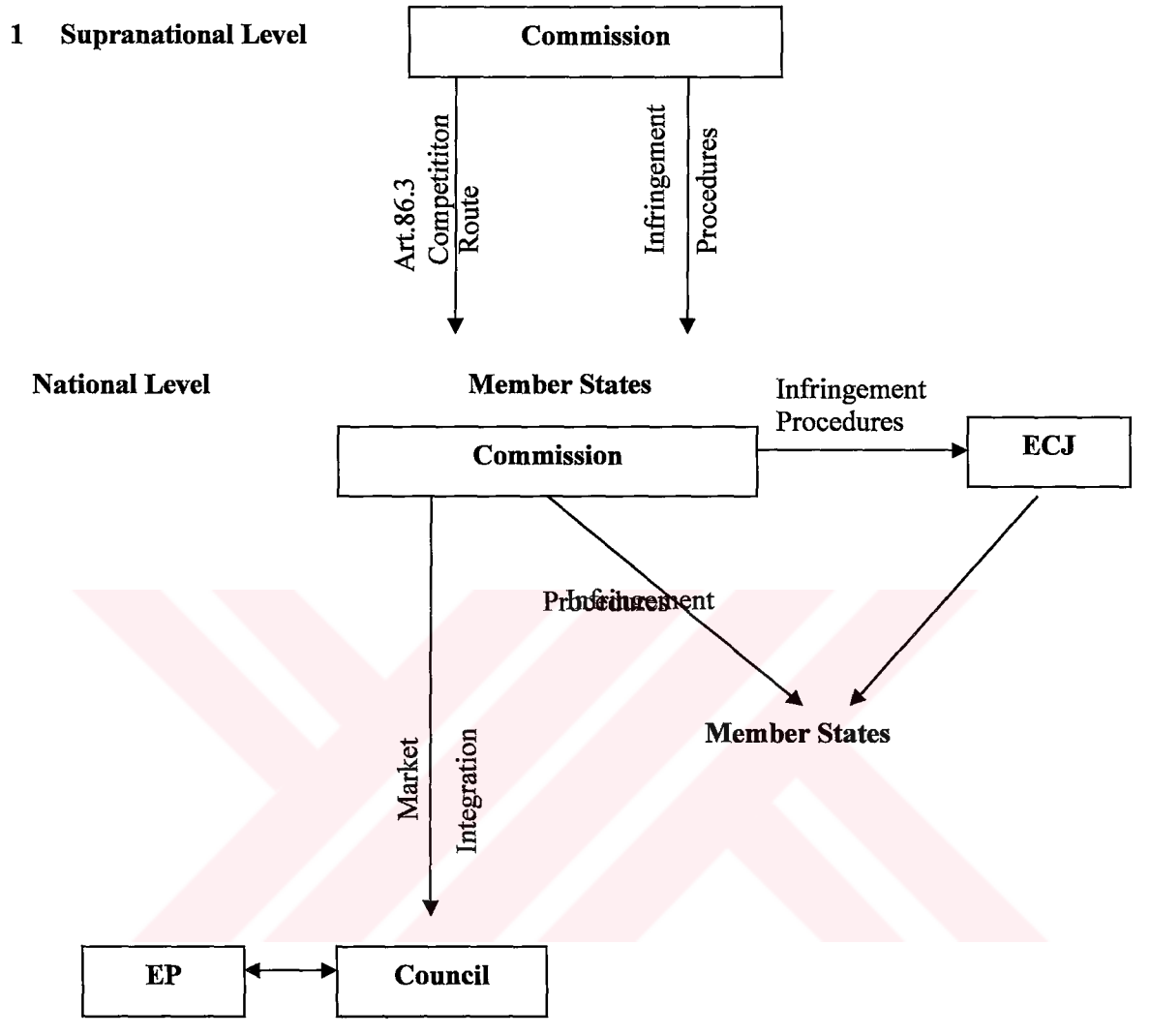
If conditions on gas sellers are set high, entry of new market players will be limited. In practice, this could mean that traders will find it hard to meet the requirements, and that mostly established gas companies would be able (allowed) to compete with the regulated gas supplier/transporter. Short-term commodity and capacity trade key in developing competition and liquidity and spreading the benefits of competition to most consumers could then be slower to emerge. In countries with several gas supplying companies, competition could perhaps start that way, but would most likely stay considerably under optimal level. The approach would be more problematic for countries with highly monopolized and vertically integrated structures, since

competition would then mainly have to come from abroad. Given transmission distances and with the absence of independent distributors (who could act as aggregators for small consumers, but also as traders) only large gas users that offer potential suppliers critical off take-volume would then benefit from a wider choice of suppliers. Thus in this case, such conditions should be restricted to a minimum so as not to render market access too difficult and restrict development of competition and short-term trade.

At the distribution level, there is less need for caution in relation to security of supply due to the many individual small-volume supplies. A further consideration in favor of introducing regulated TPA in distribution is that most countries have already taken a regulated TPA approach in electricity. Smaller gas consumers may only accept with difficulty that the choice in gas may be restricted compared to electricity. And with a regulated approach in electricity, the additional regulatory expense required for the gas distribution sector should be smaller. [403]

[403] Community Directive 96/92/EC stipulate that markets be incrementally and moderately opened to competition.

Figure 29: Competetion Route



Source: Adrienne Heritier. *"Market Integration and Social Cohesion: The Politics of Public Services in European Regulation"* **Journal of European Public Policy,** October 2001, p. 844.

5. 5. Take-or-Pay Contracts

International gas purchase arrangements have been based on take-or-pay contracts, which have provided a risk sharing mechanism between sellers and buyers and facilitated financing of gas supply projects based on more or less captive markets. The purchasing price under such contracts has typically been linked to the oil price as established for example by the Rotterdam

spot oil market. 'take or pay' contracts between national supply companies and gas producers allow the latter to set the overall volume of gas they will deliver for decades at fixed prices.[404]

EU governments agree that take-or-pay contracts will continue to play a role in the liberalised market, but are deeply divided over how these contracts should be regulated to prevent them impeding competition. Germany wants national regulators to check such contracts while the UK is pushing for the Commission to take on the role of independent arbitrator.[405]

Role of the European Commission in checking the continuation of long-term 'take- or-pay' contracts, which tie gas distributors to taking supplies at fixed prices over long periods; the separation of gas company accounts; and procedures to ease gas transportation were areas where the Parliament might table amendments.[406]

France is particularly exposed on take or pay contracts since Gaz de France does not produce its own gas, a large proportion of its customers are industrial, and it is tied to long-term contracts with countries like Algeria and Russia. If the market is opened too quickly, France is worried that most of its major industrial customers could switch to alternative suppliers, leaving the former monopoly with decades of gas that it has paid for and cannot sell.[407]

European gas purchasing contracts are, however, gradually being adapted to the emerging new competitive regime with increasing flexibility and market response. More flexible pricing provisions; shorter duration contracts and more flexible volume provisions as well as new forms of market responsive re-negotiation provisions, may well be needed for securing market share in reflection of the dynamically changing market value of gas.

Take or pay clauses are commonly justified on the ground that they hedge the producers against demand risk.[408] with France raising a series of major problems with the new text and especially its proposed treatment of 'take or pay' contracts - agreements under which gas

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[404] Tim Jones. "*New Gas Plan is in The Pipeline*" ***European Voice,*** Volume 3, Issue 25 26. 06. 1997 ,www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004659 (Download:.21.12.2003)

[405] Chris Johnstone. "Norway *Worried by Gas Liberalisation Issue*" **European Voice**, Volume 3, Issue, 38 23/10/97,,www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/000/3931 (Download: 25.03.2004)

[406] Chris Johnstone. "*MEPs Set to Approve Gas Market Deal*" **European Voice,** Volume 3, Issue 45, 11.12.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/000/3740 (Download:4.13.2004)

[407] Chris Johnstone. "*Warm Response to Gas Proposal*" **European Voice,** Volume 3, Issue 32, 11.09.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004280 (Download,22.12.2003)

[408] Yves, p. 10.

companies sign long-term deals to take gas from producers with a commitment to pay at a fixed price whether they sell it on or not. France is particularly exposed on take or pay contracts since Gaz de France does not produce its own gas, a large proportion of its customers are industrial, and it is tied to long-term contracts with countries like Algeria and Russia. If the market is opened too quickly, France is worried that most of its major industrial customers could switch to alternative suppliers, leaving the former monopoly with decades of gas that it has paid for and cannot sell.[409]

Another significant difficulty is how to deal with the 'take or pay' contracts which dominate the industry, under which Russian, Algerian and North Sea producers lock their supplier-customers into very long-term exclusive deals. Countries with emerging natural gas markets want to preserve such arrangements to secure future income for production firms developing new fields.[410] Old-style exclusive 'take or pay' contracts should not be allowed in the future, since they could freeze an attractive national market for up to 30 years.[411]the directive outlaws long-term exclusive 'take or pay' contracts. These allow the EU's major producers to set the volume of gas they deliver to supply firms for as long as 30 years at fixed prices.[412]

The latest blow follows a meeting of energy ministers late last month which made little progress on the key sticking points holding up a deal: how much of the market should be opened and whether long-term, exclusive 'take or pay' supply contracts should be allowed in future.[413]There are also still wide differences over how to deal with the take or pay contracts which allow the Union's major suppliers to set the volume of gas they deliver to supply firms for up to 30 years at fixed prices. These 'take or pay' contracts between national supply companies and gas producers allow the latter to set the overall volume of gas they will deliver for decades at fixed prices."While this provides certainty for producers so they can sink capital into gas fields, 'liberal' member states fear these contracts will stitch up the EU market before it is even created. it

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409 Chris Johnstone. *"Warm Response to Gas Proposal"* **European Voice**, Volume 3, Issue 32, 11.09.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004280 (Download: 21. 2. 2003)

410 Tim Jones. *"Electricity Sparks Highlight Dangers for Gas Market"* **European Voice,** Volume 3, Issue, 09 06.03.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005495 (Download: 3. 02.2004)

411 Passing on the Lessons of Bitter Experience. **European Voice**, Volume 3, Issue 13, 03.04.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005282 (Download:14.01.2004)

412 Tim Jones. *"Pipedreams in EU Gas Market* "**European Voice,** Volume 3, Issue 20, 22.05.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byeid.&id002/0005372 (Download:9.12.2003)

413 French Stymie Latest Attempt to Open Gas Markets, **European Voice,** Volume 3, Issue 23, 12. 06.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0003896 (Download:18.12.2003)

is necessary to have take or pay contracts in the future because, with the heavy investments the producers have to make, they need guarantees if they are going to do it".[414]

It is predicted thsat gas consumption in the Union expected to rise significantly over the next few years, industrial customers in Europe will increasingly have the upper hand.[415]Long term take or pay contracts will remain important but hubs will develop, allowing for more flexibility in the gas market and creating prices referential for gas contracts.[416] A take-or-pay contract could be an obstacle to competition," The ultimate goal of liberalisation is to forge a single European gas market by ensuring the free movement of products across borders. This is seen as crucial given the growing dependence of the Union as a whole on imports.[417]

5. 5. 1. Single Buyer System

The third possible approach is the single buyer system, where a designated single buyer sells to final consumers. Eligible consumers are free to conclude supply contracts with generators/suppliers both inside and outside the incumbent utility's territory. The electricity contracted by an eligible customer is purchased by the single buyer at a price which is equal to the sale price offered by the single buyer to eligible customers minus a tariff for network services.[418]

The EU Directive provides two options for generating capacity additions. Under the tendering procedure, the monopoly utility determines when new capacity is required and conducts a tender for this requirement under the authorization procedure.

The single buyer system would, in any case, restrict competition in generation since tenders would only be put out when new capacity was required. There would be no competition between existing generating plant and efficiency gains would be extremely limited as a result. Independent producers must be granted the right of establishment in other member states without

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[414] Tim Jones. " *New Gas Plan is in the Pipeline"* **European Voice,** Volume 3, Issue 25, 2. 06.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004659 (Download: 21.12.2003)

[415] Renee Cordes. " *Gas Sector Prepares for liberalization"* **European Voice,** Volume.5, Issue 40, 4.11.1999, p. 21.

[416] Vivies, p. 8.

[417] Renee Cordes. " *Italy Faces Obstacles as it Moves to Open Gas Market*" **European Voice,** Volume 6, Issue 7, 17.2.2000, p. 22.

[418] Chris Johnstone. "*Slotting Final Pieces into the Liberalisation Jigsaw"* **European Voice,** Volume 4, Issue 46, 17. 12. 1998, p. 20.

artificial limits on the size or capacity of their generating plant. They must then be free to negotiate to supply customers and distributors over European grid networks.

The single buyer must be independent. Where member states opt for this model, the single buyer must be completely separate from any vertically-integrated company with generation interests. The single buyer's responsibilities, which include all purchasing and selling of electricity within a given system, lead to an extremely dominant market position.[419] The Single Buyer System, along with what is hoped will be a solution to the problem of the separation between ownership and management of the national transmission network, could encourage the emergence of independent competing undertakings." [420] Paris wants a tailored version of its 'single buyer' plan, which would limit liberalisation to large industrial users to guide the way. [421]

5. 5. 2. Reciprocity

Reciprocity implies that everything can be based on a bilateral arrangement. It can be very dangerous and should only be used in limited circumstances. Reciprocity rules stand for barriers to entry of potential natural gas supplies. Given the limited number of producers in and around most European countries, governments should have an interest in extending choices of supply to eligible customers as well as traders as much as possible both for the sake of competition and security of supply.

Reciprocity provisions also carry potential discriminatory effects for access seekers, in particular in large countries. For example, on the grounds of the reciprocity principle enshrined in the recently reformed German energy law, a German gas customer situated close to the French border would not automatically gain access to the German pipes reaching gas in France if the same kind of customer does not have comparable rights in France. However, a similar end-user situated next to the Dutch border could benefit from access to Dutch supplies, assuming the Dutch market is similarly open to the German market. At a minimum, reciprocity if Spain opened its market to France, the least France could do was to open its market to Spain, if not to the whole

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[419] Philip Daubeney. "*Empowering Europe for the Global Market Place*" **European Voice,** Volume 2, Issue 10 07. 03. 1996, p. 1 www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/000. (Download: 01.03.2004)

[420] Hattori, pp. 1-6

[421] Fiona Mchugh. " *New Optimism Over Electricity Liberalisation*" **European Voice,** 15/02/1996 www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/000.. (Download: 1. 12. 2004)

EU. That is an idea that horrifies the European Commission, which regards bilateral deals in market matters as little better than jungle law that would undermine Europe's single market.[422]

There are fears that in some cases, the power base is merely shifting from state monopolies to markets dominated by a handful of mighty players who are merging and becoming even more powerful. Although consolidation per se is not necessarily harmful to competition, it can be when these companies do not allow unrestricted third-party access to the transmission grid. The pact divides the country's power grid into two zones and requires operators to pay a fee for energy which crosses the border, but the merged companies would have a presence in both zones and would therefore be exempt from the fee. German cartel authorities have already warned that the firms involved will have difficulty in getting approval for their mergers if the zone-based system is not scrapped.[423]

Reciprocity provisions are often expected to have a stimulating effect on market opening in neighboring countries. Reciprocity provisions may be necessary to protect supplying companies against unfair competition.

5. 5. 3. Eligibility

The EU energy council decided that all electricity producers, regardless of annual gas consumption, are also eligible for choice of gas supplier. "In order to safeguard the balance of their electricity market, member states may introduce a threshold, not exceeding the level decided for other industrial customers defined as eligible, for the eligibility of combined-heat-and-power producers."[424]

The application of qualitative criteria means the establishment of a threshold for the eligibility of industrial consumers which will be initially set at 25 million cubic meters, then reduced to 15 million after five years, and 5 million after ten years. Moreover, all electricity producers will be considered eligible, irrespectively of their annual consumption. However, in order to safeguard the balance of their electricity markets, Member States may introduce a

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[422] Economist. "*The Row over the EU's Market isn't over*"Volume 358, Issue 8215, 03.31.2001, p. 46

[423] Renee Cordes. "*Sparks Fly over Electricity Liberalization*" **European Voice,** Volume 6, Issue.3, 20. 1. 2000, p. 21.

[424] *Anonymous*. . "EU Agrees to Dilute Gas Directive" **Oil & Gas Journal,** Volume 95, Issue 50, December 15. 1997, p. 22.

threshold for the eligibility of combined heat and power producers, not exceeding the threshold envisaged for other customers.[425]

The French argued the directive should divide up eligible customers into specified sectors energy producers, industries and public distribution and each should then be assigned an expected percentage level of market opening.[426]

Quantitative criteria will also apply, introducing a minimum obligatory percentage of market opening for Member States, initially set at 20%, and then raised at 28% and 33% after five and ten years respectively. To take account of possible imbalances on the level of market opening due to the different gas market structures, Member States may reduce the level of market opening if after the application of the qualitative criteria, this exceeds 30%, 38% and 43% during the first, second and third stage respectively. In addition to this distributors, where they are not already considered eligible, will be eligible for the supply of gas consumed by their customers which are designated as eligible. Safeguard clause which allows countries to redefine eligible customers if more than 35% of their home market is exposed to competition in the first stage of liberalisation. This would leave them free to push the market opening below the 35% level. The EU said that the achievement of a common position is a decisive step towards establishment of an internal market for energy.[427]

5. 5. 3. 1. Eligibility and Secondary Capacity Trading

In order to generate sufficient numbers of buyers and sellers in a commodity market to allow the market to become liquid, there must be sufficient transportation infrastructure and ancillary services available to market participants to permit that commodity to be physically delivered. The freer the access to transportation and flexibility, the higher will market liquidity.

Natural gas undertakings and eligible customers will be able to have access to the system so as to conclude supply contracts with each other under objective and non-discriminatory conditions. To this end Member States may choose either or both procedures, negotiated or regulated third party Access. This means that third party access rights should preferably be given

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[425] Ibid, p. 23.

[426] French Stymie Latest Attempt to Open Gas Markets, **European Voice,** Volume 3, Issue 23, 12.06.1997 www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0003896 (Download:18.12.2003)

[427] Anonymous. "EU Agrees to Dilute Gas Directive" **Oil & Gas Journal,** Volume 95, Issue 50, 1997. p. 22.

to a wide range of market participants (increases the numbers of buyers and sellers), and trade in capacity be allowed to take place where access is based on booking specific transport and storage capacity. Thus it is desirable that local distribution companies are eligible for TPA and at the same time are subject to TPA. Member States opting for regulated TPA shall take the necessary measures to give natural gas undertakings and eligible customers a right of access to the system on the basis of published tariffs.[428]

5. 5. 3. 2. Eligible Custumer

This is a drastic change considering that most customers, even large industrial gas users, may have difficulties in assessing the value they ought to attach to specific security/flexibility services e.g. diversification of supplies. They will have to go through a learning-by-doing process. Nevertheless, it is a welcome change since it empowers consumers to make their own choices. to define the type of customers allowed to choose between suppliers. EU has yet to decide whether to apply the principle of subsidiarity which decrees that decisions in the EU should be taken by national and local authorities where appropriate in deciding whether a distribution company would be classed as an 'eligible customer'.[429]

Liberalising the markets by determining a percentage of the consumers that would be eligible and how much of the market should be opened and whether long-term, exclusive 'take or pay' supply contracts should be allowed in future. [430] The French argued the directive should divide up eligible customers into specified sectors (energy producers, industries and public distribution) and each should then be assigned an expected percentage level of market opening.

Supply flexibility will become/is a separately priced commercial item, which eligible customers will be/are able to purchase. 'Eligible customers' able to shop around for the cheapest gas supplies. Market opening in this context gives the liberated end-user the opportunity to contract and pay only for exactly the kind of flexibility/security he requires, instead of paying his utility an overall non-transparent price that is supposed to contain the flexibility service.

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[428] See, The Directive 96/92/EC.

[429] Tim Jones. " *Dutch Optimistic over Gas Liberalisation Plan"* **European Voice,** Volume 3, Issue 11, 20.03.1997, p. 12 .www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005403. (Download 8. 01.2004)

[430] French Stymie Latest Attempt to Open Gas Markets, **European Voice,** Volume 3, Issue 23, 12.06.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0003896 .(Download.18.12.2003)

Gas prices for eligible customers have fallen considerably These thresholds would automatically exclude most cogeneration plants which are mainly small consumers and close to their final users.[431] Producers and only small consumers have almost no national interest to defend.[432]

Austria, Germany and the Netherlands are amongst the Member States which have seen an increase in consumer activity among eligible customers; Italy, Spain and the UK have seen price reductions for large consumers.Distributors will be able to buy gas to pass on to so-called eligible customers (big industrial companies), but will not be able to purchase and re-sell in their own right.[433] Amongst a number of issues giving concern are: the degree of unbundling, the continuing position of market dominance in some countries, and the lack of infrastructure to allow cross-border exchanges.[434]

5. 6. Unbundling

Under the compromise the activities of energy transmission and distribution will be legally separated in a proposal know as 'unbundling'. Again, this proposed measure received stiff opposition from France and Germany, who fear it will mean huge restructuring for firms such as Electricité de France and Eon, but they backed down after the majority of energy ministers from other EU countries argued in favour of 'legal unbundling' which will prevent companies controlling access to key infrastructure such as pipelines and transmission wires as well as using it to supply customers.[435] The Commission may submit all the proposals ensuring full and effective independence of the distribution system operators earlier than scheduled. Furthermore, if it finds that the same objectives have been achieved in full through less stringent separation, the

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[431] Dismay over Presidency's New Gas Proposals, **European Voice,** Volume 3, Issue 31, 04.09.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004309 (Download:24.01.2004)

[432] Tim Jones. "New *Gas Plan is in The Pipeline"* **European Voice,**Volume 3, Issue 25, 26.06.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0004659 (Download:21.122003)

[433] Chris Johnstone. " *Minnows Face Defeat in Power Battle*" **European Voice,** Volume 4, Issue 6, 12.2.1998, p.27.

[434] See, Gas and electricity: mixed report on liberalisationAt the request of the March 2002 Barcelona European Council, the Commission has produced its 'Second benchmarking report on the implementation of the internal electricity and gas market'. Published on 3 October 2002

[435] Helen Bower. *" Energy: Compromise Reached on Liberalisation of Electricity and Gas Markets"* ,**Europe's Energy supply**, Seville, 21-22-June 2002, pp. 1-6

Commission may, at the request of a Member State, adopt an opinion and submit a proposal to the Council and Parliament to allow the State concerned to maintain this experience. [436]

5. 6. 1. Why Unbundle?

In order for competition to develop in electricity markets, monopolistic activities such as the operation of the transmission network need to be effectively separated from the potentially competitive activities (e.g. generation). The main objective of unbundling is to avoid discrimination in the competitive segments of the ESI. Thus, some degree of separation is needed between transmission and generation, distribution and generation, and distribution and end user supply.

The main reason to unbundle is to avoid discrimination by vertically separating monopoly from competitive activities. Transmission, system operation and distribution remain monopolies in a liberalised market. If these monopolies are vertically integrated with the competitive activities of generation and end user supply, they have an incentive to use their monopoly power against competitors. A grid monopolist can distort competition in many ways. For instance, discriminatory access conditions, high or discriminatory access charges and "strategic" investment in grid augmentation may put competitors at a disadvantage.

Competition law makes discrimination illegal in most countries, and discriminatory behaviour is punishable by competition authorities. However, this may not be a fully effective remedy to counter discrimination.Vertical separation thus aims to limit the ability as well as the incentive of grid monopolies to distort competition. In particular, reforming countries have to deal with separation of:

- Generation and transmission/system operation;
- Generation and distribution; and
- Distribution and end user supply.

A second and related reason to introduce unbundling is to improve the effectiveness of regulation. Some degree of separation between regulated and competitive activities is needed to regulate effectively. For instance, the regulation of transmission revenues requires, at least,

[436] ibid, pp. 1-4.

separate and transparent accounting of transmission. Stronger separation facilitates a more effective ringfencing of regulated activities and, therefore, a more cost reflective pricing of grid services.The unbundling requirements of the gas and electricity directives need therefore to be strengthened.[437]

Unbundling ensures that costs are correctly allocated to a gas company's different activities such as gas purchase, transmission, distribution, storage, and other flexibility mechanisms. This is a fundamental basis for the pricing of these different services/elements, irrespective of the third party access regime chosen regulated or negotiated and for non-discriminatory treatment of all players.

5. 6. 2. Forms of Separation

5. 6. 2. 1. Accounting Separation

Keeping separate accounts of the commodity purchases and sales from the transport activities within the same vertically integrated entity. This includes a vertically integrated entity charging itself the same prices for transport services, including secondary services such as balancing and quality fulfilment, as it does others and stating separate prices for the commodity, transport, and the ancillary services. Integrated undertakings have an obligation to separate internal accounts with regard to the activities of transmission, distribution, and storage. [438]

5. 6. 2. 2. Functional Separation

Accounting separation, relying on the same information about its transport system as the other actors when buying and selling gas and separating employees involved in transport from those involved in gas purchase and sales. Distribution will be unbundled by July 2007. This obligation does not in any way imply unbundling of ownership in vertically integrated companies.[439] Weaker separation forms functional and accounting require a large and costly involvement of regulatory and competition authorities and may fail to prevent discrimination.

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[437] See, European Voice,Loyola de Palacio calls for further liberalisation of gas and electricity markets,16 January 2001

[438] See, electricity and gas Directive 96/92/EC.

[439] Loyola de Palacio. "Liberalisation of the Electricity and Gas Market". **European Commission,** 14. 01. 2002, http://www.elpais.es /articulo.html?d_date= 20020115&xref =20020115elpepieco_4&type= Tes&anchor= enelpepieco (Download:12.09.2003)

The two more limited forms of separation are relatively easy to implement. Legal difficulties are minimal, opposition from industry is typically weak, and set-up costs are modest compared with those of setting up an ISO. However, the constraints on the ability of transmission owners to discriminate are less effective even if they may contribute to increase transparency. This implies that functional and accounting separation, whenever adopted, needs to be complemented by strong regulatory oversight, vigorous antitrust enforcement, and preferably both. These complementary measures are costly to administer and drain significant resources from the regulated parties. These costs have to be weighed against the benefits of a relatively simple and lower cost implementation. In addition, it is unclear whether increased alert by regulatory and competition authorities would be enough to prevent discrimination. Functional separation and accounting separation have a limited potential to prevent discrimination because the incentive to discriminate and some of the ability to discriminate remain.[440]

5. 6. 2. 3. Operational Separation

Investment in the transport system are the responsibility of an entity that is fully independent of the gas merchants; ownership of the transmission grid remains with the gas merchant.

Separating system operation from the ownership of transmission assets may provide a workable alternative to divestiture when transmission ownership is fragmented among several parties. However, the establishment of effective independent system operators requires the development of complex and still largely untested governance structures. The operators' commercial interests should be fully separated in operational terms from production and sales: the unbundling requirements of the gas and electricity directives need therefore to be strengthened.[441] Operational separation may be effective in preventing discrimination if there are many transmission owners. However, in order to promote efficiency, operational separation requires the development of sophisticated and still largely untested governance structures.

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[440] Loyola de Palacio Brussels, 26 November 2002 ,http://europa.eu.int/rapid /start/cgi/ guesten.ksh?p _action.gettxt= gt&doc=SPEECH/02/1733 |RAPID&lg=EN Commission Press Release DN:IP/02/1733

[441] Loyola de Palacio. calls for further liberalisation of gas and electricity marketsBrussels,16 January, 2001 http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/01/59|RAPID&lg=EN Commission Press Release DN IP/01/59

5. 6. 2. 4. Ownership Separation

Gas sales and transport are separated into distinct legal entities with different management, control, and operations and there is no significant common ownership. Ownership separation solves most concerns because it eliminates both the incentive and the ability to discriminate. The "weaker" forms of separation limit, to different extents, the ability to discriminate and may be easy to adopt for some countries; but they may not eliminate the incentive to engage in discriminatory behavior as effectively as ownership separation. Also, to different degrees, market players may overcome the regulations intended to keep activities separate. However, ensuring non-discrimination has to be balanced against the needs of longterm investment. The operators' commercial interests should be fully separated in operational terms from production and sales. The unbundling requirements of the gas and electricity directives need therefore to be strengthened. [442]

[442] ibid

6. SECURITY OF SUPPLY

The EU's policy towards the gas industry was concerned with supply security and price discrimination The first signs of a wider agenda for gas came with the publication of the Commission's review of the natural gas industry in the EC (COM (86) 518). This indicated not only that the prospects for supply and demand appeared healthy, but that the industry should move towards a European structure with as much competition as possible in the system A competitive gas market may need to be monitored and, if needed, flanked by regulatory measures or strategic targets.

Most governments consider they have a strategic obligation to ensure that the market is reliable in the short, as well as in the long-term; that environmental objectives are met; and often also that other objectives such as social or regional equity are met. We can say that an important policy priority is to sustain security of supply in its three dimensions of short-term system reliability, long-term system reliability through adequate investment, and diversity and security of fuel inputs used for power generation.

Security of supply and competition are compatible objectives and gas security can be enhanced in the single EU gas market. Nevertheless, gas security can not be taken for granted and needs to be properly planned for by companies in contact with the responsible authorities. The transition to the new market regime is obviously particularly important with regard to ensuring a continued high-level of security of gas supply. [443]

These priorities are reflected in the agreed three main pillars of European Union energy policy, which are:

- overall competitiveness;
- protection of the environment and;
- security of energy supply.

Natural gas has a major contribution to offer in achieving all three objectives.

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[443] Matthew Jones. " *Regulators Press Brussels on Gas Merger"* **Financial Times,** 22. 8. 2002, p. 2.

Today, security of supply is not the key geopolitical issue it was in the 1970s during the time of the oil crises when Europe was excessively dependent on one single fuel controlled by a small number of oil producing countries. The world has in many respects changed since then and become increasingly open and economically interdependent. Also world energy markets have become increasingly integrated and supplies more diversified both in geographical terms and with regard to the fuel mix., security of energy supply requires continued vigilance and careful monitoring with a view to manage increasing external dependence and vulnerability and avoid, or at least be able to manage, major crises should they occur. Security of supply for Europe means market security for the gas producer.[444]

It is equally important that all market players recognise the strategic importance of, and demonstrate responsibility in, security issues in order for the market as a whole to be able to co-ordinate gas security obligations and to avoid "free riders". Market based mechanisms and incentives can be created which can deliver security and match supply and demand. [445] Consequently rigid, EU-wide security of supply criteria and mechanisms do not seem to be the most appropriate response. What seems more appropriate and important, in view of the increasingly liberalised gas market, is to define the security objectives including the roles and responsibilities of each of the players and to make these operational within the new legislative framework for the gas market following the entry into force of the Gas Directive. The truly integrated markets which will benefit all consumers, big and small alike.[446]

The term security of supply is widely used to cover a range of issues spread over different time frames. In this Communication, security of supply comprises both short-term operational aspects as well as strategic and longer-term aspects.

6. 1. Security of EU Gas Supply

Security of energy supply, get importance in the second wing of the common energy policy[447], is defined as the ability to ensure the continued satisfaction of essential energy needs by

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[444] Maria Kielmas. " *Progress Towards EU Single Market Stalled by Dominant National Players*" **European Voice,** Volume 7, Issue.34, 20. 9. 2001, p. 22.

[445] See, *COM* (99)571Why a Communication on security of EU gas supply? Introduction and background

[446] Loyola de Palacio. " The Creation of a Fully Operational Energy" **Market World Economic Forum,** Davos, 29 January 2001_Commission Press Release DN: SPEECH/01/34

[447] Others environment and competition.

means of, on the one hand, sufficient internal resources exploited under acceptable economic conditions and, on the other, of accessible, stable and diversified external sources.

The term 'Security of supply' represents an all encompassing phrase for efficient investment,maintenance, operation and quality in supplying gas and electricity through the whole value chain from the gas source to the end user. Different stakeholders emphasise different elements. The need for a concise definition for security of supply seems evident as consistency of the concept helps create an improved understanding of security of supply and wider recognition of the challenges emerging from the development of the Internal Energy They are ; Market. Balance between national and export markets = same countries (Norway, Algeria) were essentially pure producers; others (Netherland, UK) served both national and export market.

Mutual trust between buyers and sellers is important. Both buyers and sellers were represented by large entities with essentially monopoly powers; this made it possible to build long term relationships of trust and dependence. Hormanony between state regulation and private sector on the whole the interest of stater and private corparations were in hormany. "State arrangements reinforced the prevailling commercial structures and did not challenge stability across natioal boundriaes. It is also effective factor in the determining security of supply. While tramit agrements were not always easy to negotiate, once concluded they held upreliably.If there is a profitable market and a profitable economic project, then contractual mechanisms will be found to bring the gas to market."[448]

The security of gas supply covers a large number of aspects and requires therefore a large range of solutions and guarantees. Security is related as much too physical risks as well as to economic risks. There exists a mechanism for dealing with insecurity and crises in the oil sector, both at EU level and more widely in the IEA framework; no such mechanism exists in the gas sector. While the gas industry continues to provide a reliable supply of natural gas to its customers, large and small alike, it is right and proper that public authorities, whether at regional, national or European levels, shoulder their respective responsibilities in this area.[449]

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[448] Tim Jones. "Plan *to Open Half Gas Market Within Decade"* **European Voice,** Volume 3, Number 13 03.04.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/000 (Download,14.01.2004)

[449] BY P. Lambert. " *The European Union and The Gas Sector"* **Gas Expo Conference,** Amsterdam, *2.1. 1995,* pp. 1-43.

6. 1. 1. The Challenge for Security of Supply

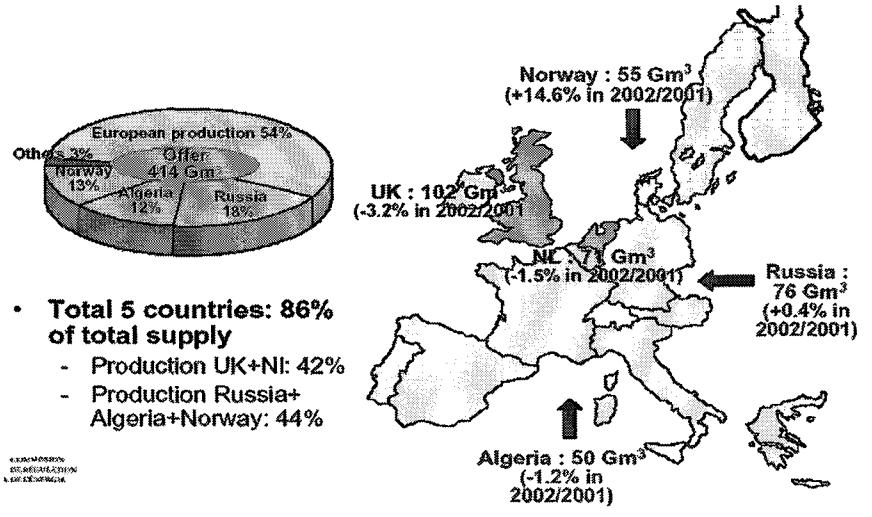
It is not enough to liberalise markets and hope that the market will achieve the required result without continued regulatory action. This has been realised from the outset by the Commission and market opening has been accompanied by a series of measures, at both national and Community level, ensuring that investment levels at the generation and network level are maintained, as well as diversity of supply and adequate interconnection levels between systems.

We cannot ignore the EU's growing dependence on imports. Currently the EU depends on imports for half of its fuel, this figure is set to increase to 70% within 30 years. And the enlargement of the EU will not alter this picture. We need to consider our options in this respect and for that reason the Commission has adopted a 'Green Paper on security of supply'. Governments and other authorities at this point in time, in which many experts say that EU is close to the output peak of oil, should think hard about ways in which to diversify our fuel supplies. The Commission highlights a number of issues in the Green Paper that merit profound discussion by as many actors as possible. Some of these issues are:

- the need to ensure the true integration of markets to enhance security of supply;
- the diversification of fuel supplies;
- the maintenance and development of strong relations with energy producing nations;
- the promotion of renewables, possibly by letting fuels heavily subsidised in the past, and now profitable, contribute to their development;
- the intensification of efforts to increase energy efficiency;

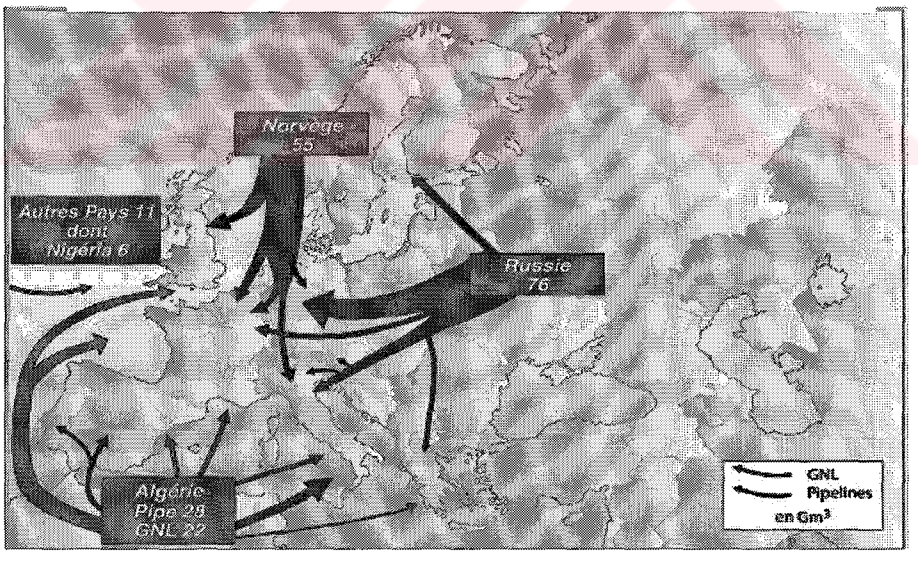
The use of the tax instrument to further security of supply situation European production plus imports from outside Europe were up by 1% in 2002/2001.

Figure 30:Upstream, European Union supply in 2002



Source: Patrice de Vivies *"Regulation Dealing With Access to Supply in Dealing with Access to Supply in Liberalised Markets"*, IEA, **CRE** Paris, Friday 27 June 2003, pp. 3-7.

Figure 30-a: Upstream, players' gas supply in 2001

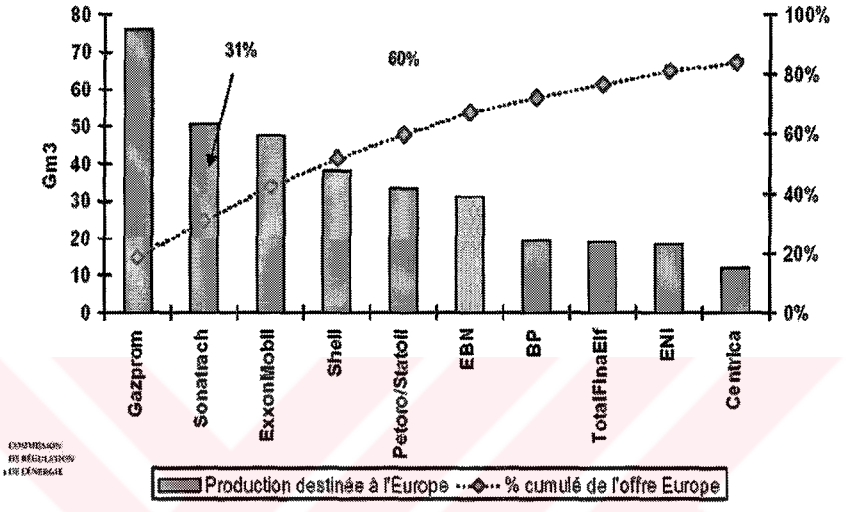


Source: Patrice de Vivies. *"Regulation Dealing with Access to Supply in Dealing with Access to Supply in Liberalised Markets"* IEA, **CRE** Paris, Friday 27 June 2003, pp. 3-7

The production of the first 10 companies provides for 84% (411 Gm3) of total supply 3 state-owned companies and 1 state-owned holding, 5 western oil & gas companies, 1 gas operator

14 producers provide for 90% of total supply in Europe[450] the physical constraints impeding cross-border trade must be removed. The Commission plans to propose a mechanism for concertation between stakeholders with a view to defining a plan for the missing interconnection infrastructure.

Figure 31: Downstream: Players Importing Gas in Europe in 2001



Source: Loyola de Palacio. **Calls for Further Liberalisation of Gas and Electricity Markets** Brussels, 16 January 2001 Commission Press Release DN: **IP/01/59**

10 players account for 80% of imported volumes extremely high concentration. 5 large players: 70% of imported gas into Europe.

6. 1. 2. European Union and Gas Production

It is clear that there are enough reserves near to Europe according to official estimations to supply future potential demand. A large share of Europe's future needs is already secured under long-term contracts. But more supply projects need to be developed for the period 2015-2020 and beyond.These will only materialise if European consumer markets can make such projects attractive to investors. The European gas consumer markets also face a relatively high concentration of natural gas production in the hands of a few large players: Russia, Algeria and in the North Sea.[451]

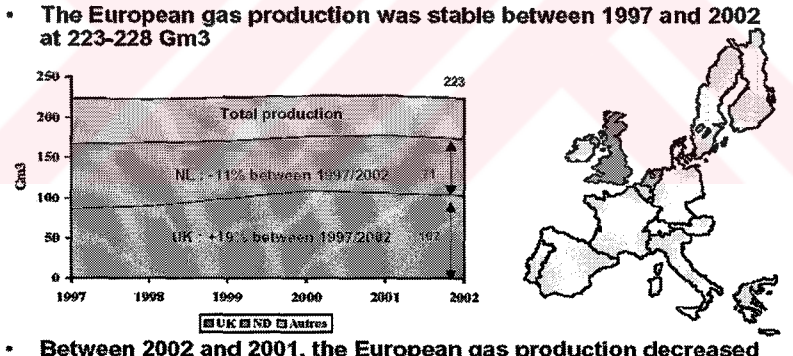
[450] Vivies. p. 3.
[451] Vivies, p.12.

It is necessary for EU that she must be able to attract new gas supply projects to cover future demand and avoid becoming a victim of producer concentration. These objectives can be met by preserving an attractive environment for gas industry investment and development while creating open, competitive, liquid and flexible gas markets.

The European upstream gas business has grown into a large industry branch of the petroleum exploration and production sector. And most countries have welldeveloped gas transmission and distribution networks, most of which are interconnected. Gas and electricity markets are converging into one market by 2010, 40% of Europe's electricity market will use gas. Today, the figure is 10-15%.[452]

In this environment, by introducing or improving gas-to-gas competition, market forces can be freed that will empower consumers, reduce end-user gas prices, and force companies to increase the quality of the energy services/products they offer. This will add to industrial competitiveness and to domestic consumption.

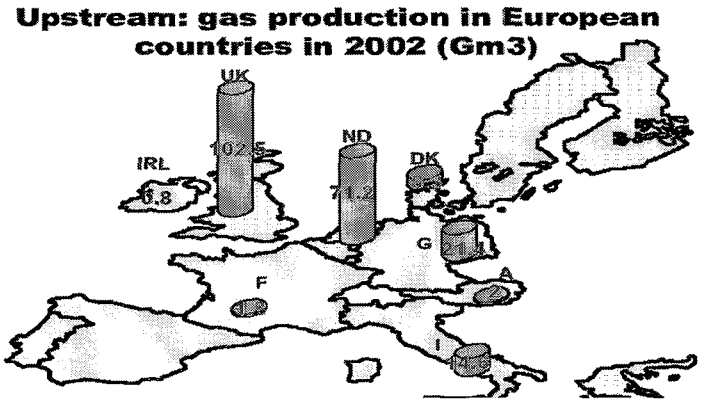
Figure 32: EU Gas Production



Source: Patrice de Viviés. "*Regulation Dealing with Access to Supply in Dealing with Access to Supply in Liberalised Markets*", IEA **CRE** Paris, Friday 27 June 2003, pp. 3-7.

[452] Maria Kielmas. " *Gas Privatisation in Pipeline as France Prepares for Free Market* "**European Voice**, Volume 8, Issue 31, 5. 9 .2002, p. 20.

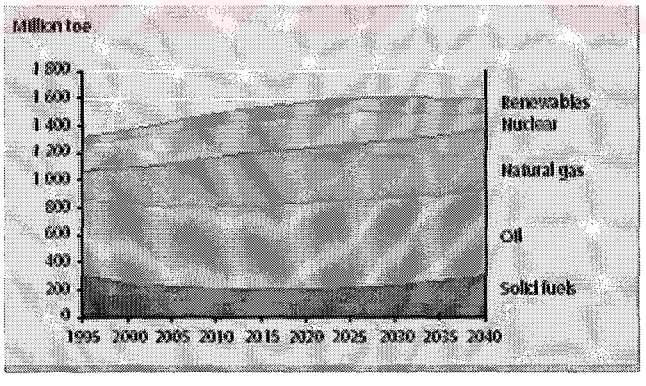
Figure 33: Gas Production in EU



Source: Patrice de Vivies. "*Regulation Dealing with Access to Supply in Dealing with Access to Supply in Liberalised Markets*", IEA **CRE** Paris, Friday 27, June 2003, pp. 3-9.

Production in the UK accounts for 46% of European gas production (4th producer worldwide). Production in the Netherlands represents 32% of European gas production (6th producer worldwide).How can we ensure that there will always be energy sources to meet EU's requirements? In other words, how can EU guarantee a sufficient supply and at a reasonable price? Every energy source can replace another, even partially, but this has advantages and drawbacks.

Figure 34: Gross Inland Consumption in the EU



Source: European Commission. **Energy Let us overcome our dependence**, Belgium, 2002, p. *20*

The EU is capable of generating 600 GWe of electricity. Between now and 2020 EU will have to produce practically as much again to meet consumption requirements and to replace half of the present power stations which will reach the end of their lives. There are calls for oil and coal to reduce their role. Natural gas is going to predominate in new capacities. The nuclear sector

will probably not expand. Its contribution will depend on several factors: the Kyoto process, competitiveness, acceptance by the public, solving the waste problem and safety in the countries applying for membership.The contribution from renewables will depend on the political will to promote them and make them economically attractive.The liberalisation of the electricity and gas markets will certainly improve the efficiency of the system, but a drop in prices will provoke people to greater consumption.

6. 1. 3. Security of Gas Supply in the Single Gas Market

Liberalisation of the gas market, not only changes the market but also the role of government. The role of government will be to ensure that the market is working efficiently and giving true signals to guide the participants in interpreting and managing change while maintaining the appropriate level of security of supply. EU must to ensure there should be no distortions to competition in the energy market.[453]

No single player will necessarily maintain the overall responsibility for short- and longer-term security of gas supply as industry restructures, new entrants emerge and competition develops. In this new context, emergency procedures may need to be reviewed and formalised under the new circumstances also taking into account.[454]

6. 2. Short Term Security of Gas

Short-term security of gas supply includes the ability to maintain continuity of gas supply despite exceptional demand and difficult supply conditions including possible disruptions of gas supply whether of a technical, economic or political nature. At short-term, as there are more suppliers, more transparency and efficiency. However, while the development of liquid spot gas markets adds instruments to provide security of supply to cover interruptions of gas supplies at short-term, market reform also changes the well-established business environment that has supported security of supply and adds new challenges. With the parallel opening to competition of the gas and electricity markets, combined with the increasing use of gas in the power sector, the security of gas and electricity supply become intertwined. Where both sectors have been

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[453] Deborah Hargreaves. " *Brussels Challenges Gazprom Gas Supply Contracts*" **Financial Times,** 27. 3. 2001. p. 8.

[454] See, Article 24 of the Gas Directive in Relation to a Sudden Crisis in The Energy Market.

liberalised and liquid and deep marketplaces have developed, arbitrage can help to solve supply problems. Because it serves to move the gas and electricity to the highest value use of those fuels, which minimises the economic losses resulting from physical supply shortages. Moreover, if there is over-capacity in power generation, this may add more flexibility and switching possibilities to the gas sector. To ensure security of supply, such an entity developed a number of tools and mechanisms, such as supply diversification, gas storage, interruptible contracts. In order to share risks and allow financing of new supplies. There may be limited capacity in the short term congestion cannot be addressed by additional investment. Consequently, it is important that the existing capacity is allocated efficiently and that flexibility instruments are available e.g. interruption, linepack and storage.

Ensuring an appropriate harmonised, well defined and common approach to the security of gas supply system operation in EU Member States; ensuring operational system integrity maintaining system pressure, coping with surges in demand within the balancing, ensuring overall system balancing.[455]

- Capacity congestion management;
- Transparency in the definition and publication of storage,
- Trading and market arrangements including hubs and spot markets.

6. 3. Long-Term Security of Supply

Longer-term security of gas supply is the ability to ensure that future gas demand can be met by a combination of indigenous and imported gas supplies. This requires adequate investments in production, transmission infrastructure and supply diversity and clearly has a geopolitical dimension.

In an open market, price signals dictate behaviour both in the supply of a commodity and the maintenance of infrastructure. As long as prices are accurate, choices made by purchasers or investors will yield an efficient allocation of resources and corresponding supply security. There are adequate natural gas reserves, adequate alternative fuel sources and at least for the present time adequate switching capacity in Europe. And provided a sufficient degree of competition,

[455] European Commission . "*Enhancing European Union Energy Security and Integrity*" **"Odessa-Brody-Plock Oil Transportation Project** , Odessa, 27 May 2003, http://www.f-e-e.org/redirect.htm?http://www.f-e-e.org/cgi-bin/fee/cal/event.cgi?ActID=2166 (Download:6.12.2003)

fuel switching, market liquidity and transparency is achieved, producer market power can be avoided. When the natural-gas rush to the North Sea began in the Seventies, production companies wanted to tie customers into long-term contracts at set prices to justify their massive investments. These contracts, under which suppliers continued to pay for their gas even if they did not want it, have locked some of them into buying gas at a cost often well above the current market price.[456]

But long term take-or-pay contracts are still likely to be needed in a liberalised European gas market in order to under in large import projects. Their share may diminish over time as other financial risk management tools become available.Nevertheless, governments need to be watchful and prepared to support the market in mobilising new supplies, and to promote flexibility on the demand side through fuel switching and trade.[457]

There is therefore a need to ensure that investments will be made on time to allow for supplies and that adequate measures are in place in case of a supply crisis also taking into account the reduced number of upstream suppliers. It is often said that the capital investment and long-term helps to create strong bonds and promote stable relationships between nations. [458]

We can declare that regulators have a role in constructing this market through the establishment of common, clear market rules facilitating gas flows across the regions.In the long term, the existence of a true pan-European liberalised natural gas market has the potential to deliver a high degree of gas security of supply. Solving problems related to cross border trade, including gas quality interoperability and congestion management is an important regulatory task in this context.

6. 3. 1. The EU's Long-Term Supply Options

Long term security of gas supply is the ability for the future demand for gas to be met by a diversified combination of indigenous and imported gas supplies. The Commission in its recent

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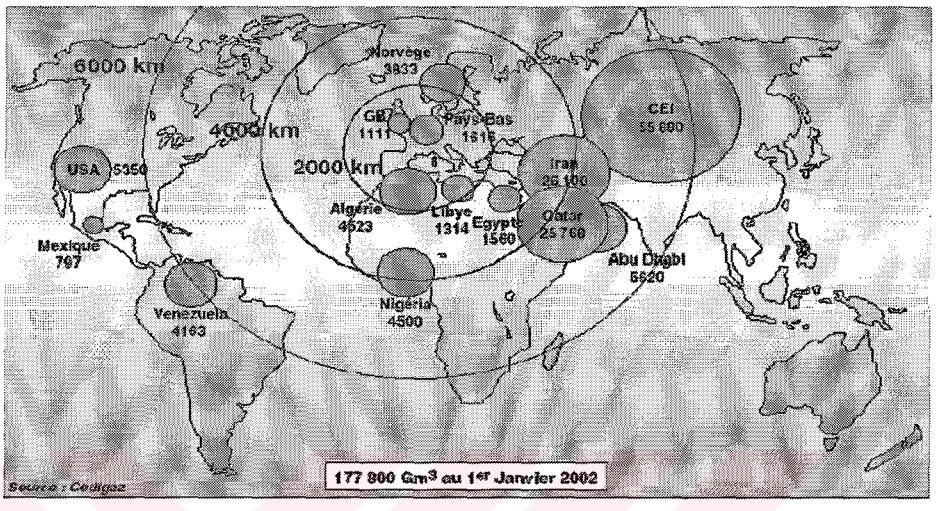
[456] Tim Jones. "*Passing on the Lessons of Bitter Experience*" **European Voice,** Volume 3, Issue 13, 03.04.1997, www.knoweurope.net/cgi7quickD/full.rec.?action:byid.&id002/0005282 (Download:14.01.2004)

[457] CEER. "Gas Security of Supply", **International Energy Agency Workshop,** Paris, 27 June 2003, p. 4.

[458] Thomas Victoria " *International Gas Focus*" **Pipe Line & Gas Industry,** June 2000, Volume 83, Issue 6, p. 19.

communication entitled, "Gas Supply and Prospects", has addressed this problem which may for convenience be divided into external relations and internal measures. [459]

Figure 35: Upstream: Europe Access to Proven Reserves in the World



Source: Patrice de Vivies. "*Regulation Dealing with Access to Supply in Dealing with Access to Supply in Liberalised Markets*", IEA **CRE** Paris, Friday 27 June 2003, p. 3-12.

The existing three main external suppliers, Norway, Russia and Algeria are expected to remain the most important external gas suppliers to Europe for the time horizon up to 2020. It is not unlikely that by 2020, Russia, Norway and Algeria may still cover about 90% of total EU gas imports. However, before 2020 it should be expected that gas imports from these countries will no longer only be made under contracts with the traditional state-controlled companies and entities (Gazprom, GFU and Sonatrach) but a wide range of producers including EU/Western oil and gas companies engaged in upstream gas exploration and production. The role of Russia and NIS are, in this respect, essential. In 1998, these three countries exported around 160 BCM to the EU. Their potential annual export capacity to Western Europe could well become as high as 350 BCM or even higher in the future.[460]

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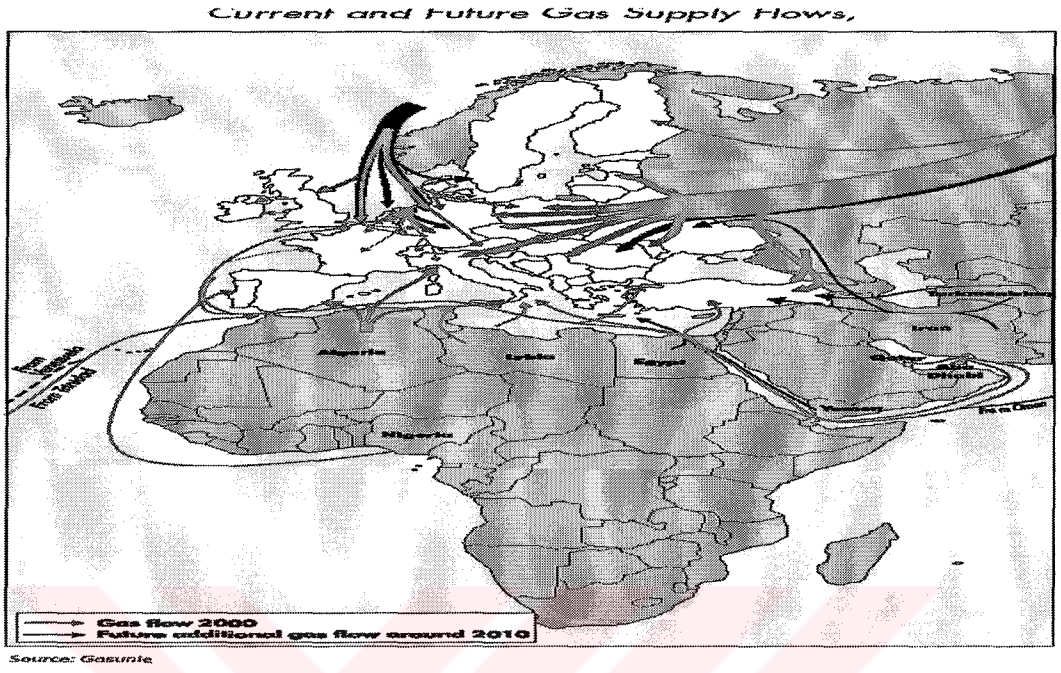
[459] See, Lambert, p.1-43 and DG XVII Head of Gas Unit See Energy in Europe No: 24 and 25, COM(95) 478 final, Council Directive 90/547/EEC. OJ L 313, 13.11.1990 Council Directive 90/377/EEC; OJ L 185, 17.07.1990.

[460] See, *Comission (1*999)571 Why a Communication on Security of EU Gas Supply? - Introduction and Background.

Map 2: Gas Supply Flows



Source: Gasunie Supply flows http://www.gasunie.org/gassupplyfolows_en/_%20handouts.pdf (Download: 12 01 2004)

6. 3. 2. Diversity and Security of Fuel Inputs

Competition is already leading to greater competition in technologies for more efficient or de-centralised energy production. improved transparency and public confidence, high level of security and efficient long-term waste management. The European Union is already contributing to address these problems and will keep on in the future. [461]

While gas supply diversity may seem relatively limited both within and outside the EU when considered on the basis of the number of producing countries, it is worth noting that in 1996, it took no less than 33 individual gas companies to produce around 94% of total West European gas production from a very large number of fields. Only the three largest of these companies produced between 10 and 15%. The remaining 6% was produced by an even larger number of very small producers. Similar situations already apply to various degrees to the

[461] Steve Roth. " *Opening up the Energy Market and Securing Energy Supply in Europe"* **The Sanderstolen Conference,** Tisleidalen, 8 February 2002, http://www.hri.org/news/europe/midex/2002/02-02-08.midex.html (Download:10.3.2004)

external gas producing countries and are expected to further develop. This illustrates the potential for supply side competition within as well as outside the EU. Policies aimed at stimulating economically viable domestic EU gas exploration and production activities should be encouraged and producer incentives should not in any way be inhibited by unreasonable constraints, barriers or excessive regulatory intervention.[462]

A liberalized Europe-wide gas market would be good for the private sector in general. New suppliers could enter the market, using new technology to give them an edge over existing suppliers. The gas directive is expected to reduce the power of state firms that dominate several continental countries' gas industries and of private companies with virtual monopolies in some market sectors. [463]

Diversification of supply should, as far as possible, be left to the market and the role of governments should primarily aim at providing stable and predictable frameworks and incentives favourable to investments taking into account the Community dimension to improve the diversity and flexibility of energy supplies. There are two complementary sides to this issue. First, we should aim to reduce our escalating dependence on imported oil and gas; second, we must increase the use of indigenous fuels.

A major challenge for energy policy is therefore to ensure security of supply. Diversification and flexibility of domestic and imported supplies should be encouraged in particular by promoting the development of renewable energy resources and by achieving closer integration of the energy markets. Degree of liberalization among import-dependent countries could be limited because of their wish to retain some form of centrally coordinated energy policy to ensure security and supply diversity.[464]

European energy firms and the European Commission to the develope and integrate the natural gas markets of Scandinavia, Russia and the Baltic States for linking Russian natural gas to central Europe.[465] For some countries, the market may not automatically deliver gas supply diversification. Though diversification and security of supply could acquire a commercial value in

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[462] See *COM* (99)571Why a Communication on security of EU gas supply? - Introduction and background
[463] (OGJ, June 16, 1997, Newsletter).
[464] Thomas Victoria " *New Gas Market Forces Strongly Affect Some European Countries*" **Pipe Line & Gas Industry,** Volume 83, Issue 5, May 2000, p. 41.
[465] Jeremy Beckman. " *Northern Gas Grid Under Review*" **Offshore,** Volume 57, Issue 8, August 1997, p. 18.

an open market, and therefore be offered by wholesale traders/suppliers, there is no guarantee at the outset that this will be maintained or increased, in particular when geographical and technical constraints exist, when transit or transport routes pose security risks, or the number of wholesale suppliers remains low. Supply diversification may, therefore, have to be dealt with by regulation/legislation in import dependent countries. This may be necessary only for a transitional period until sufficient wholesale competition sets in and brings enough diversification. Such regulation is perhaps best done at national level in order to take into account each country's specificities.

6. 3. 3. Security of Supply in an Enlarging EU

The EU accession candidates are well aware of the challenges facing their gas sectors and are preparing for these. Transition is underway both in terms of preparation of new regulatory frameworks; gas pricing reforms as well as restructuring of the industry.

Most CEECs are highly dependent on gas imports, particularly on Russian gas supplies. Compared with an average dependency on Russian gas of around 17% for the EU, the CEECs today depend on average for around two-thirds of their gas consumption on Russian gas. Security of gas supply in the CEECs has been enhanced in recent years by the construction of new storage facilities and through some diversification of gas supplies based on new physical interconnections between CEEC and EU Member States and between the CEECs themselves.

Central and Eastern Europe (CCEE), many of which should become EU members in the next few years. Excluding large international transit pipelines, it is estimated that CCEE countries will require at least 3 billion ECU of investment funding for transportation and storage projects over the next 15 years which around 100 million ECU for technical assistance.[466]

In a future enlarged EU, import dependency in general, as well as in relation to Russia, is therefore expected to be at a higher aggregate level than at present. The overall gas import dependency of, for example, an EU25 would be around 72% by 2020 while the dependency on Russian gas would be around one third. In this situation, the level of network integration will need

[466] BY P. Lambert. " *The European Union and The Gas Sector"* **Gas Expo Conference,** Amsterdam, *2.1. 1995,* pp. 1-43.

to develop further to ensure adequate co-operation, diversity of supply portfolios and the most efficient utilisation of security of supply tools.[467]

In addition, gas-pricing reforms in the CEECs, which will better reflect the full supply costs and the real value of gas, will have a sound demand side effect on gas consumption, which will gradually contribute positively to gas security. In most CEECs, issues related to the structure and level of gas pricing hamper investments in supply diversity and gas security. A solution to these issues therefore seems to be a pre-condition for significantly diversifying gas supplies and improving security of gas supply in the CEECs.[468]

It goes beyond a compromise reached last March in Barcelona by EU leaders, who agreed to open up commercial markets in 2004 but put off the more sensitive household sector in the face of French and German resistance.[469]

Most central and eastern European countries are looking to investors from the West to provide the funding needed to end their reliance on economically unviable and polluting energy sources. "If you look at the first wave of countries, the Czech Republic and Poland face the biggest problems with rather antiquated energy systems.[470]

The relative contribution of these core gas suppliers for the EU is however projected to change in the next thirty years. Starting from 28% in 2000, the share of the CIS is expected to increase steadily to reach 54% of gas requirements in Western Europe and CEEC. This increase translates into a tripling of traded volumes with the CIS during the projection period. The share of gas supplies from Africa and Middle East would reach a peak of 22% in 2020 and then decrease to 15% of the European gas demand in 2030. This decrease is concerning mainly supplies from the Middle East, which are exported mostly towards Asia after 2020. On the contrary, the share of gas imports from Africa mainly Algeria and Nigeria is expected to remain stable up to 2030, ranging from 10 to 15% of Europe's gas requirements. Twice the volumes of gas currently imported from Africa and Middle East would be exported to Europe.

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[467] See, *Comission(1999)*571Why a Communication on Security of EU Gas Supply? - Introduction and Background.

[468] ibid

[469] Karen Carstens. *"Single Market on Way for Gas and Electricity"* **European Voice**, Volume 8, Issue 43, 28.11.2002, p .23.

[470] Renee Cordes. *"Energy Sector Faces Race to Catch up"* **European Voice**, 15. 06. 2000 www. knoweurope. net/cgi7quickD/full.rec.?action:byid.&id002/0009796 (Download: 21.12.2003)

As far as Europe is concerned, pipeline gas deliveries from the CIS would represent 75% of external supplies in 2030, imports by pipeline from North Africa and the Middle East 20% (via among others the pipelines from North Africa under the Mediterranean sea and from Iran via Turkey), the remaining 5% corresponding to LNG deliveries mainly from Nigeria.[471] The suppliers are concerned that, in the event of such sales, they will not be able to share in any of the profits.[472]

6. 3. 4. IEA

The IEA is a club of like- minded nations, acting together to advance their common objectives in energy policy. It is a global institution, with 24 members from North America, Europe and the Asia-Pacific. Its members have endowed the Agency with certain decision-making powers. Beyond that, it is a forum for co- operation in energy technology, for sharing experiences on the full range of energy policy issues and for pursuing analytical work in relation to international energy developments.[473]

The IEA was founded after the oil shock in 1974. Its primary aim then was to improve the oil supply security of its members. The first step was to establish an emergency response system to provide for a more effective response to any future oil supply disruption. Work then turned to the longer term task of reducing dependence on oil, through energy diversification and improved energy efficiency. All this went under the general heading of energy security. In the past few years. We have come to understand energy security in a wider sense. Ensuring that energy exploitation and use is environmentally acceptable is now a vital element in long term security of supply. And, in a globalised economy, there will be no energy security without effective interaction between all the major energy consumers and producers, both members and non- members of the IEA.

The image of the IEA in confrontation with OPEC belongs to a distant past. Today, dialogue between consumers and producers is routine; and, as a result, there exists a much better understanding of mutual dependence.

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[471] The WETO. **World energy outlook 2000**, Paris: 2001, p. 95.

472 David .Butter. "*What a Gas: Finding Ways to Fill Europe's Supply Gap*" **European Voice,** Volume 9, Issue 39, 20. 11. 2003, p. 26.

[473] IEA. http://www.iea.org/dbtw-wpd/Textbase/about/index.htm. (Download:23.2.2004)

The IEA also maintains an active involvement with a number of Latin-American countries and with regional organisations.The great strength of the IEA lies in its ability to analyse important national and international energy problems in a multi-disciplinary, forward-looking way.

6. 3. 5. European Energy Charter

Charter Treaty signed in Lisbon on 17 December 1994.[474] The Energy Charter illustrates how multilateral organizations can assist the transition process in Eastern Europe not only through financial support, but also by providing policy advice. The charter's work, though it may not grab many headlines, is nonetheless an important component in the efforts of governments to ensure energy security throughout the wider Europe.[475] Finally, the European Energy Charter is designed to promote cooperation and reciprocal market access with the countries of central and Eastern Europe and the former Soviet. In effect, the Charter is a list of good intentions. It has three titles: objectives, implementation and specific agreements. Its aims are summed up in the first title: 'The signatories are desirous of improving security of energy supply and of maximising the efficiency of production, conversion, transport, distribution and use of energy, to enhance safety and to minimise environmental problems, on an acceptable economic basis. In a spirit of global cooperation, they undertake to promote throughout Europe, a better functioning global market, in both cases based on the principle of non-discrimination and on market-oriented price formation, taking account of state sovereignty over energy resources and of environmental concerns. They are determined to create a climate favourable to the operation of enterprises and to the flow of investments and technologies by implementing market principles in the field of energy.

The charter then sets out three objectives: development of trade in energy, cooperation in the energy field, and energy efficiency and environment protection. These objectives are to be implemented through: 'Access to and development of energy resources; access to markets; liberalisation of trade in energy; promotion and protection of investments; technical specifications

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[474] See, Council Decision 98/537, OJ L 252, 12.09.1998 and Council Decision 2001/595, OJ L 209, 02.08.2001. 1276 OJ L 380, 31.12.1994, OJ L

[475] Ria. Kemper. *"Cooperation the Way to Achieve Energy Security"* **European Voice,** Volume 8, Issue.31, 5. 9. 2002, p.28

and rules on safety; research, technological development, innovation and dissemination; efficient use of energy and environmental protection; and education and training.[476]

The aim of the Treaty is to establish a legal framework in order to promote long-term cooperation in the energy field in accordance with the principles of the European Energy Charter. The Treaty's most important provisions concern investment protection, trade in energy materials and products, transit and dispute settlement.[477] The participants agree to negotiate specific agreements to broaden their cooperation. These include: horizontal and organisational issues, energy efficiency, oil and gas exploration/production, modernisation of power stations, transmission networks, the coal cycle, the nuclear fuel cycle, development of renewables, transfer of technology and cooperation after a major accident.

There is no doubt that the signing of the European Energy Charter was a singular coup for the Dutch Presidency and Prime Minister Lubbers. However, with political turmoil still rife in the Soviet Union and in other Eastern European states, the Charter could do little to provide the much-desired investment security for Western firms. Translating the intentions of the Charter into a legally binding text was an essential next step but it proved immensely more complex and time-consuming than was ever envisaged.

With regard to investments made, the Contracting Parties must encourage and create stable, favourable and transparent conditions for foreign investors and apply to them the most favoured nation principle or accord them the treatment they accord to their own investors, whichever is the most favourable. Where pre-investments are concerned, however, the principle of national treatment will be applied in two stages. In accordance with the Treaty, it will be applied initially according to the "best endeavours" principle. At a later stage, and subject to conditions to be set out in an additional treaty currently under negotiation, national treatment will be accorded on a legally binding basis for investments.[478]

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[476] See, Council Decision of 13 July 2001 on the conclusion by the European Community of the Amendment to the trade-related provisions of the Energy Charter Treaty *Official Journal L 209 , 02/08/2001 P. 0032 - 0032* **32001D0595** 2001/595/EC:

[477] Energy Charter. http://www.encharter.org/index.jsp (Download:3.12.2003) p. 1

[478] ibid

6. 3. 6. Security of Supply: Northern Dimension

Impacted by market and infrastructure development, European Union policy and Russian moves, the North Sea natural gas industry is set for profound changes. This will lead to a more integrated market and affect all North Sea producers. Most importantly, the United Kingdom's position as a self-sufficient "island" in natural gas is history. Since the ending of Norwegian Frigg gas exports due to field depletion, the UK has not imported natural gas. The Interconnector gas pipeline between the UK and Belgium, which opened in 1998, was essentially constructed to export gas to the Continent, but it can be reversed to import at a lower capacity.

The Northern Dimension represents an essential frontier for security of supply. Transit in this region, especially of oil products and gas, will be increasingly important in view of the expected rise in European Union consumption. The Union has, moreover, financed interconnections projects from the budget of the trans-European networks.

European companies are studying a project worth several hundred million dollars that would include construction of a pipeline to move Norwegian natural gas to the German cities of Emden and Rostock. No decision on the feasibility of the pipeline is expected.[479]

The diversification of gas outlets nevertheless creates some euphoria in Norway's oil and gas industry. Historically, Norwegian gas exports were essentially confined to a small number of Continental buyers that had strong bargaining power through local monopolies. [480]

The dialogue between Norway and the EU will reflect the interests of both energy producers and consumers. They considered that a strengthened dialogue between Norway and the European Union is of great mutual interest and must therefore continue on an annual basis on issues of mutual interest.[481]

Norway is physically and commercially fully integrated into the EU gas market and through the EEA agreement is also politically committed to and part of the internal market and that in practical terms it may therefore be considered comparable with domestic EU production. If the already contracted imports from Norway instead of being considered as extra-Community

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[479] European Natural Gas Pipeline Mulled. **Pipeline & Gas Journal**, Volume 226, Issue 8, August 1999, p. 10
[480] World Oil, Vol. 222 Issue 4, April 2001, p. 42.
[481] Comission. http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action. gettxt=gt&doc=SPEECH/03/147| RAPID &lg =EN (Download: 02. 04. 2004)

imports were considered as domestic EEA gas production, the import dependencies for the Security of supply means both the continued availability of energy resources and security of provision to customers. There is no scarcity of conventional energy sources in the world, but the European Union is getting more and more dependent on imports, to the tune of 70% by 2020. Maintaining security of supply will continue to be a key challenge for the internal market. Over the next 20 years, in the EU, we need to build or renovate as power stations as we have in service today. Around 600 GW, that means 750 large power stations. Investment in new transmission electrical lines within Europe is also essential. [482]

6. 3. 6. 1. The Role of Russia in the EU Energy Policy

The opening of the EU energy market will bring benefits to its neighbouring countries and in particular Russia. objective is the progressive creation of an integrated pan-European internal market, not a market limited to the Member States of the EU. A wider European internal market, properly implemented, will lead to increased competition and lower prices, will permit increased environmental protection over a wider area, and will enhance security of supply throughout Europe. [483]

6. 3. 6. 2. Why Such a Partnership?

Aside from nuclear weapons, oil and gas are Russia's greatest strategic assets. It has the world's third largest oil reserves, while in natural gas it is unequalled.[484] Russia and the European Union are natural partners in the energy sector. Some figures illustrate their interdependence in this field. Russian energy exports account, in value, for some 45% of exports to the EU. 53% of Russian oil exports (crude and products) of 181 million tonnes of oil equivalent (toe) were to the EU in 1999. Within 20 years, Russia could be supplying up to 40 of the EU's gas needs.[485]

Some 63% (130 billion cubic metres (Bcm)) of Russia's natural gas exports of 205 Bcm were delivered to European countries in the year 2000, with contractual requirements to

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[482] Commission: http://europa. eu.int/rapid/start/cgi/ guesten.ksh?p_action. gettxt=gt&doc= SPEECH /03/536 |RAPID&lg=EN (Download:15 1.2004)

[483] Claude Mandil. "Europe in the Global Energy System" **Challenges for Energy Policy – Corporate Strategies,** Cologne, 23 September 2003, p. 4.

[484] Fiona Hill. " *A land too Cold for a Free Market in Energy"* **Financial Times** ,17. 10. 2003, p. 21.

[485] Ria Kemper. " *Powering up EU-Russia energy links*" **European Voice**, Volume 7, Isue 20, 17. 5. 2001, p. 21.

increase deliveries to around 200 Bcm by the year 2008. Approximately 56% (73 Bcm) of the natural gas exported to Europe in 2000 was delivered to the EU. The EU and Russia have a mutual interest in enhancing the overall energy security of the continent.[486]

6. 3. 6. 3. What are the Objectives of the Partnership?

The overall objective of the energy partnership is to improve energy relations, while ensuring that the policies of opening and integrating energy markets are pursued. The energy partnership will cover oil, gas and electricityit is clear that the European markets of electricity and gas, which are in full change, will generate new commercial opportunities for Russian companies. Close co-operation at all levels between the Federation of Russia and the EU allowed a better reciprocal understanding of the issues and objectives at stake. The EU-Russia energy dialogue has been instrumental in this respect.[487]

Through the energy partnership, the EU wishes Russia to take concrete commitments in terms of fiscal stability, improvement of the production and protection of investment. It also aims to improve the legal framework in which European firms operate and to favour the creation of a fast track settlement procedure in Russian law.Russia aims to accelerate the reforms of its energy monopolies, to attract investments to increase its oil and gas exports by reorienting its energy production and consumption systems and to improve energy efficiency[488] A wider European internal market, properly implemented, will lead to increased competition and lower prices, will permit increased environmental protection over a wider area, and will enhance security of supply throughout Europe. [489]

Russia has been a truly reliable supplier of high quality gas., Russian holds a market share of 18% in Europe, a share which could reach 30% in the decades to come. Within the next 30 years, consumption is likely to increase by 200 billion m^3, which would represent a growth of

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[486] See, The Green Paper of the European Commission « Towards a European Strategy for the Security of Energy Supply » and the Energy Strategy of the Russian Federation for 2020.

[487] European Commission. *"A Key Element of our Energy Policy : The EU - Russia at the UK"*-**Russia Energy Conference,** London , 26 June 2003, p. 1-5.http://www.f-e-e.org/redirect.htm?http://www.f-e-e.org/cgi-bin/fee/cal/event.cgi?ActID=2237

[488] Sixth EU-Russia Summit (30th October 2000, Paris)

[489] Loyola de Palacio."a Key Element of our Energy Policy UK-Russia" **EU-Russia Dialogue Energy Conference** London, 26th June 2003 Commission Press Release DN:IP/03/327.

50%.[490].While west finds new investment oppurtinities and Russia secures its enormous fuel trade and capital inflow,central Europe might in same ways appear to be a comperative loser.[491]

The problem is there are no spot markets, this does not only apply to European companies. Russian suppliers, which have traditionally focused on long-term contracts, could increasingly see those spot-market as a promising new market opportunities. The statute of destination clauses, which, under Community law, are illegal, and long-term contracts, the existence of which is not challenged. Considerable progress is being made in the context of the EU-Russia energy dialogue in finding mutually acceptable solutions to destination clauses. Russia must have equitable and non discriminatory access to the European natural gas market.[492]

The gas market dominated by Gazprom through production and distribution, or at the very least allowing third-party gas producers in Russia access to the pipeline and the right to export their gas. Gazprom continually pushes the Russian government for increases in domestic tariffs, but critics argue that so long as it remains unliberalised, with tight control over domestic gas production and distribution and with a monopoly on transport and export sales, the price increases will simply add to its inefficiency.[493]Precisely these issues will to a large extent determine the success of the restructuring process. [494]. Challenging Gazprom is politically sensitive, as Russia has been encouraged to increase the supply of gas to the EU. Russia supplies of the EU's gas needs.[495]

6. 4. Long-Term System Reliability Need Investments

The EUs long-term gas security challenge is mainly related to the continued ability to ensure, remunerate and finance adequate investments in gas supply infrastructure which in turn depends on the ability of the market to pay a rewarding gas price to cover the supply costs related to bringing new supplies from increasingly remote areas to the European gas market. Security of

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[490] Ibid.

[491] Mark Turner. "*Energy Sector Set Own Agenda*" **European Voice**, Volume 2, Issue 43, 21. 11. 1996, p. 2.

492 Loyola de Palacio. "a Key Element of our Energy Policy UK-Russia" **EU-Russia Dialogue Energy Conference** London, 26th June 2003 Commission Press Release DNIP/03/327.

[493] Andrew Jack. *" EU Ties Russian Gas Price with WTO Entry Bid"* **Financial Times,** 14. 3. 2003, p. 10

[494] Loyola de Palacio Sets out the Conditions for Successful Gas and Electricity Liberalisation 30/01/2001 Commission Press Release_DN: IP/01/132.

[495] Deborah Hargreaves. "Brussels Challenges Gazprom Gas Supply Contracts" **Financial Times,** 27. 3. 01. p. 8.

supply for Europe means market security for the gas producer,The EU directive is based on the lowest comon denominator;it doesnot go far enough.[496]

According to a European gas industry estimate, investments in the order of US$ 100-200 billion will be required in the overall supply infrastructure to meet Europe's increasing gas demand over the next two decades.

In the long-term there is a need for appropriate infrastructure investment concerning peak and volume requirements and appropriate measures to deal with sudden widespread supply disruptions that could occur under emergency conditions. A number of factors will influence the equation of how much investment will be made in new gas supply infrastructure and how much additional gas is likely to reach European markets. These factors include i) the general level and trend in energy prices and taxes; ii) technical, economic and political risks and, in function thereof, required rates of return; iii) technology and efficiency drivers reducing unit production and transportation costs; iv) strategies of existing and future new market players, v) project organisation and financial feasibility and vi) longer-term environment policy constraints. [497]

The development of new gas supplies and the infrastructure to deliver the commodity to the market will require substantial investment. Regulatory uncertainty of the sector is perceived as an additional risk by investors, as expressed by the downgrading of several energy companies in good financial health, making financing of new investment more difficult. With market liberalisation, the responsibility for security of supply has to be defined and shared between all players involved governments, producers, suppliers, traders, TSOs, regulators, customers.Alternatively, residential and small commercial and industrial users may need some special protection against interruption as security of supply cannot be customised for these customers. Governments should define theadequate level for captive customers.[498]

In the new market, investment in generation is governed by market rules. In this context, prices signal the relative scarcity of generation capacity, and investment is driven by prices.This

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[496] Maria Kielmas. *" Progress towards EU Single Market Stalled by Dominant National Players"* **European Voice**, Volume 7, Issue 34, 20 .9. 2001, p. 22

[497] ibid.

[498] IEA. *"New Dimensions of Gas Security"* **Security of Gas Supply Meeting of the Governing Board at Ministerial Level,** Paris , 28-29 April 2003, p. 2

market process should result in adequate investment levels and, in particular, eliminate the incentives to over invest that arise in a regulated environment. However, it is sometimes suggested that competition may have a negative impact on investment in generation assets.

First, there is the argument that competition may be "too effective", leading to unsustainably low prices that may, in turn, temporarily discourage investment and reduce security of supply. However, the real problem has often been the opposite: insufficient rivalry rather than cut-throat competition.

Second, it has been argued that investment may follow a cyclical pattern if investors are myopic, but investors can be expected to take into consideration returns over the entire life of the investment.Third, there are concerns that under competition there may be a shortage of investments in peak load capacity, because it will tend to be remunerated randomly and infrequently in a competitive market.

Even if such concerns were relevant, there are a number of elements in the market that may compensate for any temporary imbalances, thus suggesting that investment in generation capacity should not be an issue under competition. The development of Information Technology increasingly allows demand to be responsive to price changes without ultimately affecting reliability; and the shortening of lead and construction times for some generation technologies means that supply can react relatively quickly to maintain reliability.

Adequate investment in transmission and distribution is also essential to sustain reliability. Investment can be open to any interested parties or, alternatively, responsibility for investment may lie with a single transmission company. In both cases, transmission prices play a key role in guiding investment decisions. Cost reflective prices can provide adequate signals for investment. However, transmission networks have some special characteristics that may result in investment distortions. There is a broad consensus that governments (or the appropriate regulated companies) should retain at least a residual role in investment in electricity transmission, including monitoring investment developments.This is in addition to the ongoing role of governments in providing an adequate regulatory framework for investment.[499]

[499] IEA. Elecricity Regulation, Paris: 2003, p. 43.

6. 4. 1. Future Prospects for Europe's Energy Supply

Flexibility elements in Continental European long-term take-or-pay contracts include price and volume re-openers and price indexation (e.g. spot gas price indexation). Such provisions should enable gas companies to commit themselves also in the future over the long-term. In future prospects for Europe's energy supply two things stand out.

First, that there are inherent weaknesses in today's energy supply system which render it unsustainable .for example of growing demand for fossil fuels. This is not only contributing to environmental damage precisely at a time when we committed ourselves under the Kyoto Protocol. It also threatens to make Europe, in the longer term, increasingly dependent on supplies from distant regions.

The second point is European Community currently has at its disposal the necessary policy capacities and competencies to manage the risks which our energy situation faces. Europe needs a more pro-active, co-ordinated and, above all, long-term strategy for energy. Europe must aim for a common European approach for sustainable and secure energy supplies. An approach which respects social needs, fulfils environmental demands and sustains economic growth, international competitiveness and global stability.[500]

The future supply gap represents an important opportunity for new players to procure gas and enter the competitive market. Demand and supply should, therefore, in any case match each other at some point. The European gas industry is in a superior position to develop the supply of gas in an environmentally favorable way.[501]

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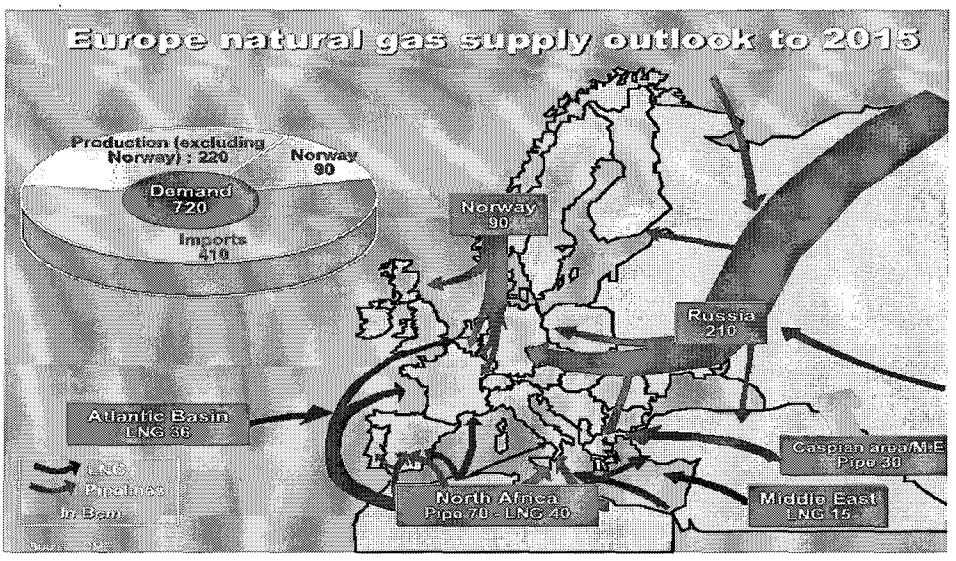
[500] Steve Roth ,**Opening up the Energy Market and Securing Energy Supply in Europe,** The Sanderstolen Conference Tisleidalen, 8 February 2002, http://www.hri.org/news/europe/midex/2002/02-02-08.midex.html (Download:3.4.2003)

[501] Bergmann Burckhard. " *Supply Prospects and Network Integration in The European Natural Gas Sector"* **OPEC Review: Energy Economics & Related Issues**, Volume 22, Issue 2. June 1998, p.162.

Figure 36: Europe Natural Gas Supply Outlook to 2015



Source: Patrice de Vivies. "*Regulation Dealing With Access to Supply in Dealing With Access to Supply in Liberalised Markets*", **IEA CRE,** Paris, Friday 27 June 2003, p. 3-14

- Europe external dependency will increase due to the growth in demand.
- Imports from traditional suppliers (Russia…) will increase but also LNG imports
- Large investments are therefore needed upstream and midstream (transit lines)
- New LNG facilities are already planned (Spain, France, UK…) or under construction
- Long term takes or pay contracts will remain important but hubs will develop, allowing for more flexibility in the gas market and creating prices referential for gas contracts
- Security of supply concerns will increasingly become a European issue

6. 4. 2. Role of Commission in Security of Supply

The crisis at the end of 1973 brutally highlighted the Community's energy problem and the soaring prices resulting from it aggravated the situation. The problem was structural and not short term. By 1973, in fact, the Community was 63% dependent on third countries for energy supplies. The energy crisis clearly illustrated the extent to which the economies of the Community countries and even their political decision-making independence could be jeopardised by a group of countries that held in their grip the bulk of energy supply.

The most important measure is the strategic storage of petroleum products. A Council Directive obliges the Member States to maintain a minimum stock level of 90 days' consumption for crude oil and/or petroleum products, as a divider against the effects of accidental or deliberate interruption in supplies and against the economic and political influence enjoyed by suppliers[502]. Another measure is a Council Decision setting a Community target for the reduction of primary energy consumption in the event of supply difficulties of crude oil and petroleum products in order to ensure that these difficulties are spread fairly among all consumers.[503]

For objective of the completion of the internal market, a Directive on the conditions for granting and using authorisations for oil and gas prospecting, exploration and extraction is designed to ensure non-discriminatory access to and pursuit of these activities by Community companies in non-member countries under conditions which encourage greater competition in this sector.[504] However, Member States have sovereign rights over oil and gas resources on their territories. They therefore retain the right to determine the areas within their territory to be made available for oil and gas prospecting, exploration and production.

First a Community procedure for information and consultation on crude-oil supply costs and the consumer prices of petroleum products was set up in 1976 and simplified in 1999 via the publication of a "weekly bulletin" by the Commission.[505]The Council adopted in 1979 a Regulation introducing the registration of crude oil imports and petroleum products in the Community.[506] On the basis of this Regulation and one specifying the rules under which registration of crude oil imports into the Community is carried out[507], the Member States notify the Commission of information revealing the terms at which imports have taken place. This information system was improved in the 1980s in the framework of the International Energy Agency, and it contributes to the transparency of the Community's oil market.

In October 1995, the European Commission adopted a Communication entitled "European Community Gas Supply and Prospects which addressed EU gas demand and supply issues and

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[502] See, Directive 98/93, OJ L 358, 31.12.1998.
[503] See, Decision 77/706, OJ L 292, 16.11.1977.
[504] See, Directive 94/22, OJ L 164, 30.06.1994.
[505] See, Decision 1999/2280, OJ L 110, 28.04.1999 and Decision 1999/566, OJ L 216, 14.08.1999.
[506] See, Regulation 1893/79, OJ L 220, 30.08.1979 and Regulation 1370/90, OJ L 133, 24.05.1990.
[507] See, Regulation 2592/79, OJ L 297, 24.11.1979 and Regulation 1370/90, OJ L 133, 24.05.1990.

made an initial assessment of EU gas security. [508]In its conclusions adopted on 7 May 1996 the Energy Council welcomed the Commission's Communication and requested the Commission to examine in depth the various issues raised in the Communication. The Commission was requested to report back to the Council and, if necessary, to make proposals to strengthen EU gas security. [509] The European Parliament as well as the Economic and Social Committee and the Committee of the Regions adopted resolutions on the Commission's Communication and also encouraged the Commission to deepen the analysis.[510] The present Communication represents the Commission's response to the May 1996 Energy Council's call for an in-depth examination of EU gas security. [511]

Then, on 30 May 2000, the Council invited the Commission to monitor and analyse on an ongoing basis, in close cooperation with the Member State and the European gas industry, developments in the security of EU gas supply in terms of both internal short-term and operational and external longer-term and strategic security aspects, and to agree together with the Member States in conformity with the principle of subsidiarity on the most appropriate ways of ensuring transparency and regular exchange of data and relevant information between the different market players, including the gas industry, and the authorities.

In Green Paper "Towards a European strategy for the security of energy supply", the European Commission outlines a strategy to keep the security of EU energy supply to the highest level possible and makes proposals in terms of potential safeguards. The security of gas supply is of course one important element in this strategy, given the expected expansion of natural gas imports in the European energy markets in the long term. aimed at counteracting such dependence by developing alternative sources of energy in Europe. The Green Paper also sought to tackle the challenges posed by climate change and the liberalisation of Europe's energy markets.[512] The Green Paper drew attention to the structural weaknesses of the European Union's energy supply and to its growing vulnerability. According to Green paper, imports cover 50% of the Union's total energy requirements today, but this could rise to 70% by 2030, if nothing is done by then, and to 90% in the case of oil. A compromise reached last March in Barcelona by EU leaders, who

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[508] *Comission(1995)478 final (18.10.1995).*
[509] *.See, Council (*Energy - *Brussels 07-05-1996) - Nr. 6803/96 (Presse 123). 1921*
[510] See,*PE 217.775/fin (9 July 1996).*
[511] See, *COM* (99)571. Why a Communication on security of EU gas supply? - Introduction and background.
[512] See.Green Paper [COM(2000)769 final] on the 29 November 2000 on the security of Europe's energy supply.

agreed to open up commercial markets in 2004 but put off the more sensitive household sector in the face of French and German resistance.[513]

6. 4. 3. Convergence of the Gas and Electricity Markets and its Impact on Gas Security

It is so obvious that convergence of European gas and electricity markets and companies is increasing. This process is driven by the parallel opening up of both markets; the growing use of gas for power generation and the increased use of electricity price indexation of gas for power generation. Energy sector mergers and other forms of alliances as well as the emergence of companies offering a wider range of energy supply services further push this process. It is fact that power generation was the main driver behind growth in Italy (up 9.1%), Belgium (up 7%), the UK (up 5.4%) and Denmark (up 4.3%).[514]

The growth in the demand for natural gas will affect all sectors, but most particularly that of electricity production.[515]While the increase in dependency on gas in the electricity sector, combined with the general increase in dependency on external gas suppliers, might be seen as a double risk for the electricity sector which can be seen as a legitimate cause of concern, the EU gas and electricity industries generally agree that such an increase in the use of gas for power generation is manageable from a security of supply point of view. Secure gas supplies clearly are a prerequisite in the first place for any significant development of gas-fired power generation which would be unlikely to develop to its full potential if such conditions did not prevail.[516]

The commercial and technical interdependence between the gas and electricity sectors may in fact offer new opportunities with regard to optimising the integrated supply capacities and operational performance of the two network-based sectors in combination. This may offer more cost-effective solutions to energy supply and abundant excess capacity in meeting the combined

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[513] Karen Carstens. " *Single Market on Way for Gas and Electricity"* **European Voice,** Volume 8, Issue 43, 28. 11. 2002, p. 23.

[514] Thomas Victoria. " *New Gas Market Forces Strongly Affect Some European Countries"* **Pipe Line & Gas Industry,** Volume 83, Issue 5, May 2000, p. 41.

[515]Jeff Share." *Natural Gas Supplies Concern European Energy Executives"* **Pipeline & Gas Journal**, Volume 227, Issue 10, October 2000, p. 81.

[516] Wendy Weirauch. " *Natural Gas Fastest Growing Fuel, as World Energy Demand Increases"* **Hydrocarbon Processing,** Volume 75, Issue 11, November 1996, p. 27.

peak-day demand of the two sectors combined may be reduced. [517] Natural gas will soon dominate Europe's electricity market as the industry is opened to competition. It is estimated that Europe will eventually rely on natural gas for 40 percent of its power generation, up from less than 15 percent today.[518]

6. 4. 4. The Supply Response from Indigenous Resources

The Single Market's requirement for non-discrimination between Community-based companies in respect of the allocation of concessions could mean the introduction of greater competition in the bidding process for gas exploration and exploitation rights, and thus possibly enhance the level of activities required from the successful companies. Even so, this could not guarantee the development of discovered reserves as national governments could still exercise their right to deny or delay exploitation on grounds of national strategic or economic considerations. [519]

The European Community is aiming at providing 12% of its Primary Energy Supply from Renewable Energies by 2010. This implies that fossil fuels should continue supplying the greater part of European energy. Consequently, from the supply angle, EU position is that all options should be kept open.

It is important that efforts should be made to cut down the carbon content of energy mix. Regarding electricity and steam, the means to achieving this reduction are either to switch from coal to gas or to increase the thermal output of fossil fuels conversion, including coal. the coal option open because of the abundance and diversity of resources, because it is easily available and cost-competitive coal can contribute to security of supply while also considering climate change, provided advanced clean coal technology is sufficiently developed and implemented.

The contribution of solid fuels to European energy supply will increase with the enlargement process and carry increasingly on electricity production. Both indigenous and

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[517] See, P. Carpentier and A. Tagheghi. **Commercial Opportunities in European Gas Markets,** London: Isherwood Production Ltd, 2000

[518] New European Energy Market Centered on Natural Gas. **Pipeline & Gas Journal,** Volume 226, Issue 9, September 1999, p. 20.

[519] Odell, p. 41.

imported solid fuels should contribute to the variety of fuel mixes for competitive and environment-friendly power generation.

Natural gas, this is considered the most cost-effective means of meeting both the energy and environmental goals. Separation of gas and oil prices through gas-to-gas competition should be fostered to develop a market on a healthier basis.thus in the policy it should be included that current oil market developments make it urgent for Europe better to co-ordinate and to develop an overall strategy. The broad outlines for common European action are as follows:

- more open relations with hydrocarbon-producing countries with special emphasis on Russia and the countries in the Caspian area
- improvement of market mechanisms
- greater consistency of national policies and strengthening of a common approach
- greater diversity in more economic energy policies
- Aiming at an alternative common transport policy.

Renewable sources should be pushed and regulatory obligations or tax incentives are imagined. Voluntary agreement with the electricity industry could also be affected by in order to reach the figure of renewables accounting by 2010 for a 22% share of electricity consumption. New biofuels package is also a step towards the target substituting 20% of traditional fuels by alternative fuels in the road transport sector by 2020. [520]

Nuclear options should be examined in relation to its contribution to security of supply and reduction in CO_2 emissions. Nuclear energy has made it possible to avoid 800 million tonnes of emissions per annum and provides 35% of all electricity produced in the EU. But Nuclear energy challenge to energy security is the decision by some Member States to phase-out nuclear power. [521]

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[520] Loyola de Palacio. "*The EU Energy Policy in transition: transforming objectives into market realities*" ***European*** **Society**, London School of Economics, London, 22 November 2001,p.2 Commission Press Release_DN:IP/01/568, http://europa.eu.int/rapid/start/cgi/ guesten.ksh?p _action.gettxt= gt&doc= SPEECH /01/568|0 |RAPID& lg=EN&display= (Download:3.12.2003) p. 1

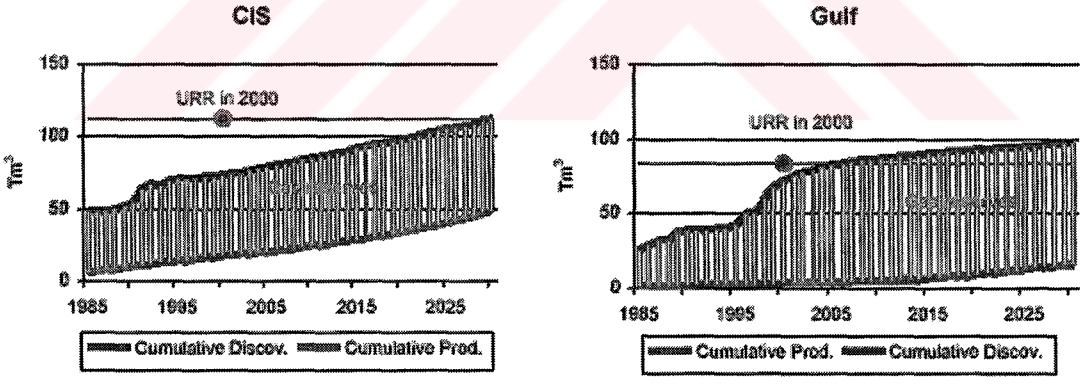
[521] Mrs Loyola de Palacio. " *Future European Energy Policy and Security of Supply Issues*" **Coaltrans Conference** Madrid, 23 October 2000, p. 1. Commission Press Release DN:IP/00/398

The European Parliament as well as the Economic and Social Committee and the Committee of the Regions adopted resolutions[522] on the Commission's Communication and also encouraged the Commission to deepen the analysis.The present Communication represents the Commission's response to the May 1996 Energy Council's call for an in-depth examination of EU gas security. [523]

6. 4. 5. Gas Resources in the CIS and the Gulf

The development of gas production of main region illustrates not only the exceptional increase in gas production but also the important changes in the regional allocation of total gas supply over time. About 68% of existing gas reserves is located in the CIS and in the Gulf region. Moreover, gas reserves are expected to grow in both areas over the projection period (+14%) so that their share in world reserves will reach 72% in 2030. Total gas discoveries are projected to reach similar levels at the end of the projection periods; on the contrary, cumulative production in the Gulf region will be less than half the CIS level in 2030, reflecting disparities in supply costs to final markets. [524]

Figure 37: Gas Resources in the CIS and the Gulf



Source: Directorate-General for Research Energy. **World gas resources** 2003 Figure 2.21

According to WETO scope of study the CIS is projected to cover about one third of the cumulative gas demand over the 2000-2030 periods, compared to slightly more than 10% for the

[522] See, PE 217.775/fin (3) .(9 July 1996).
[523] See,*Comissin* (1999)571.Why a Communication on Security of EU Gas Supply? Introduction and Background
[524] See, WETO. **World Energy, Technology and Climate Policy Outlook 2030**, Luxembourg, 2003

Gulf region. Similarly to oil, this result raises questions in terms of probability of occurrence and geopolitical feasibility.

6. 4. 6. International Trade and Security of Transit

One of the important tasks of The Commission has sought tools and path the way to integrate the whole of the Community into the gas market and to improve links with neighbouring states. Secure transit regimes are essential as long-distance transit increase in importance and in order to stimulate investors' confidence. Strengthening international rule of law with regard to energy transit should therefore be welcomed and the work under the auspices of the Energy Charter Conference on analysing the usefulness of a legally binding Multilateral Transit Framework agreement or Model Agreements and Codes of Conduct should be encouraged and strongly supported by the that gas resources are locked-in and unable to compete for markets. The role of Russia and NIS are, in this respect, essential.[525]

The whole demand-supply situation is so vulnerable. [526] EU gas companies signed large gas import contracts of ever longer duration periods up to 25 years. It should also be borne in mind that usually in such a contract not all of the contracted volumes are covered by take-or-pay obligations, leaving room for flexibility in terms of volumes.[527] Governments should also play a role in encouraging cross-border trade by:

- putting a stable market framework in place in their own country;
- helping to create a favourable political climate,
- by sharing experience on market reforms with producing/transiting countries;
- enabling cross-border holding in the supply[528]

As cross-border trade in electricity only amounts today to 8% of total EU production, it will a priority to promote cross-border trade, by developing appropriate mechanisms, including regulatory instruments for cross-border tarification and congestion management the physical

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[525] See, *COM* (99)571 Why a Communication on security of EU gas supply? - Introduction and background

[526] Andrew Nikiforuk. *"The Next Gas Crisis"* **Canadian Business,** , Volume 74, Issue 18.20.2001,p.1-3

[527] Until the last stages of the negotiations on the EU Gas Directive, it was not clear whether the Directive would in the end contain provisions to protect take-or-pay contracts.

[528] International Energy Agency "New Dimensions of Gas Security" **Security of Gas Supply Meeting of the Governing Board at Ministerial Level, Paris,** 28-29 April 2003

constraints impeding cross-border trade must be removed.[529] A regulatory instrument allowing formal decisions to be adopted on issues such as cross-border tarification needs to be in place while the Commission should act to deal with cross-border issues that can only be effectively dealt with at the European level» [530]

6. 5. Transportation, Transmission and Distribution

There is a fundamental difference between transmission and distribution, which implies that regulated access may be more appropriate for distribution and negotiated access for transmission. . It is customary to distinguish between two types of transportation: transmission is transportation at very high voltage levels and distribution is transportation at lower voltage levels. Transmission refers to transportation over an interconnected network, which is shared by all end users.At the distribution level; there is less need for caution in relation to security of supply due to the many individual small-volume supplies.

6. 5. 1. The Transmission Line

It should be borne in mind that firstly, network externalities, causes investments benefit all interconnected parties by increasing reliability and security and reducing the cost of generation. Network externalities may result in the additional value of investments in grid supplement being reduced by successive investments. A transmission line thus provides security of supply to all end users. However, transmission lines within the grid are not, in general, natural monopolies. Two transmission lines may run more or less in parallel and still be economical; and two complications within an interconnected grid are often connected through several paths as a means to increase reliability. Thus, transmission services can be provided by different owners within a single interconnected network may discourage investment.

Secondly, there are system-wide economies of scale as in the case of distribution. Whereas distribution refers to transportation from the interconnected network to a specific group of end users; while a distribution line benefits only some. Distribution lines are often considered a natural monopoly since replication of distribution lines would be inefficient due to the large fixed

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[529] Loyola de Palacio. "Further Liberalisation of Gas and Electricity Markets" **Financial Times, 16**/01/2001 CommissionPressReleaseDN:IP01/59|0 www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc= SPEECH/0 1/59|0|RAPID&lg=EN (Download:4.12.2003)

[530] ibid.

costs of the investment. There are exceptions such as buildings and factories that have two connections to the distribution grid to ensure security of supply.

6. 5. 2. Distribution

Natural gas distribution looks like more of a natural monopoly. A duplication of a distribution system by a new comer would in the vast majority of cases be a loss-making enterprise, and would be economically inefficient. The local distribution system therefore constitutes an essential facility. This raises the issue of defining the proper, specific mode of regulation of transmission, and separately distribution. Inefficiencies, costs and yet profits are on average significantly higher in gas distribution than in gas transmission. There is thus a more urgent need to improve economic efficiency in gas distribution than in transmission. Furthermore, the opening of distribution through third party access is essential to extend the benefits of competition to the small and medium-sized gas consumers.

The most effective approach to distribution should involve two simultaneous steps. The first is to consider making distribution companies fully eligible for access to the transmission pipeline systems, giving them a choice of supplier and hence opportunities to purchase at least cost.

The second is to consider full eligibility of all consumers within gas distribution, so that distribution companies are encouraged to pass on the benefits of their lower costs through lower prices to end users. It follows from this that when reforming gas sector regulation, in particular when designing third party access models for the gas. These institutional systems have fulfilled the purpose of building mature and secure gas supply systems.[531]

The drawbacks of downstream suppliers have enjoyed or enjoy monopoly positions that provide them with relatively weak incentives for cost-efficiency and customer care. This is particularly the case in gas distribution.

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[531] *Anonymous.* " *EU agrees to diluted gas directive"* **Oil & Gas Journal**, Volume 95, Issue 50, December 15, 1997. p. 22.

6. 5. 3. Natural Gas Transmission and Gas Distribution

Natural gas transmission, i.e., the cross-regional or regional gas transport by high-pressure pipeline is developed in specific projects on the basis of entrepreneurial risk, often with a longterm contract as backbone. [532] This can be a purchasing contract with a producer or a sales contract to one or several buyers, for example a distributor, a power plant or a large industrial consumer. Only customers with an annual gas consumption of more than 25 million cu m will initially be eligible to choose their supplier. This threshold will be reduced to 15 million cu m/year after 5 years and 5 million cu m/year after 10 years.[533]

In an open, non-discriminatory regulatory framework, and for the sake of long-term market development, there should a priority be equality of opportunities for any company with the ability and will to enter into such a project. Most European Union leaders want energy, one of the few remaining sectors where companies can have legal monopolies, to be fully opened to competition as part of the EU's drive to become the world's most dynamic economy. The European Commission has prepared legislation to liberalise the electricity and gas sectors by 2005.[534]

An earlier draft directive based on similar plans for a single European electricity market failed to gain a consensus. The EU had hoped for success with a redrafted directive incorporating the monopolists' concerns.[535] We see that the EU Gas Directive seeks to introduce the same principles for all the EU Member States which led to increased competition. [536]

Inefficiencies, costs and yet profits are on average significantly higher in gas distribution than in gas transmission. There is thus a more urgent need to improve economic efficiency in gas distribution than in transmission. Furthermore, the opening of distribution through third party access is essential to extend the benefits of competition to the small and medium-sized gas consumers.

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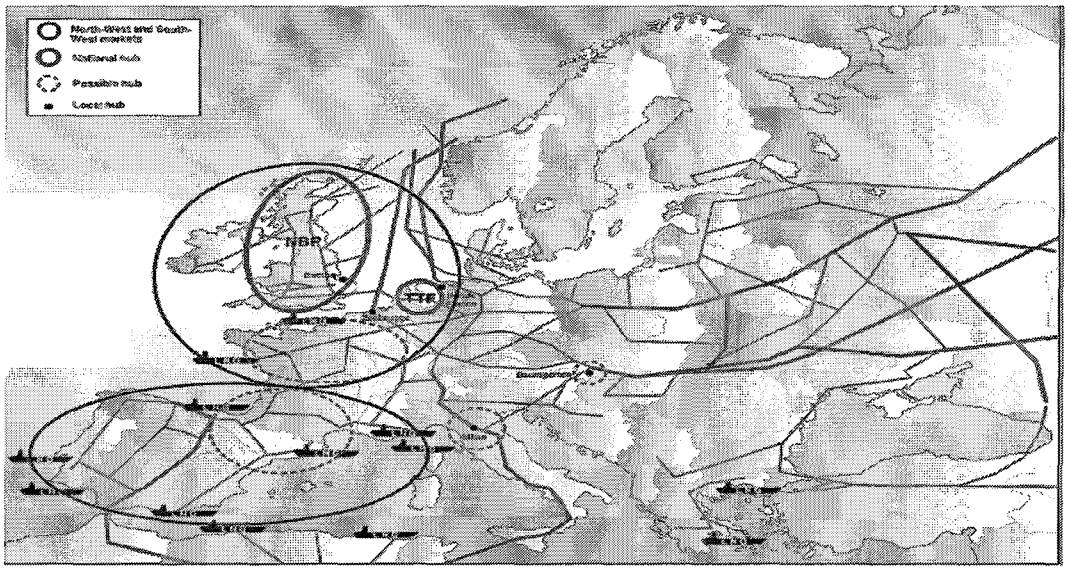
[532] See, Natural Gas Distribution, IEA/OECD, Paris, 1998, annex 1; and Natural Gas Transportation, IEA/OECD, Paris, 1994, chapter II.
[533] ibid p. 23.
[534] Europe Struggles to Pass Test of Opening up Energy Sector, **Financial Times,** 27. 8. 2001, p. 4.
[535] OGJ, December. 9, 1996, p. 28.
[536] See The EU Gas Directive 1992.1998.

Figure 38: Infrastructures, Existing and Possible Hubs in Europe



Source: Patrice de Viviés, "*Regulation Dealing with Access to Supply in Dealing with Access to Supply in Liberalised Markets Liberalised Markets*" **IEA,** Paris, Friday 27 June 2003, p. 1-14

The most effective approach to distribution should involve two simultaneous steps. The first is to consider making distribution companies fully eligible for access to the transmission pipeline systems, giving them a choice of supplier and hence opportunities to purchase at least cost.The second is to consider full eligibility of all consumers within gas distribution, so that distribution companies are encouraged to pass on the benefits of their lower costs through lower prices to end users.

The non-discrimination problem can be addressed by an audit of the gas companies' accounts, and an obligation on them to publish indicative tariffs for transport/capacity. In case and for as long as a company enjoys a de facto monopoly in flexibility services, it should also publish indicative tariffs for these services. However, controlling company accounts is difficult and requires considerable effort on the part of the regulator.

Security of supply at this level is achieved mainly through the contracting of sufficient flexibility or back-up e.g. from storage by the consumer, which poses less difficulty with a small-volume contract. In fact, given that gas distribution constitutes more of a natural monopoly, smaller end-users of gas have an interest in a maximum efficiency of TPA so as to enhance the choice of suppliers, and compensate their disadvantage over larger end-users that are in a better

negotiating position with gas companies due to their larger off-take, lower flexibility requirements or the short-term option of a substitute to gas. Thus in distribution, concentration on efficient access deserves priority. In support of that is the fact that gas distribution generally consists of a coherent and meshed pipe system that is easier to approach by cost-of-service, price-cap or yard-stick regulation than the more disparate and predominantly 'one-directional-flow' pipeline systems of a transmission company. To facilitate the transit of natural gas between high-pressure transmission grids in order to increase transfers of gas between the grids without ignoring the need for security and quality of supply.[537]

6. 5. 4. Parallel Transmission Pipelines

In a sufficiently large market, the freedom to build and operate pipelines and thus also the existence of parallel transmission pipelines is not economically inefficient natural gas distribution resembles more of a natural monopoly. A duplication of a distribution system by a newcomer would in the vast majority of cases be a loss-making enterprise a single direct line to a large consumer and would be economically inefficient. The local distribution system therefore constitutes an essential facility. This raises the issue of defining the proper, specific mode of regulation of transmission, and separately distribution. European countries may have smaller markets, but with the implementation of the Gas Directive national markets will eventually integrate into a large European market, and so enhance opportunities for new pipeline projects. The non-existence of a natural monopoly in gas transmission can also be explained by the technical-economic limitations to capacity increase. In most cases, a sizeable increase in demand for transmission capacity between two geographical points requires the building of a new pipeline, given the limitations to an increase in compressor capacity or to bi-directional flow. If there is demand for a new pipeline, there is a priori no reason why the necessary gas pipeline operator should build and operate it rather than another operator.[538]

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[537] See, Council Directive 91/296/EEC of 31 May 1991 on the transit of natural gas through grids [Official Journal L 147 of 12.06.1991].

[538] See, Directive 95/49/EC - Official Journal L 233, 30.09.1995 Commission Directive of 26 September 1995 updating the list of entities covered by Directive 91/296/EEC on the transit of natural gas through grids.

6. 6. The Organisational and Institutional Arrangements

A competitive market provides incentives for investors to choose the least cost alternatives. For instance, given current conditions, fossil fuels such as gas often provide electricity at least cost. This, of course, may conflict with national policies that give preference to other fuels or that would favour a different fuel mix. Governments can, to some extent, continue to implement fuel policies in a competitive market. For instance, governments can restrict fuel choices for new entrants or can establish subsidies for generation based on certain fuels. However; this approach may have a significant impact on market performance, as it distorts entry and investment decisions. Ultimately, regulations on entry are likely to conflict with the efficient operation of the market, and reduce the efficiency gains that were the primary objective of reform.

The organisational and institutional arrangements in relation to security of supply indicate a wide range of approaches and responsibilities assigned to gas market regulators and participants. Nevertheless, a common pattern of general responsibility could be identified in most countries:

- Governments have the executive power in defining the general security of supply policies and goals;
- Regulators are responsible for setting up the appropriate market arrangements, grid codes approval and other rules. In some cases they have responsibilities directly linked to security of supply;
- Transport and distribution operators, and in some cases also other market participants such as power generators, where they are given special responsibilities, are responsible for the short-term security of gas supply, as defined and set-up in the rules provided by the regulators; and
- Supply companies and customers have a role in the process of ensuring responsible for securing reasonable demands for gas are met.

Mapping the current status of security of supply in member countries is essential and is ongoing within the CEER. The general goals of the work could potentially include:

- List all the potential barriers for ensuring security of supply;
- Consider how appropriate market based signals and appropriate incentives for security of supply through different regulatory tools can be provided in the energy sector;

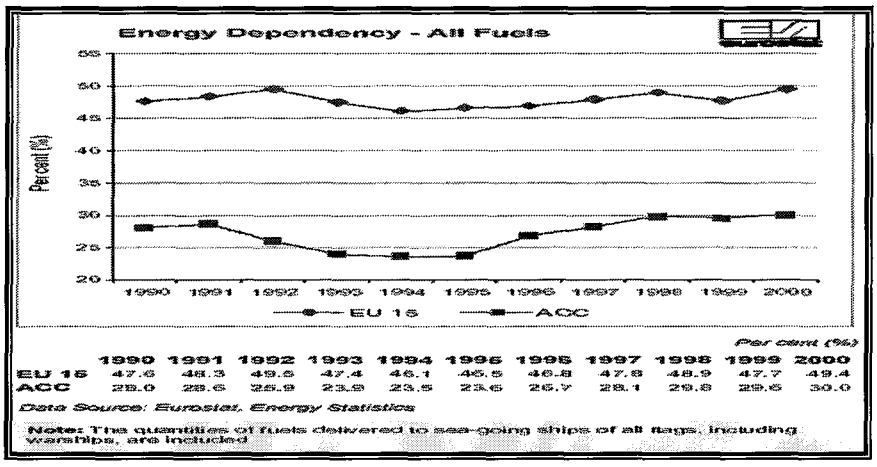
- Analyse and propose appropriate standards and/or norms for security of supply which are of
- common interest for the member countries
- security of supply standards in terms of public service obligations throughout the European Union;
- Transparent grid capacity planning methodologies and results;
- harmonised measures to implement security of supply in the member countries;
- Consider security of supply on a global European level, taking into account the local/regional specific issues. Optimising security of supply locally (region or country) from a supply point of view may result in duplication of resources from an European perspective;
- Mechanism to monitor security of supply in the European Union.

6. 6. 1. Managing External Dependency to Secure Energy Supply

It is fact that in 2000 the EU 15 energy dependency rate was 49.4%, an increase of about 2% since 1990. Overall, there were annual fluctuations in the energy dependency rate during the period 1990-2000, ranging from 46.1% in 1994 to a high of 49.5% in 1992.we see that three were three countries which are: Denmark, UK and Norway (an EFTA country) had a surplus of energy over their own requirements (i.e. negative energy dependency ratio), while six Member States had energy dependency ratios of over 75 %.

According to datas in the period 1990-2000 the energy dependency rate for the acceding countries reached a peak of 30% in 2000. It can be observed that, with the exception of Poland, the Czech Republic and Estonia, the acceding countries have a rate of energy dependency greater than 50%. The total of the acceding countries shows that the energy dependency rate is lower than for the EU 15, mainly due to Poland which is the biggest consumer with around 43% of the total gross consumption of the acceding countries but has a very low rate of energy dependency.

Figure 39: Energy Dependence



Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003 **:** http: //www .europa. eu.int/ comm/ eurostat/ Public /datashop/print-product /EN ? catalogue = Eurostat & product= KS-DK-03-001- -N-EN & mode (Download: 15.11.2004)

The external energy dependency of the European Union currently stands at approximately 50%. It could well by 2020 increase to as much as 70%, 80% and 90% for natural gas, coal and oil respectively

There is also scope for strengthening security of supply by closer co-operation with third countries and by developing a system which can respond quickly and flexibly to sudden energy supply breakdowns, in particular as regards oil and gas. A co-ordinated approach to external energy relations is thus necessary in order to ensure free and open trade and a secure framework for energy investments. Dialogue, assistance and co-operation with non-member countries are realistic solutions for the simultaneous enhancing of energy security, achievement of environmental goals and stimulation of the development of appropriate energy technologies and their dissemination to third countries. [539]

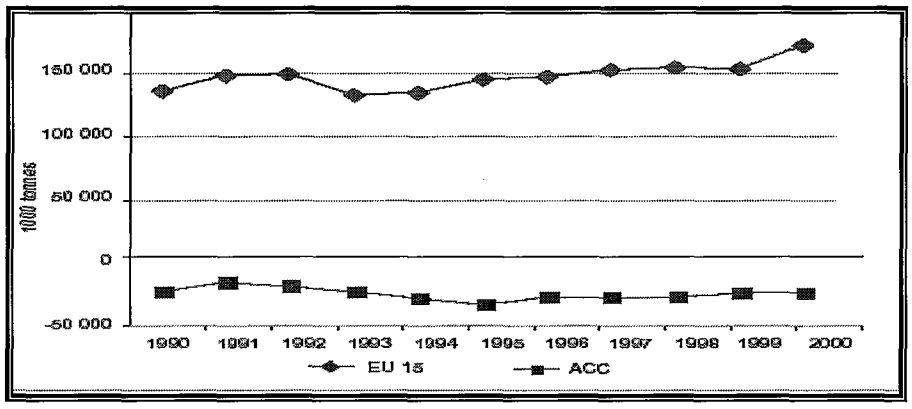
6. 6. 2 Import Dependency

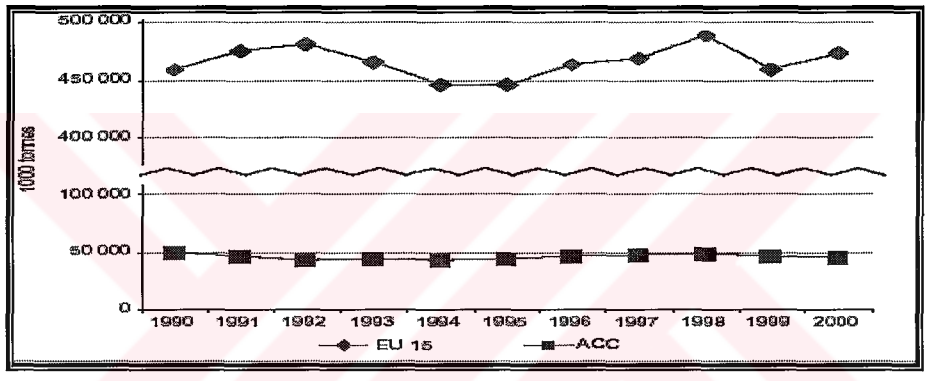
We see a significant constrast that while the EU 15 is mainly an importer of solid fuels; the acceding countries are mainly exporters. On the other hand, all the countries are importers of oil with the exception of the North Sea oil-producing countries Denmark, UK, the Netherlands

[539] See, European Commission .**European Energy to 2020. A Scenario approach,** Spring 1996.

and Norway. However for the EU 15 in total, net imports of oil have increased only slightly (3%) over the decade, while for the acceding countries there was an 8% reduction over the same period.

Figure 40: Net Imports of Solid Fuels





Solid Fuels

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
EU 15	136 902	148 481	149 875	133 127	135 202	146 015	148 125	152 796	155 856	153 778	173 054
ACC	-23 310	-15 456	-18 526	-22 798	-27 903	-33 222	-26 911	-27 393	-27 010	-24 124	-23 890

Oil

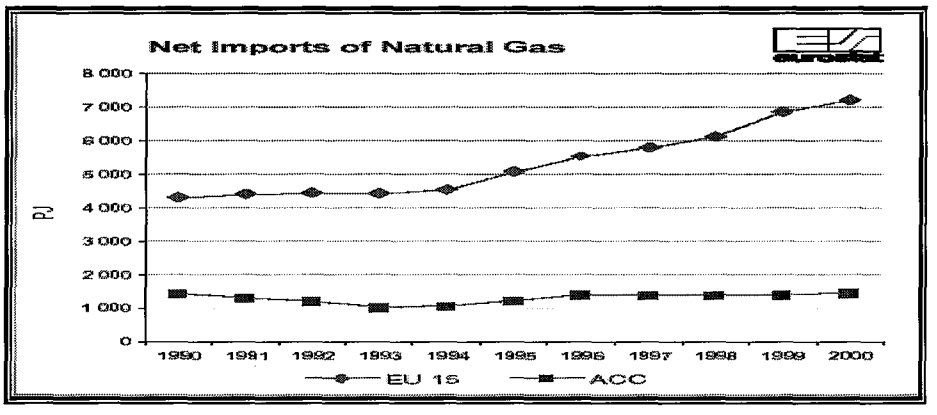
EU 15	459 131	475 607	482 046	466 203	446 696	445 913	464 444	469 229	489 540	459 319	473 801
ACC	49 671	46 262	43 196	43 771	42 884	44 476	46 188	48 982	48 489	46 259	45 655

Data Source: Eurostat, Energy Statistics

Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators**, Luxembourg: European Communities, 2003 http:// www. europa. Eu .int/ comm/ eurostat/ Public/ datashop /print-product/EN? Catalogue =Eurostat&product= KS-DK-03-001- -N-EN& mode (Download: 18.02.2004)

Most of the EU 15 and acceding countries import natural gas, with the exception of the North Sea producers: Denmark, the Netherlands and United Kingdom. Norway is the largest gas exporter of all the countries under consideration, while Germany, France and Italy are the largest importers.

Figure 41: Net Imports of Natural Gas



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
EU 15	4 294	4 389	4 430	4 417	4 528	5 053	5 510	5 776	6 116	6 852	7 194
ACC	1 449	1 305	1 208	1 033	1 063	1 218	1 398	1 386	1 394	1 397	1 452

Data Source: Eurostat, Energy Statistics

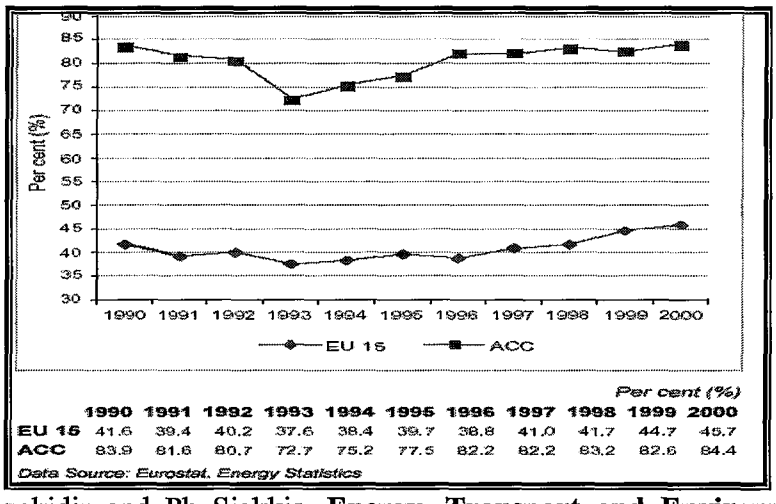
Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators**, Luxembourg: European Communities, 2003 http:// www .europa. eu.int / comm / eurostat/ Public/ datashop /print-product/EN? catalogue = Eurostat & product= KS-DK-03-001- -N-EN&mode (Download: 22. 0.12004)

Ireland, Greece and Portugal are rather new in the gas market, since it was introduced in 1993, 1996 and 1997 respectively. Total net imports at EU 15 level rose by 68% over the last decade, whilst a notable decrease was observed in the acceding countries in the period 1990-1994, followed by an increase over the period 1995-2000. Thus, in 2000 the level of the net imports of natural gas in the acceding countries was the same as in 1990.But we can say that after integration this figures will raise.

6. 6. 3. Natural Gas Dependence

According to datas EU 15 energy dependency rate for natural gas remained at the same level of around 40% over the period 1990-1998 though it has risen recently due to a strong increase in demand. Denmark, the Netherlands, UK and Norway are exporters of natural gas from the North Sea deposits. The EU 15 energy dependency rate for natural gas was 45.7% in 2000, while for the acceding countries' energy dependency rate was 84.4%.

Figure 42: Natural Gas Dependence



Per cent (%)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
EU 15	41.6	39.4	40.2	37.6	38.4	39.7	38.8	41.0	41.7	44.7	45.7
ACC	83.9	81.6	80.7	72.7	75.2	77.5	82.2	82.2	83.2	82.6	84.4

Data Source: Eurostat, Energy Statistics

Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003 http: /www. europa. eu.in t/comm /eurostat /Public/ datashop/ print-product/EN? catalogue = Eurostat & product= KS-DK-03-001- -N-EN & mode .(Download:12.12.004)

The Union is a net importer of oil, which accounts for 40 of total energy consumption and is the only source for several types of transport. It is expected that by 2020, the EU could be importing as much as 90 of its oil, with most of it coming from the politically-volatile Middle East.To reduce Europe's dependency on imports, the need to develop renewable energy sources and boost overall efficiency.[540]

In 1998, 40% of the EUs gas demand was covered by imports from mainly three gas-producing countries: Russia, Algeria and Norway while other countries including Libya and Qatar exported minor volumes to the EU in the form of LNG (liquefied natural gas). Russia, Algeria and Norway represented respectively 17%, 12% and 11% of total EU gas consumption in 1998. The import dependence for gas is expected to grow faster than for energy overall. The EUs overall energy import dependency in 1998 was approximately 50% while it was 40% for gas. By 2020, gas import dependency is expected to be at a level (67%) similar to the overall energy import dependency (66%). The expected total gas imports by 2020 (approx. 290 MTOE) are nearly equivalent to today's total EU gas consumption.[541]

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[540] Renee Cordes. "*Commission Bids to Reduce the Risk of Future Energy Crises*" **European Voice,** Volume 6, Issue 39, 26. 10. 2000, p. 21.

[541] See, *Comission* (1999)571.**Why a Communication on security of EU gas supply?** Introduction and Background, See annex 2.

Table 14: Oil and Gas Import Dependence (%)

	Gas Import dependence	Gas Import dependence	Oil Import dependence	Oil Import Import
	2000	2030	2000	2030
North America	1	26	39	68
Europe	36	63	53	85
Pacific	67	50	89	95

Source: IEA. *"New Dimensions of Gas Security"* **Security of Gas Supply Meeting of the Governing Board at Ministerial Level,** Paris, 28-29 April 2003.

At present around 40% of gas is imported into the EU from Russia, Norway and Algeria with small quantities from Libya, the balance (60%) produced from within the EU, the bulk (three quarters) of it coming from the Netherlands and the UK. As indigenous production eventually declines, so increasing volumes will be imported from outside the EU to satisfy Europe's growing appetite for gas. This will mean that an increasing proportion of the EU's gas supply will be imported, rising to around 60% by 2010 (the reverse of today's situation) and maybe as high as 75% by 2020.

It is predicted that gas supplies from Norway would double over the next ten years, reaching 23% of European gas requirements in 2010, and then decrease slightly but constantly until 2030. For that time horizon, imports from Norway would represent the same market share as in 2000, namely 15% of the European gas market. The European Union is becoming increasingly dependent upon external sources of gas. In 2002, around 46% of gas was imported into the EU. The Green Paper of the European Commission on energy security of supply foresees that import dependency will amount to 66% in 2020. Statistics indicate that the highest growth rate for natural gas will come in power generation, from 22% of sales in 1998 to 36% by 2030 in west and central Europe. As a result, 45% of the total demand increase will be absorbed by the power generation sector.[542]

It is important to say that gas import dependency is not, however, expected to increase to the level of oil import dependency, which is expected to reach 85% by 2020. However, the

[542] Jeff Share. *"Natural Gas Supplies Concern European Energy Executives"* **Pipeline & Gas Journal,** Volume 227, Issue 10, October 2000, p. 81.

structure of the oil market is quite different from the gas market, which has a higher degree of concentration with much gas production in the hands of relatively few countries. Gas utilisation is, however, often combined with the possibility of switching to alternative fuels, which in itself enhances security of supply and alleviates the issue of dependence.

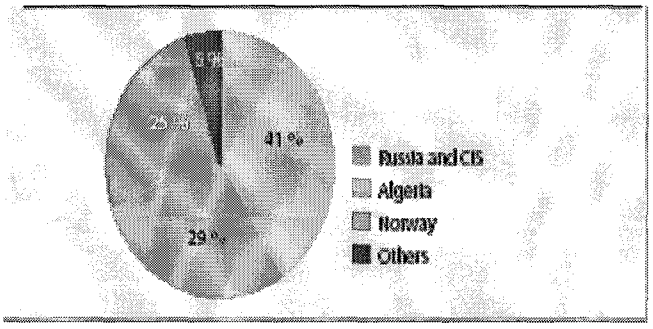
The three largest gas exporters to the EU (Russia, Algeria and Norway) and The Netherlands are expected to remain predominant in EU gas supply and intra-Community trade over the next two decades. Of the EUs expected 67% imports of its total gas demand in 2020, two-thirds are already contracted for, of which more than 95% are contracted with Russia, Norway and Algeria. [543]

European Economic Area would be around 29% for 1998 and 52% by 2020 i.e. significantly less than for the EU, but still high and with a growing trend, in particular after 2010. [544] One of the priority of the Commission in the energy field is the external dimension of energy policy. This has to be seen in the framework of security of supply, the further development of a dialogue with the producing countries strengthen the energy co-operation with its neighbouring countries.

This Communication sets guidelines to face up to the challenges of growing external energy dependence between the European Union and neighbouring countries. It also examines the need to address infrastructure issues on a regional level, to diversify sources of energy, at both geographical and technological level, and to broaden the basis for energy trade in Europe and its adjoining continents. One of the central roles of the European Union is to act as a force for stability and sustainable development in the continent of Europe. Extending the benefits of the Internal Market is part of that projection of stability to the ring of countries that surround the Community.

[543] See, COM (99)571Why a Communication on Security of EU Gas Supply? - Introduction and Background.

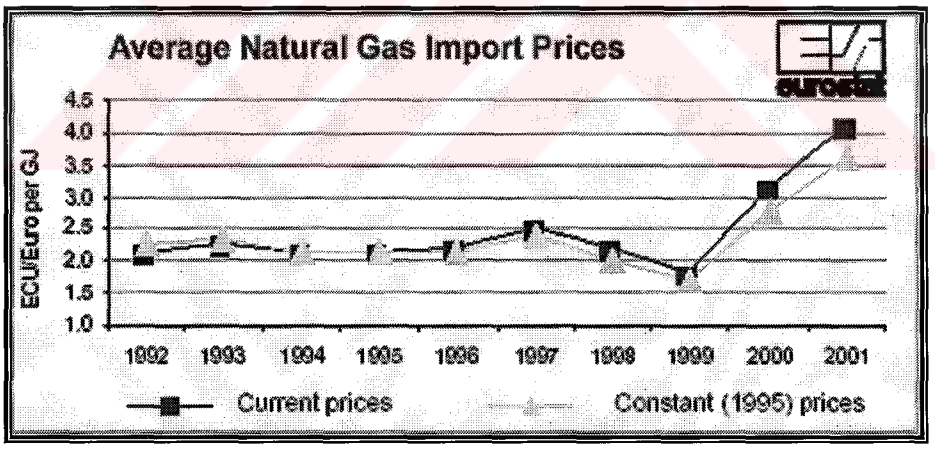
Figure 43: EU-15— Imports of Natural Gas from non-EU Countries in 1999



Source: Commission. **Energy Let us Overcome our Dependence**, Belgium, 2002, p.15.

The EU is an important customer on the international energy scene. In 1997, the bill for energy imports into the EU was EUR 120 billion.The EU absorbs 14–15 % of world energy consumption and is the biggest world importer of oil (19 % of world consumption) and of natural gas (16 % of the planet's requirements). In 1999, the bill for oil in the EU was EUR 240 billion.The price went through the roof in 2000. More than half the sum paid ended up in the coffers of Middle East oil producers.[545]

Figure 44: Average Gas Import Prices



Source: G. Giannakidis and Ph Siakkis. **Energy, Transport and Environment Indicators,** Luxembourg: European Communities, 2003 http ://www.europa .eu.in t / comm / eurostat /Public / datashop / print-product/EN?catalogue = Eurostat & product= KS-DK- 03-001- -N-EN & mode (Download: 15.02.004)

[545] Commission. **Energy Let us Overcome our Dependence**, Belgium, 2002, p.15.

It is important to say that the average gas import prices for natural gas and LNG remained rather stable for the period from 1992 to 1998 in the EU 15 at around 2.2 Euro per GJ. After falling moderately in 1999 the gas import prices followed a sharp raise in the next two years showing the link to the crude oil prices. Current prices for the 1992 to 2001 period for both natural gas and LNG almost doubled with proportion raises in the order of 92% and 95% respectively. This is probably attributed to the respective price raises of competing oil products. The average import price for LNG in the EU 15 is slightly higher than natural gas reflecting the higher transportation cost.

6. 6. 4. A Wide Range of Risks

Security of gas supply can be defined as an insurance against the risk of an interruption in gas supply. So far, security of supply was mainly viewed as an insurance against interruption of external supplies. Security of supply no longer stops at countries' borders but extends to the final customer. Security of supply is needed as a protection against a number of risks.We see five main categories of risks can be distinguished:

- technical risks include system failure, due to weather, lack of investment, etc;
- political risks, i.e., interruption of external supplies;
- regulatory risks, i.e., failure of deliveries due to flawed regulation;
- economic risks, i.e., when gas producing countries are not willing to develop reserves for export at prevailing prices and conditions; and
- Environmental risks, i.e., unacceptable level of greenhouse gas emissions.

Achieving an appropriate mix and diversity of supplies and supply routes is also essential for European security of supply. In this respect, it is necessary to define the conditions conducive to market participants making efficient decisions regarding, for example, from where to import gas. When assessing the potential risk of barriers to security of supply, both the short-term and the long-term risks should be taken into account.

The time horizon of the different risks varies considerably. Short-term risks refer to supply interruptions due to technical failures, accidents, political intervention or extreme weather conditions. Long-term risks generally cover economic and political risks.They refer to insufficient

investment in the development of production and transportation facilities for new supplies – or to politically driven interruption of supplies due to civil war or social unrest.

In the past, government major focus was mainly on the external dimension of security of gas supply, i.e., interruption of gas supplies due to political intervention. Whereas this dimension still needs review, interruption for political reasons seems unlikely as it would immediately hurt the exporting country's cash flow and would be extremely damaging for the reputation of the supplier.

However, transit risks do not necessarily enjoy this safeguard. Given that gas is a network energy and gas projects have long lead-times, risks relate not only to the commodity or sources of supply (which are abundant, although access may be an issue) but also to the adequacy of the linking infrastructure and the timing of investment. With market reforms and unbundling of the transportation and supply functions, the link between investment decisions on infrastructure and the development of new resources may be weakened.[546]

According to developments EU has ambitions to establish a free market operating within a sound regulatory framework has the potential to deliver a high degree of Security of Supply while providing competitive pricing.The potential downstream barriers for ensuring security of supply include, for example:

- Market structure issues, including networks that are not effectively separated may hamper effective and non-discriminatory network access for market parties;
- . Inappropriate investment climate, for example, insufficient incentives and signals to invest and excessive regulatory uncertainty for market players or inefficient/ distorted investment decisions;
- Sudden widespread supply disruptions that could occur under emergency conditions;
- . Inadequate transparency;
- . Planning and environmental restrictions; and
- Insufficient market liquidity and access to competitive supply sources. [547]

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[546] See, IEA. *"New Dimensions of Gas Security"* **Security of Gas Supply Meeting of the Governing Board at Ministerial Level,** Paris,28-29 April 2003.

[547]Loyola de Palacio "Confederação da Indústria Portuguesa" Lisbon, 18 October 2002 CommissionPressRelease DN:IP02/496http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/02/496|RAPID&lg=EN.

6. 6. 5. Managing Geopolitical Risks

The geopolitical shape of the world impacts on the European energy transition in three ways. First, much of the supplies of oil, gas and coal lies in remote, undeveloped or politically volatile areas. Sudden moves affecting supply could be destabilizing, calling for policies which can cover potential interruptions and market failures.[548] Second, recent developments in the political and economic structures of East-Central European countries and the Soviet Union have major implications for Western Europe. The third geopolitical impact on the European energy system derives from the likely future surge in energy demand from the high population Less Developed Countries (LDCs) in Asia and Latin America.[549]

The best solution to reduce or manage geopolitical risks and to ensure security of supply for Europe in a situation in which gas will have to be produced further afield and transported over longer distances is one that is based on free trade; integration of markets and closer and strengthened co-operation with external suppliers and transit countries. A reciprocal integration and opening of upstream and downstream markets will attract capital and thus provide new ways of financing projects. [550]

Such co-operation could, based on free market principles similar to those of the internal energy market i.e. free movement of goods, non-discriminatory right of building new gas facilities and of access to the gas system, gradually de-politicise gas resource development. This co-operation and integration should be pursued through joining forces within the EU and with other interested parties including international financial institutions. In this way, the EU will be in a stronger position to safeguard, when necessary, its interest with regard to secure and diversified gas supplies. the EU energy markets will have a positive and spill-over effect in countries neighbouring Europe, which might facilitate a gradual de-coupling of gas resource developments from political issues.

EU gas market opening should not be a one-way street. It is therefore important for the EU to promote the implementation of market rules upstream such as access to energy resources and to

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[548] Dieter Helm (Ed.), "*Towards an energy policy* "**OXERA publications,** Volume 32, Issue 7 , 2002, p. 937-941.
[549] Helm, p. 939.
[550] Beckman, Jeremy. "Northern Gas Grid under Review". **Offshore,** Volume 57, Issue 8, Augst 1997, p.18.

the network and thereby to promote supply-side gas-to-gas competition among individual producing companies. This would also help facilitate the establishment of a European gas price, which could provide a reference and commercial basis for planning and implementing future investment projects. [551]

6. 6. 6. The Demand-Side Policy

More rational energy demand management and control of the growth in consumption are priorities with a view to sustainable development. It is worth reminding Member States of their obligations to submit plans to improve energy efficiency under the energy saving directive (SAVE). The Commission will remind them of the importance of controlling consumption. Households, transport and electricity are the three prime movers where consumption is concerned.

Oil and gas cover 65% of household needs: 40% for natural gas and 25% for oil. Any price disruption makes things difficult for the people of Europe. Since the price of gas follows the price of oil.[552] In addition, consideration should be given to making energy savings and diversifying the fuels consumed in buildings. Transport is the big unknown in the future energy equation. This sector accounts for between 4 and 10% of GNP depending on the country in question. By 2020 passenger transport is expected to grow by 20% and goods transport by over 30%. In the accession candidate countries, changes will be even quicker with a marked bias towards road transport. The amount of gas products consumed in road transport is steadily increasing and today accounts for nearly half of total oil consumption (47%) compared with 18% in 1973. Freeing this quarter from its dependence on oil is an ecological necessity and a technological challenge.[553] Electricity is a sector in which demand is particularly strong. In the years ahead it is likely to increase by nearly 2% per annum and in the accession candidate countries by at least 3%. [554]

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[551] See, **http://www.f-e-e.org/redirect.htm?http://www.f-e-e.org/cgi-bin/fee/cal/event.cgi?ActID=313**

[552] Mrs Loyola de Palacio. " *Future European Energy Policy and Security of Supply Issues"* **COALTRANS Conference** Madrid, 23 October 2000, Commission Press Release DN:IP 00/398,http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/00/398|RAPID&lg =EN.

[553] ibid.

[554] Mrs Loyola de Palacio. " *Future European Energy Policy and Security of Supply Issues"* **COALTRANS Conference** Madrid, 23 October 2000 Commission Press Release DN:IP00/398 http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/00/398|RAPID&lg=EN.

Demand side policy can also play a role in curbing our increasing dependency on imported gas. Technology can assist over the medium term in providing alternative fuels and the optimal use of other transportation modes needs to be encouraged. To curb the growth in energy demand, public authorities should not shy away from using the regulatory framework and fiscal instruments, such as targeted taxes or tax credits, to influence energy operators to change their behaviour.[555]

6. 6.7. Demand Prospects

The rise of natural gas in Europe started in the early 1960s. Since then it has known steady growth, which is likely to continue well into the next century. Present expectations are that by the end of the next decade, natural gas will take a greater share in Europe's energy mix than in North America and any comparable other large world region. According to preliminary forecasts from CERA, total gas demand in Europe is expected to rise by nearly 4.4% from 451.6 Bcm in 1998 to 471.4 Bcm in 1999 and by a further 5% to 495.3 Bcm in 2000. On the supply side, production for national use is forecast to rise by 3% from 207.9 Bcm in 1998 to 214.3 Bcm in 1999 and by 3.6% to 222 Bcm in 2000, while imports from Europe's biggest suppliers, Russia, Norway and Algeria, are also set to increase slightly over both years.[556]

The substitution of other energy sources by natural gas, the use of which has, thus far been mainly restricted to the residential/commercial sector, is now being extended to the industrial and power generation sectors of the economy. Gas use in these latter sectors actually declined for a decade after 1976 as a result of pricing and policy conditions imposed by a combination of structural and political factors. Since the late 1980s such constraints have been gradually lifted in most European countries, culminating in the withdrawal in 1991 of the 1976 EC Directive against using gas for power generation.[557]

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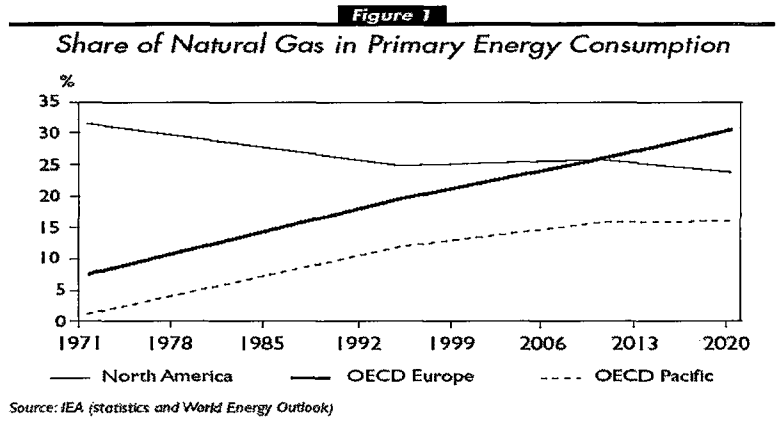
[555] See, http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/02/653|RAPID&lg=EN.
[556] Victoria Thomas,. "*European Gas Outlook*" **Pipe Line & Gas Industry,** Volume 83, Issue 1,January 2000, p. 19.
[557] Odell, p. 43.

Figure 45: Share of Natural Gas in Primary Energy Consumption



Source: www.iea.org.gasmarket energy20 %22 (Download: 02.05.2003)

The reasons for the expected demand growth are different depending on the region. In Western Europe, the rapid progression of natural gas in the power generation sector is the main factor. The fact that growth expectations for gas demand in Central Europe are slightly lower (even though still strong) can be attributed mainly to the transition from still artificially low enduser energy prices to market prices, to increasing energy efficiency as well as to a modest economic growth outlook. Motors of growth in gas demand are likely to be the power generation and residential/commercial sectors, whereas demand from industry will most likely remain flat.

6. 6. 8. Europe's Demand and Supply Outlook

On the supply side, there is an issue of concentration and above all proximity of gas resources to meet forecasted demand in Europe.The Caspian Sea region offers a huge supply potential in principle, but its realisation requires the solving of key issues. There are now alternative buyers with access to markets elsewhere in Europe.[558] In Europe, most countries have a high gas import dependency. And this dependency is set to increase. About 40% of the gas now consumed in OECD Europe is imported; this figure could exceed 60% in 2020.There are enough reserves near to Europe to supply future potential demand. A large share of Europe's future needs is already secured under long-term contracts. But more supply projects need to be developed for the period 2015-2020 and beyond. These will only materialize if European consumer markets can make such projects attractive to investors.[559]

[558] Odell, p.44.
[559] Vivies, p. 3.

We can declare that Europe must be able to attract new gas supply projects to cover future demand and avoid becoming a victim of producer concentration. These objectives can be met by preserving an attractive environment for gas industry investment and development while creating open, competitive, liquid and flexible with increasing gas demand, gas imports and transit over third countries will inevitably increase. They represent already today about 2/3 of consumed gas volumes in Europe. This makes cooperation of transmission grid operators in transit and dispatching a key element in European gas supply security. In most cases, a sizeable increase in demand for transmission capacity between two geographical points requires the building of a new pipeline, given the limitations to an increase in compressor capacity or to bi-directional flow. If there is demand for a new pipeline, there is a priori no reason why the incumbent gas pipeline operator should build and operate it rather than another operator.

Where demand is low, prices are likely to be low. Consistently high prices would reflect capacity constraints and provide economic incentives to expand capacity.The role of regulation and public authorities is to make sure that the system operator transmission or distribution company is responsible for the dispatch of the appropriate physical flow to meet instant demand. There should be provisions in legislation/ regulation to ensure that traders/suppliers using the system have the necessary incentives to honour their contracts, e.g. by charging penalties in case of default, and that they have the financial back up to pay these penalties.[560]

For higher-income countries, several recent articles in the literature on world energy and carbon dioxide emissions have reported income elasticities that are close to zero and sometimes negative-for examples, for the highest-income OECD countries, estimated income elasticities that are quite low.[561] At present, natural gas is consumed in almost all Western European countries. Consumption varies, in each country we distinguish between small and large users of natural gas: a small user is an agent in the residential, commercial or public sector, whereas large users are found in the manufacturing industry and in electric power production (gas-fired thermal power plants). Henceforth, we term the first group the household market, and the second group the industry market. [562]

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[560] See, *Comission (1999)*571 Why a Communication on Security of EU Gas Supply? - Introduction and Background.

[561] Dermot Gately, Hillard G Huntington. *"The Asymmetric Effects of Changes in Price and Income on Energy and Oil Demand"* **The Energy Journal,** Volume 23, Issue 1, 2002, p. 19.

[562] Rolf Eystein, p. 88.

7. TURKISH ENERGY POLICY

7. 1. Energy Policy Objectives and Institutions

The main objectives of Turkish energy policy are: To meet demand using domestic energy resources as the highest priority. In the medium and long term, this is to occur through a mix of public, private and foreign capital.[563]

For Turkey it is necessary to develop existing sources while accelerating the penetration of new and renewable sources, diversify energy sources and to avoid dependence on energy imports from a single source or country. At the same time encouraging private-sector investment and to accelerate capacity construction and privatisation in the power industry. Turkey need to improve the reliability of electricity supply through upgrades in the power transmission and distribution grid.For improving energy efficiency in end use and transformation, e.g. through reduction of losses in energy production, transmission and consumption. It is also necessary to protect the environment and public health.Turkey also should increase ability to use of Turkey's geopolitical location to establish the country as a pivotal transit area for international oil and gas trade "Eurasia energy corridor".[564] Turkey represents the most promising target market for gas in South west Asia. Its potential suppliers are just as eager to supply their gas to Turkey. Itis unlikely for all gas pipeline projects to win the Turkish gas market race unless connections to the European gas market are created.[565]

7. 2. Energy Market

7. 2. 1. Energy Demand

Energy demand increase with parallel to industrialization of Turkey. With Total Primary Energy Supply (TPES) growth rates of 4% to over 5% per annum and Total Final Consumption (TFC) growth of around 4% over the last three decades, Turkey is among the fastest growing energy markets in the world, and the fastest in the IEA: in IEA Europe, annual average (TPES) demand growth was 1-1.5% in the same time period, roughly in line with IEA totals.

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[563] IEA. **Energy Policies of IEA Countries Turkey 2001 Review**, Paris, 2001, p. 17

[564] Energy Policy of Turkey.MFA. www.mfa.govtr/groupd/dc/dcb/energy.htm. (Download:5.2.2004)

[565] Mehmet Ögütçü. "Caspian Energy "Poker Game" and Turkey" **Prospects for a New Approach,**Volume 8, Issue 8, http://www.dundee.ac.uk/cepmlp/journal/html/article8-5.html (Download:16.12..2003),

The government expects demand growth to accelerate in the coming two decades, with an average annual TFC growth rate of 8% between 1999 and 2005, 5.8% between 2005 and 2010, and 5.9% between 2010 and 2020. This implies a 2.7-fold increase of TFC from 57.4 Mtoe to 214.1 Mtoe.

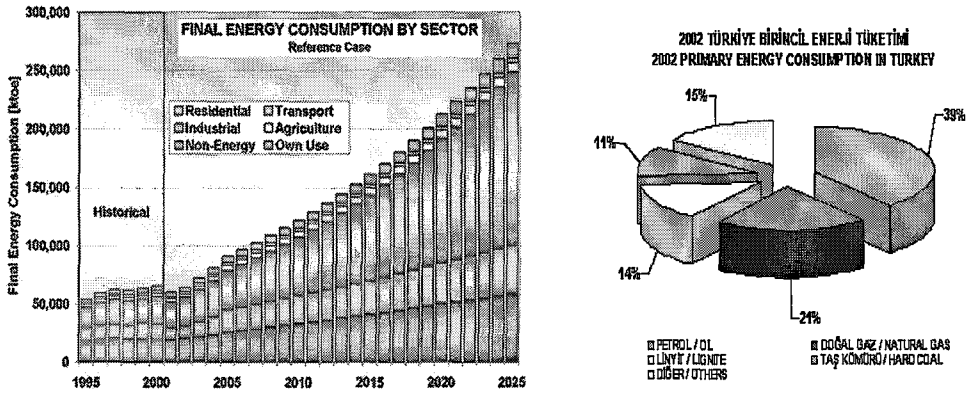
However, this demand growth occurs from a low base. Turkey's per capita TPES was 1.19 Mtoe in 1999, and is expected to grow to 3.65 in 2020. Even the 2020 figure is still significantly below the IEA's overall per capita TPES in 1973 of 4.61, Table 15 show past demand and future expectations by consuming sector and by source.

Table 15: Primary Energy Consumption in Turkey (thousand tons oil equivalent)

YEARS	OIL	NATURAL GAS	LIGNITE	HARD COAL	OTHERS	TOTAL
1983	17,540	7	5,294	3,255	9,501	35,597
1984	17,840	36	6,408	3,464	9,499	37,247
1985	18,134	62	7,933	3,775	9,263	39,167
1986	19,622	416	8,879	3,992	9,259	42,168
1987	22,301	669	9,189	4,404	9,996	46,559
1988	22,590	1,115	7,932	5,204	10,729	47,570
1989	22,865	2,878	10,207	4,722	9,693	50,365
1990	23,901	3,110	9,765	6,150	9,706	52,632
1991	23,315	3,827	10,572	6,501	9,700	53,915
1992	24,865	4,197	10,743	6,243	10,250	56,298
1993	28,412	4,630	9,918	5,834	11,051	59,845
1994	27,142	4,921	10,331	5,512	10,769	58,675
1995	29,324	6,313	10,570	5,905	11,068	63,180
1996	30,939	7,186	12,351	5,560	11,999	68,035
1997	30,515	9,165	12,280	8,495	10,912	71,367
1998	30,349	9,690	12,631	8,921	12,576	74,167
1999	33,166	11,740	12,314	7,708	11,775	76,703
2000	34,893	14,071	12,830	8,149	9,728	79,671
2001	30,721	14,967	13,091	6,972	12,231	77,982
2020	40,777	26,128	20,603	18,870	17,025	123,403

Source.TPAO, http://www.tpao.gov.tr/rprte/energytr.htm/tuk.2002.download8022004

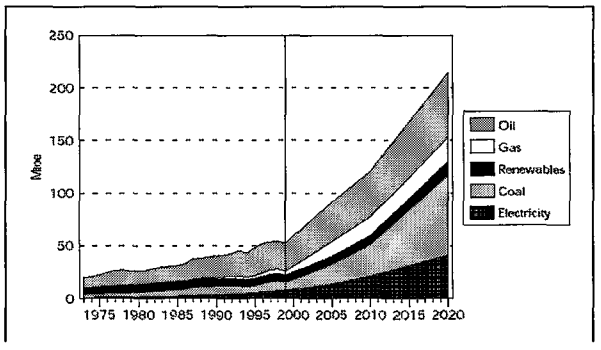
Figure 46: Total Final Consumption by Sector



Sources: IEA/OECD. Energy Balances of OECD Countries, Paris, 2000, Figure4, http: //www. dis.anl.gov /CEEESA/turkey.html, www.deik.org.tr/ bültenler/200312151440461 energy. pdf.

In the past, demand was distributed approximately evenly among the industrial, transport and residential sectors. With somewhat faster growth in industrial and transport demand, the industrial sector became supreme in energy demand in the early 1990s and accounted for 40% of TFC in 1999. As can be seen from Figure 45, the government explains this as a sign of major industrialisation over the next 20 years, causing very rapid industrial demand growth, at the end of which industry's share in TFC is expected to be 60%. With a total of 11.37 Mtoe, transport accounted for 15.7% of TPES and 21.1% of TFC (43% of oil products consumption) in 1998. Total energy consumption of the transport sector is projected to more than double to 23.26 Mtoe by 2010 and to reach 26.7 Mtoe by 2015. In that year, its share is projected to be about 12% of TPES and 16.5% of TFC.

Figure 47: Total Final Consumption by Source, 1973 to 2020



Source: IEA/OECD. **Energy Balances of OECD Countries,** Paris, 2000, Figure 6

The government expects that industrial demand will grow primarily for coal, and, to a lesser but still significant degree, for electricity. These predictions are drawn from from economic modelling carried out in the Ministry of Energy and Natural Resources, based on the MAED energy demand model. The model is based on a scenario approach, and the intermediate scenario, taken as the most probable outcome, forms the basis of the figures presented in this report. This scenario assumes unchanged government energy Mtoe.

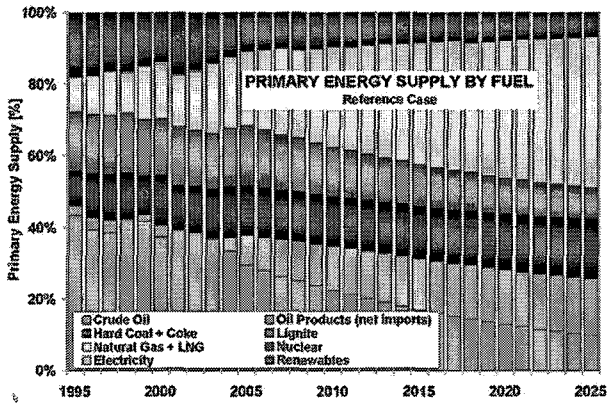
7. 2. 2. Energy Supply

Turkey has limited reserves of oil and natural gas, but proven reserves of lignite in the order of 8.4 billion tonnes. Combustible renewables, especially wood, and the country's water courses, especially the Euphrates and Tigris rivers, are other important indigenous energy resources. Coal represented about 28.5% of TPES in 1999. Domestically produced coal accounted for 17% of TPES. Combustible renewables supplied 9.7%, and hydro 4.2%.

Overall, Energy production between 1973 and 2020, Show that, the share of Turkey's energy production in TPES was 35%, down from 64% in 1973 and 49% in 1990. This decrease is due mainly to the increase in oil imports to almost 3.5-fold their 1973 value and 40% of TPES in 1999. Slightly less than half of oil TFC occurs in transport; there is still sizeable oil use in industry, households and power generation. Natural gas imports have also grown significantly in the last half decade, up to 15% of TPES in 1999. In line with the forecasts of strong energy demand growth, TPES is expected to increase to 298.45 Mtoe in 2020, 4.2 times its 1999 value of 70.33 Mtoe. The above figures demonstrate that this rise will come mainly from increased production and use of coal, increased natural gas imports, and eventually nuclear power.[566]

[566] OECD/IEA. **Energy Policies of IEA Countries Turkey 2001 Review** ,Paris, 2001, p. 27

Figure 48: Turkey Projected Primary Energy Supply Mix



Source: http://www.dis.anl.gov/CEEESA/turkey.html

Primary energy supply is projected to increase from 64.5 mtoe (1995) to 332.0 mtoe (2025). Crude oil imports remain constant at 33.0 mtoe after 2004 when the domestic refineries are forecast to run into their processing capacity, resulting in a drop in crude oil share from 44% to 10% of total supplies. Once the refining capacity is reached, net imports of refined products quickly grow from 2.6 to 52.3 mtoe (2000–2025), accounting for about 16% of total supplies by 2025. Natural gas quickly increases its share from 10% (6.3 mtoe) in 1995 to 42% (139.8 mtoe) of total supplies in 2025 (see Figure below). Although renewables double over 2000–2025, their share decreases from 14% in 2000 to 7% in 2025.

7. 3. Policies and Programmes and Sectors

GDP growth between 4.7% and 5.7% per annum is expected between 2000 and 2020. Hence, GDP in 2020 is expected to be 2.8 times its 2000 value. All sectors of the economy are expected to grow, but three sectors are expected to grow particularly strongly: the construction industry (with GDP in 2020 2.89 times its 2000 value), the services sector (3 times) and manufacturing (3.07 times). Car ownership and distances travelled are expected to rise, as is electricity consumption per dwelling (reaching 2.56 times its 2000 value in 2020), especially for space heating, water heating, cooking and other thermal uses.

7. 3. 1. Coal

7. 3. 1. 1. Industry Overview

Turkey has significant coal reserves, especially lignite, but also some hard coal. At end-1999, hard coal reserves were estimated at about 1.12 billion tonnes, 428 million tonnes (38%) of

which were proven reserves. Total proven lignite reserves were estimated at about 8.4 billion tonnes. Turkish lignite has low calorific value and high sulphur, dust and ash content. Turkish hard coal is of low grade but of cokeable or semi-cokeable quality. About 75% of the reserves contain coal with calorific values below 2,500 kcal/kg, and less than 10% have a quality over 3,000 kcal/kg.[567]

Hard coal is found and mined in only one location, the Zonguldak basin near the north-western Black Sea coast (see Figure 10). This mine is operated by the fully state-owned Turkish Hard Coal Enterprise (TTK). TTK has a de facto monopoly in hard coal production, processing and distribution. There are no legal restrictions on operations by the private sector, but the operating conditions are too unattractive for private capital. The Zongùldak basin has a complex geological structure that renders mechanised production impracticable. The majority of TTK's hard coal production is sold to the Catalagzi thermal power plant. Hard coal production has declined since the mid-1980s, falling from 2.7 million tonnes in 1990 to 2 million tonnes in 1999.[568] TTK is trying to reverse this trend and aims to increase production to 3 million tonnes and then to maintain that level. TTK believes that by leasing to third parties some of its small mines it cannot operate economically itself; it can increase coal production to 4.5-4.8 million tonnes per annum. In 2000, TTK produced 2.4 million tonnes of hard coal.[569]

Lignite is found in almost all regions of the country. The most important reserves are in the Afsin-Elbistan, Mugla, Soma, Tuncbilek, Seyitömer, Beypazari and Sivas regions. About 40% of Turkey's lignite resources, or 3.4 billion tonnes, are situated in the vast Afsin-Elbistan basin in the south-eastern part of the country.[570] The fully state-owned enterprise Turkish Lignite Enterprise (TKI) was responsible for about 56% of lignite production in 1998. Private companies produce about 10% of the total. The remainder is produced by two open-cast lignite mines that are owned by the state-owned electricity company TEAS and supply lignite. Much of the remainder and over half of all lignite production are located in the western parts of Turkey. About 90% of

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[567] Turkiye Taş Kömürü İşletmeleri http://www.tki.gov.tr/TKI_HAKKINDA/tur_dun_kom.htm (Download:3.3.2004)

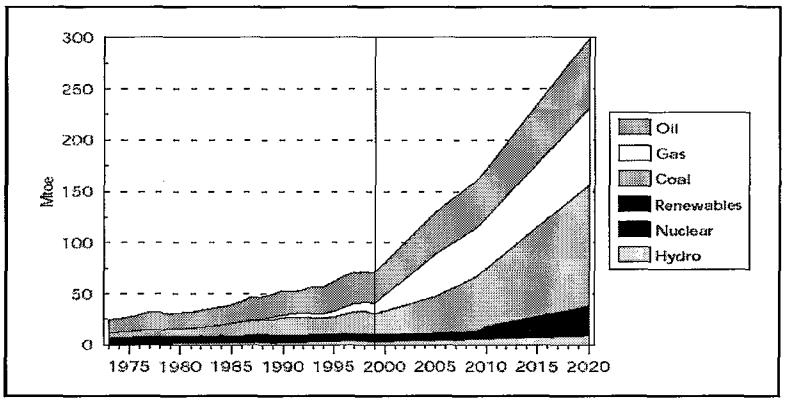
[568] İSO. **Elektirik Enerjisinde Ulusal Politika,** İstanbul : Laga yayıncılık, Ekim 2000, p. 40-41

[569] Türkiye 1.Enerji Şurası 3. Alt Komisyon Raporu. **Kömür ve Diğer Yakıtların Geliştirilmesi,Üretimi ve İthali İle İlgili Sorunlar,** İstanbul, Aralık 1998, p 3.23

[570] Türkiye 1.Enerji Şurası, p. 3.32

lignite production is open-cast, but low-cost open-cast mines are nearing depletion. There are also asphaltite reserves of 82 million tonnes in the Sirnak and Silopi areas.[571]

Figure 49: Primary Energy Supply, 1973 to 2020



Source: OECD/IEA. **Energy Policies of IEA Countries Turkey 2001 Review**, Paris, 2001

The government expects coal supply to rise from 20.1 Mtoe in 1999 to 118.4 Mtoe in 2020; more than five times current figures. It believes that domestic lignite production will almost triple and that hard coal imports will multiply by 15. Securing the supplies thought to be necessary will require very significant investment. Tripling the power generating capacity by 2015, as considered necessary by the MENR, will require investing $3.5-5 billion per year in that time period. The construction of additional gas and oil pipelines and/or LNG terminals will require very substantial additional amounts. Among the more than one dozen oil and gas infrastructure projects currently under discussion and/or construction9, the four most advanced together require in excess of $10 billion.

The contribution of nuclear power as of 2005 was to come from a plant to be built at Akkuyu on the southern, Mediterranean coast. The cost of this plant was estimated at between $2.5 and $4 billion. The government has made at least three attempts since the 1980s to secure construction of this plant by foreign investors under a build-own-transfer (BOT) scheme, all of which failed. Many other power plant projects have experienced a similar fate. The last attempt was aborted in summer 2000, with the consequence that the 2005 start-up date for nuclear power has become unrealistic. The government now aims for 2015.

[571] Güven Onal,"*Dünya ve Türkiye'de Yüzyılda kömürün Enerjideki Yeri ve Önemi*", **Türkiye 8. Enerji Kongresi,** Ankara, Mayıs 2000, p. 121-128

7. 3. 1. 2. State Aids

Investment decisions and production programmes are proposed by the companies and discussed with the MENR. The State Planning Organisation takes final decisions.The government subsidises production of indigenous hard coal. The stated reason is that the use of domestic resources is important in order to maintain security of supply. TTK and TKI report directly to the MENR. TTK and TKI set the prices of hard coal and lignite for their customers, but these prices are subject to approval by the MENR. These prices do not allow TTK, the Turkish Hard Coal Enterprise, to recover its costs. As a result, the company incurs heavy losses, which are borne by the government. In contrast, TKI, the Turkish Coal Enterprise, does not benefit from direct subside any more? Since 1995, the company has been able to cover its costs and make a profit.

Following the Producer Subsidy Equivalent (PSE) method, total subsidies paid by the Turkish Treasury to TTK amounted to Turkish lira 72 trillion ($171 million) in 1999. This represents a decline from the 1995 value of $263 million, but is still much higher than the $68 million paid in 1990. Table 4 details PSE paid in recent years. It shows that both PSE, which includes government coverage of operating losses, and assistance not benefiting current production increased substantially in 1995 and continued to grow afterwards.

Table 16: Assistance to Turkish Hard Coal Producers (TTK)

	1991	*1995*	*1996*	*1997*	*1998*	*1999*	*2000p*
Production,million tce	2.69	1.88	1.97	1.94	1.64	1.47	1.67
Aid per tce in thousand	637	6,487	8,031	12,371	27,212	63,976	138,078
Aid per tce in $	151.6	142.0	98.8	81.6	104.5	155.8	220.0
p = provisional. tce = tonne of coal equivalent.							

Source:IEA: *Coal Information 2001*, IEA/OECD Paris, 2001, http://www.tki.gov.tr/tki_hakkinda/_tur_dun_kom.htm

7. 3. 1. 3. Reforms in the Coal Industry

For a number of years, the government has tried to increase productivity in the coal industry. Beginning in 1993, government programmes have aimed at increasing productivity and reducing overstaffing in TTK. In 1995, the least productive mines were closed. Between 1992 and 1999, TTK reduced its workforce by 13,315 through an early retirement programme. As a result, TTK's production costs decreased from $128 per tonne in 1990 to $104 per tonne in 1995, but they were still twice the price of imported hard coal. Prices for Turkish steam coal for electricity generation continued to decline by about 11% on average between 1995 and 1999 – domestic coal prices for industry remained stable – but in the same period, average prices for internationally traded coal fell by 26%.[572]

However, in early 2000, TTK hired 4,012 new workers for underground mining. The stated purpose was refreshment of the workforce especially with respect to skills. Of this number, 3,012 were direct surface workers. The earlier workforce cuts had led to the reduction of coal output to just under 2 million tonnes in 1999, shown in Table 17. Since the government plans to expand hard coal production, it considered new hiring and upgrading of skills to be necessary.

Table 17: Production and Workforce in TTK and TKI

	TTK				*TKI*	
	Production (million tonnes)	***Number of Workers***			***Production (million tonnes)***	***Number of Workers***
		Underground	***Surface***	***Total***		
1990	2.245	21,024	13,325	34,349	36.859	29,644
1993	2.789	16,592	11,837	28,429	..	..
1997	2.320	12,277	6,397	18,674	..	..
1998	2.136	11,684	5,722	17,406	..	..
1999	1.990	10,898	5,282	16,180	38.644	18,967
2000	2.340	13,255	5,002	18,257	39.180	17,408

Sources:TTK,TKI,MENR.www.tki.gov.tr.production.htm.dr.2000/%20.download.12012004

[572] Oktay Apaydın, "Enerji Sektöründe Yeniden Yapılanma Gereklidir " **Türkiye 8. Enerji Kongresi**, Mayıs 2000, Ankara, p. 147.

There are attempts to increase labor productivity in TKI. Table 5 also shows employment and production in TTK and TKI. Between 1990 and 1995, the workforce of TKI had been more than halved, from 29,644 to 12,192. It was then increased. Overall productivity in TTK increased from 98 to 124 tones per person-year between 1993 and 2000, and in TKI it increased from about 2,037 to 2,134 tones per person-year between 1999 and 2000. TKI estimates that in 2000, production expanded slightly within stable workforce.

The government is considering privatization of TTK and TKI in the medium to long term in the framework of its long-standing privatization programmer. The government also had plans to transfer the operating rights of the most profitable lignite mines to the private sector, especially those owned by TEAS, which deliver coal to mine mouth power plants. Four mines were to be privatized in 1997, and the transfer of operating rights (TOOR) of up to 20 individual mines was to occur in the medium term. However, privatization has actually occurred in only one case, the Cayirhan power plant, through a TOOR procedure. Following difficulties in concluding TOOR contracts with the private sector, the end of the TOOR programmer in the power industry and the possibility for outright privatization opened by constitutional amendments, no further transfers of individual coal mines can be expected.

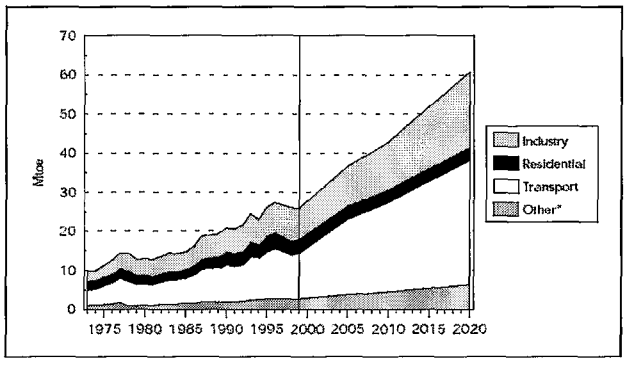
7. 3. 2. Oil

7. 3. 2. 1. Oil Demand

In line with developments in most other IEA countries, the importance of oil in the energy economy has declined. In 1973, oil accounted for 51.4% of TPES and 51.4% of electricity generation. By 1999, these shares had fallen to 41.8% of TPES (29.38 Mtoe) and 6.9% of electricity generation. Only in total final consumption did the share of oil remain unchanged – it was 48.5% in 1973 and 49.8% (25.92 Mtoe) in 1999. This is essentially due to the growth of oil use in transport, which was responsible for more than half of all oil use in 1973 as well as in 1999. Oil demand grew at an annual average rate of 4.1% between 1979 and 1990. In the following decade, the growth slowed somewhat, and the government expects lower growth rates in the vicinity of 3% per annum until 2010. The government expects oil consumption to increase fastest in the transport sector, leading to a near-tripling of demand by 2020. Industrial demand is also expected to more than double by 2020. In the commercial/residential sector, oil consumption is

expected to continue to increase, although less rapidly, especially because of growing demand in agriculture. Figure 49 shows past oil consumption, as well as expected future demand.

Figure 50: Final Consumption of Oil by Sector, 1973 to 2020



Source: PIGM.http://www.pigm.gov.tr/istatistik petrol/tüketim_.htm. en. tah.download20 4 2003

Turkey is the fourth-largest European consumer of liquefied petroleum gas (LPG) after Italy, France and Spain. LPG consumption increased on average by about 8% per year over the past decades. Recently, LPG consumption has increased drastically, since the government started subsidising LPG intended for household (cooking) use. Tax exemptions pushed the price of LPG below gasoline or diesel. As normal car engines cannot use LPG, the government expected that its use in cars would remain limited, except for taxi drivers, who in large cities such as Istanbul and Ankara were encouraged to use LPG because it causes less air pollution than diesel or gasoline. An underground industry then developed to convert gasoline and diesel engines to LPG. With a payback period of less than two years, the operation was sufficiently simple and cheap for drivers to convert massively to LPG use. Alerted by the resulting loss of tax revenue, the government began to phase out the tax break at end-2000. The new tax regulations on LPG have brought the use of LPG back under control.

7. 3. 2. 2. Production and Exploration

The Turkish Petroleum Corporation (Türkiye Petrolleri Anonim Ortakligi, TPAO), the state economic enterprise (SEE) is responsible for petroleum exploration and production in Turkey. TPAO does not have any statutory monopoly in the upstream market. Twenty-five companies, including three Turkish companies, are active in the upstream petroleum sector in Turkey. But TPAO has the largest market share. Ten companies, of which two are domestic and eight foreign, were involved in production, either individually or as joint production companies.

74.4% of total oil production was from TPAO, followed by the Dutch company Perenco N.V. (20.4%). The remaining 5.2% was produced by the other Turkish and foreign companies. Table 6 shows crude oil production in 1999 by company.

Table 18: Crude Oil Production in Turkey, 1999

Company	*Production (thousand tonnes)*
TPAO	2,187
Perenco N.V.	2,599
Arco	2,236
Petrom (Dorchester)	2,281
Others	2,237
Total	2,940

Source: PIGM.http://www.pigm.gov.tr/istatistik/hampetrol_uretimi.htm.source.endownload 18 2 2003

TPAO's oil production rose gently in the 1950s, levelled off after 1969, and then peaked sharply in 1991. Since then, it has declined, as some of the fields are beginning to near depletion. The government expects Turkey's total domestic oil production to be slightly more than one-third of today's value in 2010, and to decline further thereafter. The Directorate-General for Petroleum Affairs (PIGM) estimated Turkey's remaining petroleum reserves at 296 million barrels of crude oil and 8.8 billion cubic metres of natural gas on 1 January 2000. Table19 provides further details on reserves. At current rates of production, Turkey's known oil reserves will last another 14 years.

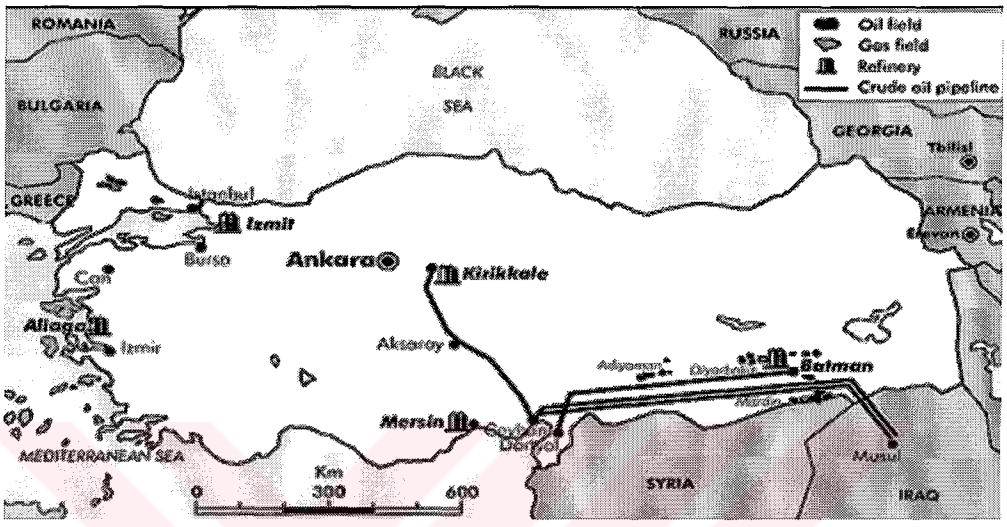
Table 19: Petroleum Reserves in Turkey, 1 January 2000

	Reserves in Situ	*Recoverable reserves*	*Cumulative Production*	*Remaining Reserves*
Oil (million barrels)	6,582	1,070	774	296
Ele.(million tonnes)	966.5	152.6	109.5	43.1
Gas (bcm)	**19.0**	**13.1**	**4.3**	**8.8**

Source: PIGM.http://www.pigm.gov.tr/istatistik/hampetrolrezerv.htmdownload3022004

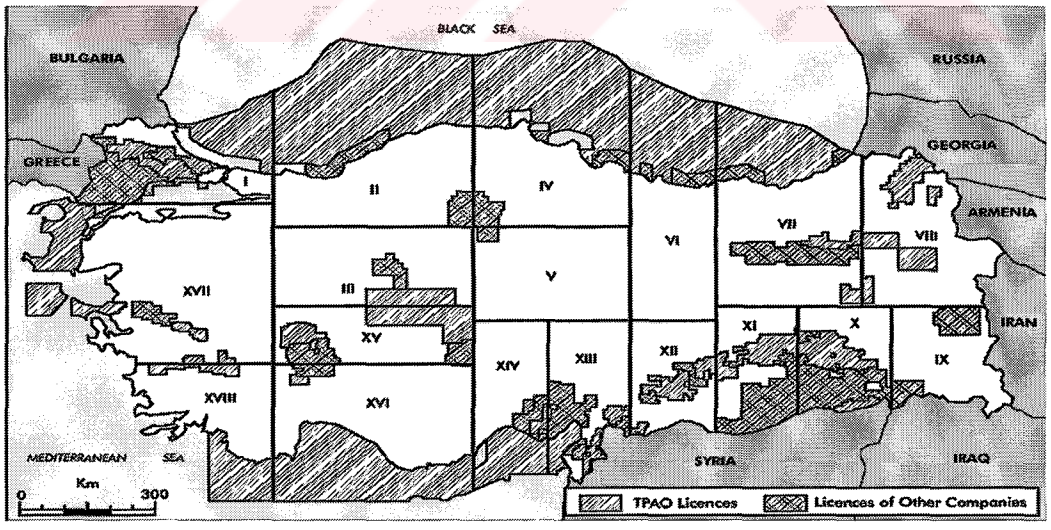
Turkey's three main known petroleum reserves lie near Hamitabat in Thrace in the European part of the country and in south-eastern Anatolia near Adiyaman and Diyarbakir/Batman.

Map 3 : Turkish Rafineries



Source: Turkiye 1.Energy Şurası Alt Komisyon Raporları Cilt 1 "Türkiye 'de Rafineri Tesisleri" **2.Alt Komisyon,** 7-9 Aralık1998, İstanbul, chapter 2, p. 126, figure 3-1.

Map 4: Oil Reserves



Source. Turkiye 1.Energy Şurasi Alt Komisyon Raporları Cilt 1 "Türkiye Petrol Bölgeleri" **2.Alt Komisyon,** 7-9 Aralık1998, İstanbul, chapter 2, p. 18, figure 2.5.

Two of the latter were international joint ventures with Perenco and Arco. TPAO carries out onshore exploration in various areas in Turkey, especially in the south-eastern part of the country. Offshore exploration focuses on the Black Sea. In 1999, exploration activities in the Western Black Sea carried out jointly with Arco, encountered only non-commercial gas deposits. In April 1999, TPAO and BP Amoco were granted exploration licences in the Eastern Black Sea. Offshore exploration is also carried out in the Mediterranean Sea, in the Antalya, Mersin and Iskenderun bays. To encourage exploration, the government plans to lower royalties, which amount to 12.5%. The new royalties are to be progressive, i.e. smaller fields will enjoy a lower royalty rate.

7. 3. 2. 3. Trade, Transportation and Transit

Turkey's oil reserves are minor. The country covered about 10% (3.09 Mtoe) of its primary oil demand (29.38 Mtoe TPES) through its own production in 1999; the remainder had to be imported. As oil demand shows momentous growth, net crude oil and oil products imports also increased at a 4.1% annual average growth rate since 1990. As indigenous production is expected to decline and demand is expected to keep growing, oil imports will have to increase substantially in future. Table 8 shows Turkish crude oil imports by country of origin. Before 1990, Iraq was the largest oil supplier. In 1990, after the UN sanctions against Iraq, Turkey increased its crude oil purchases from Saudi Arabia and Iran. Beginning in December 1996, limited oil imports from Iraq were once more allowed, under UN Resolution 986. From that time, Turkish oil imports from Iraq have continued and even grown slightly.

Table 20: Turkish Crude Oil Imports by Country of Origin

Country of Origin	*1990*	*%*	*1998*	*%*	*1999*	*%*
Saudi Arabia	2.9	14.4	5.4	22.8	3.6	15.7
Iraq	6.8	33.8	3.1	13.1	4.8	20.9
Iran	3.5	17.4	4.5	19.0	4.8	20.9
Libya	2.6	12.9	3.3	13.9	3.6	15.7
Russia	2.0	10.0	0.9	3.8	2.5	10.8
Syria	0.3	1.5	2.2	9.3	2.1	9

Other	2.0	10.0	4.3	18.1	1.6	7.0
Total	**20.1**	**100.0**	**23.7**	**100.0**	**23**	**100.0**

Source: PIGM. http://www.pigm.gov.tr/istatistik/urunithalatı.htm

Turkey imports oil products through seaports such as Ceyhan and by truck. The country has no oil product pipelines. In 1999, net oil product imports amounted to about 11% of total final oil consumption.

Turkey has three major crude oil pipelines. These pipelines, as well as gas pipelines, are owned and operated by the fully state-owned Petroleum Pipeline Corporation (Boru Hatlari Ile Petrol Tasima A.S., BOTAS). BOTAS was established on 15 August 1974, but remained a subsidiary of TPAO until 8 February 1995, when it was restructured as a State Economic Enterprise. Until recently, BOTAS had a *de facto* dominating position in gas transportation in Turkey, as it was the only company allowed to import natural gas.

Crude oil produced in petroleum districts near Batman is transported to the port terminal at Dörtyol by means of the Batman-Dörtyol crude oil pipeline, which was constructed by TPAO in 1967 and transferred to BOTAS in 1984. Crude oil is transported by marine tankers from Dörtyol to the refineries at Izmir and Izmit, as well as to the refinery run by the private company ATAS. Crude oil produced in the Selmo oil field is transported to Batman by means of the Selmo-Batman crude oil pipeline.The crude oil pipeline linking Yumurtalik and Kirikkale was built to carry oil to the Orta Anadolu Refinery. Its ownership rights were transferred from TPAO to BOTAS in 1983, and it began operating in 1986.

The Turkey-Iraq crude oil pipeline consists of two parallel pipes and runs to the major oil terminal of Ceyhan. The first pipeline started operation in May 1977 and the second in August 1987. Economic sanctions against Iraq in 1990 led to the closure of these two pipelines. After the UN vote on Resolution 986, which allowed Iraq to sell oil worth $2 billion over a period of six months, the pipeline was opened again in December 1996. Meanwhile, the limit on oil exports was lifted. In 1990, the two parallel Turkey-Iraq pipelines carried far larger amounts of oil (about 350 million barrels) than the three others together. As of 1997, oil transport resumed, and in 1999 the pipelines again carried over 300 million barrels.

Turkey has far-reaching plans to bring new oil supplies to Western markets from the Caspian region, especially Azerbaijan and Kazakhstan. The Baku-Tbilisi-Ceyhan project is designed to transport crude oil produced in the Caspian Basin by pipeline to the Ceyhan port terminal. As the Ceyhan terminal has a capacity of 120 Mtoe per year and can receive very large crude carriers (VLCC), the oil could be shipped to world markets by tanker. The Turkish government expects that the pipeline will have an approximate length of 1,730 km, will carry 1 million barrels of crude oil per day, and will come into service in 2004 or 2005. From its starting point in the Azeri city of Baku on the shore of the Caspian Sea, the pipeline is to cross the territory of Azerbaijan and Georgia, enter Turkey near the city of Ardahan, run westwards to Sivas and then dip south to Ceyhan. For this reason, many parties are involved in negotiating this international project, which has been under consideration for a decade.[573]

Negotiations are also complex because there is an alternative, "northern" route from Baku via the Russian port of Novorossiysk, and then by tanker through the Black Seaand the Bosporus Strait. Unlike Ceyhan, Novorossiysk cannot handle super tankers, but a crude oil pipeline has existed between Baku and Novorossiysk since 1993, and the investment cost is therefore estimated around $60 million. Estimates for the Baku-Ceyhan option range from $1.8 billion to $4 billion: the Turkish government assumes that the cost will be in the order of $2.5 billion. Other competing proposals include construction of a pipeline from Baku to the Georgian sea port Supsa at a cost of about $250 million, and a swap arrangement with, or pipeline through, Iran. Like Novorossiysk, the Supsa option would be restricted to smaller tankers, because among other things of the need to pass through the Bosporus Strait, which already has extremely dense tanker traffic28. Moreover, weather conditions in winter can constrain navigation on this route. Figure 15 shows the alternative pipeline options. The World Bank sponsored a feasibility study, an environmental impact assessment and a detailed route study for the Baku-Tbilisi-Ceyhan project; these were completed in 1998. Following numerous additional studies, an Intergovermental Agreement (IGA) was signed between Turkey, Azerbaijan and Georgia during the OSCE Summit in Istanbul on 18 November 1999. The IGA sets forth the mutual obligations of the three governments with respect to the project.[574]

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[573] Turkiye 1.Energy Şurası Alt Komisyon Raporları Cılt 1,. **2.Alt Komisyon,** 7-9 Aralık1998, İstanbul, Chapter 2, p. 47.

[574] Turkiye 1.Energy Şurası Alt Komisyon Raporları.Cılt 1 2.Alt Komisyon ,7-9 Aralık1998, İstanbul , Chapter 2, pp. 49-.51.

A number of additional documents were also developed for signature after the IGA was ratified by the parliaments of Azerbaijan, Georgia and Turkey. In the Host Governments Agreement, the three governments committed themselves to establishing a harmonised legal, economic and administrative structure for investors in the project. The turnkey agreement establishes BOTAS as the contractor for the Turkish section of the pipeline, and foresees 6 months for fundamental engineering studies, 12 months for detailed engineering and 32 months for construction, with commissioning in 2004. The Government Guarantee is a guarantee by the Turkish government to bear all costs exceeding the $1.4 billion that the government has estimated for the Turkish section of the pipeline. Ratification of the IGA occurred on 26 May 2000 in Azerbaijan, on 29 May 2000 in Georgia, and on 22 June 2000 in Turkey. [575]

With the framework of required intergovernmental treaties now in place, the project can be submitted to investors. The most important aspect in terms of the economic viability of the pipeline concerns the volumes of crude oil that can be committed to it. Industry analysts estimate that to succeed the pipeline must carry 1 million barrels per day of crude oil. Attempts are under way to commit oil volumes to the project in co-operation with Azeri and Kazakh oil companies. TPAO is playing a major role in this respect.

TPAO has held a 6.75% share in the Azerbaijan International Operating Company (AIOC) since 1994. On 20 September 1994, an agreement was signed between a consortium of companies, the state-owned Azeri oil company Socar and the Azeri government to produce oil from the "Mega Project". The agreement covers the Chirag and Azeri fields and the deepwater part of the Guneshly field in the Azerbaijan sector of the Caspian Sea. AIOC was established following this agreement. Besides TPAO, the shareholders are BP, Unocal, Socar, Lukoil, Statoil, Exxon-Mobil, Pennzoil, Itochu, Ramco, and Delta-Hess. BP is the largest shareholder with about 34%, followed by Unocal, Socar and Lukoil with about 10% each. The project is currently in the early oil production phase: in 2001, production from the project's 11 wells reached 120,000 barrels per day. The main production phase, which is to bring total production to around 400,000 barrels per day, is under development, but is not expected to begin until the first quarter of 2005. Estimated reserves in the Mega Project total about 4.6 billion barrels of oil.[576]

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[575] IEA Country Report 2002, Turkey , p. 64.
[576] ibid

TPAO is involved in three other similar joint ventures in the Azeri part of the Caspian Sea. The company became part of the Shahdeniz project in October 1996, the Kurdashi project in July 1998, and the Alov project in December 1998. The Shahdeniz project has six shareholders, the largest of which are BP and Statoil with 25.5% each. TPAO's participation is 9%. A significant gas discovery was made in this field in June 1999, and agreements for marketing the gas were signed on 21 March 2001. The estimated reserve is reported to be about 875 billion cubic metres of natural gas.

The Kurdashi project has five shareholders, of which SOA (50%) and AGIP (25%) are the largest. TPAO holds 5%. The first exploration well was drilled in June 2000. Two more exploration wells are to be drilled during the threeyear exploration period.The Alov project has six shareholders. SOA (40%) is the largest, followed bytoil, BP and Exxon-Mobil with 15% each. TPAO holds 10%, and AEC theremaining 5%. The first exploration well is to be drilled in 2002.TPAO's activities in Kazakhstan are carried out through an oil exploration company it formed in 1993 with the Kazakh Ministry of Geology and Energy. The joint venture, in which TPAO holds a 49% share, is called Kazakhturkmunay (KTM). Production from three commercial discoveries commenced in 1999, yielding a total of around 4,500 barrels per day. Studies are under way to increase production.[577]

In March 2001, a Memorandum of Understanding was signed between the governments of Azerbaijan, Georgia, Kazakhstan and Turkey providing a legal framework for oil producers in Kazakhstan to join the Baku-Tbilisi-Ceyhan pipeline project. This opens the possibility in principle that oil from the Kazakhi Tengiz (Kashagan) field, produced by Tengizchevroil, may be committed to the pipeline.[578]

7. 3. 2. 4. Refining and Retailing

There are five oil refineries in Turkey with a total capacity of 32 million tonnes. Four of them are owned by the state-owned company TUPRAS: the Izmit, Izmir, Kirikkale and Batman refineries. The refining capacity of TUPRAS is currently 27.6 million tonnes per year, or 86% of Turkey's total refining capacity.

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[577] IEA Country Report 2002,Turkey p.67.
[578] ibid.

The fifth refinery is owned by the private company ATAS and is situated near Mersin on the Mediterranean coast. ATAS was established in 1962 with an annual capacity of 3.2 million tonnes. It is a joint venture of Mobil (51%), Shell (27%), BP Amoco (17%) and the local company Marmara Petroleum (Marmara Petrol ve Rafineri Isleri AS, 5%). The ATAS refinery, a simple hydro-skimming facility, was expanded to 4.4 million tonnes annual capacity in 1969. No further upgrades have been carried out.

Table 21: Refinery Capacity in Turkey

Refineries	*Capacity (million tonnes per year)*
Izmit	11.5
Izmir	10.0
Kirikkale	5.0
Atas	4.4
Batman	1.1
Total	**32.0**

Source: PİGM http://www.pigm.gov.tr/istatistik/rafinerikapasiteleri.htm (Download: 23. 12.20039

In 1999, 26.2 million tonnes of crude oil were processed, yielding 25.4 million tonnes of products. During the same period, 5.6 million tonnes of products were imported while 2.5 million tonnes of products were exported. With crude oil processing capacity of 11.5 million tonnes per year, the Izmit (Körfez) refinery is the largest refinery in Turkey. It is located on the Gulf of Izmit, approximately 80 km south-east of Istanbul. It serves the Istanbul market and the markets along the Black Sea and Marmara coast. The Izmit refinery is adjacent to several industrial complexes and various oil product distribution companies. The refinery was upgraded with the construction of a hydro cracker and CCR complex in 1997.[579]

The retail market has also long been characterised by dominance of a state-owned company, Petrol Ofisi (POAS). POAS was established in 1941 as a government institution to ensure the storage, marketing and distribution of petroleum products in Turkey. In 1981, Petrol

[579] Turkiye 1.Energy Şurası Alt Komisyon Raporları Cilt 1 "Türkiyede ki Rafineri Tesisleri" 1 2. Alt Komisyon 7-9 Aralık 1998, İstanbul, Chapter 2, p. 26.

Ofisi was transferred to Türkiye Petrol Kurumu (PETKUR), a government agency responsible for all government-related petroleum matters. In 1983, POAS was corporatised and became a limited liability company under Law No. 233 on State Economic Enterprises. Its ownership was transferred to TPAO. As part of Turkey's privatisation programme, under Law No. 3291, ownership of POAS was transferred to the Public Participation Administration (PPA), the predecessor of the Privatisation Administration, in 1990. At present, approximately 6.7% of POAS's shares are traded on the ISE, and the Privatisation Administration owns approximately 93.3% of the shares.

POAS has no statutory monopoly, but is the leading distributor of petroleum products in Turkey. In 1999, POAS had a 40% share of the products market. POAS's fuel products are distributed through a nationwide network of 5,259 sales outlets. Of these, POAS owns 47 retail service stations, although they are operated by independent licensees. The remaining 4,589 POAS service stations are owned and operated by independent dealers under long-term supply and operating agreements. POAS sells products directly to government agencies, State Economic Enterprises, industrial users, the Turkish military and NATO. With a 77% share, POAS is the leading supplier of aviation fuel to international and domestic airlines in Turkey. Through an annually renewed protocol, POAS has exclusive civil usage of the NATO West trunkline that is connected to the Izmit refinery and owned by NATO. Apart from POAS, the Turkish retail market for oil products comprises 12 companies. The number of retailers has increased since 1989, when regulation of the oil market was eased. Table 10 shows oil product retailers and their market shares in 1999.[580]

On 12 December 1994, the Privatisation High Council (PHC), a ministerial body that has the ultimate decision-making power concerning privatisation, took the decision (Decision 94/9 PHC) to privatise POAS. A first tender for the block sale of 51% of POAS's public shares was issued in March 1998. Seven proposals were included in the final tender. PHC approved the block sale to a consortium for $1,160 billion. However, the Administrative Court of Ankara (Danistay) cancelled the tender in 1999. The POAS tender was then cancelled by the PHC.

A new tender was opened on 17 November 1999. Four proposals were included in the final tender on 3 March 2000. The highest bid of $1.260 billion was submitted by a Turkish

[580] ibid

financial consortium. Following a favourable review by the Turkish Competition Board on 10 March 2000, the result of the tender was 70 approved by the PHC in April 2000. The sale became effective on 21 July 2000. This sale attributes the majority of shares and voting rights to the new owners, within the limits of a Preferential Share currently held by the Privatisation Administration. The latter has announced that it reserves the right to sell the remaining 42.3% of the shares of the company at any time in one or more further block sales, public offerings, international offerings, or by sale to company employees and/or sale on the Istanbul Stock Exchange.

Table 22: Oil Retailers and their Shares in the Turkish Market, 1999

Company	*Sales million tonnes)*	*MarketShare (%)*	*Number of Sales Outlets*
(POAS)	7.0	40	5,259
Turcas	1.3	7	769
Shell	1.8	10	572
BPAO	3.1	17	926
Total	0.9	5	339
Selyak	0.5	3	135
Opet	1.4	8	439
Tu-Ta *	0.1	1	166
Petline	0.3	2	179
Turkuaz	0.3	2	186
Bölünmez	0.1	1	58
Aytemiz	0.6	4	112
Delta**	..	..	10
Total	**175.4**	**100**	**9,150**

* TABAS and TURCAS merged their downstream activities in 1999.
** Delta was established in 1999.
Source : http://www.pigm.gov.tr/istatistik/rafinerikapasiteleri.htm (Download.:2 .01.2004)

7. 3. 2. 5. Government Intervention and its Reform

Oil market, which had been heavily regulated, underwent significant liberalisation from 1989 through 1990. Before 1954, petroleum operations were classified as public service operations under Petroleum Law Number 792 of 1926. The operations were state-owned and were integral parts of the general government budget.

In 1954, a more liberal Petroleum Law (No. 6326) was enacted. This law, which was in force until 2001, provided for private-sector activities throughout the upstream oil and gas sectors and the downstream oil market, although it also foresaw government regulation of exploration, production, refining and transportation. No provisions were made regarding oil and gas distribution. Oil product retailing was not restricted. Foreign companies were required to act through Turkish subsidiaries, to have a minimum storage capacity and to own a minimum number of service stations. The Petroleum Law also forms the legal basis of the natural gas industry (see section below). Under this law, until 1990 domestic oil producers had to sell their production to TUPRAS. Oil product prices were set by the government. The law contained a third party access provision for pipelines. TPAO was established through Law No. 6327 to operate like a commercial company. The Directorate-General of Petroleum Affairs (PIGM), a part of the MENR, was assigned to enforce.[581]

7. 3. 2. 6. Petroleum Law

Under Law No. 79 of 1989, importers, refineries and oil distribution and retailing companies were allowed to set prices freely for crude oil and petroleum products. However, the same law enabled the government to determine "fundamental principles of purchase, sale and distribution of crude oil and petroleum products, considering the developments of international markets". The outcome of this reform was that oil producers were allowed to sell 35% of their production from 72 new oil fields to others than TUPRAS. Oil product imports and exports were also liberalised in 1989; all refineries and retailers with minimum storage capacities were granted import licences. However, the government continued to prescribe annual oil import programmes with the stated purpose of matching refinery requirements in terms of quantity and quality.

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[581] Turkiye 1.Energy Şurası Alt Komisyon Raporları Cilt 1 *"Petrol Kanunu ve Yapılan Değişiklikler "* **2. Alt Komisyon,** 7-9 Aralık 1998, İstanbul, Chapter 2, p. 21.

TUPRAS's ex-refinery prices for oil products also remained subject to government approval. Through repeal of Article 6 of the Petroleum Law (Law No. 6326) in 1994, restrictions on non-producer private-sector participation in ownership or construction of refineries and pipelines were removed.[582]

Between 1 July 1998 and January 2000, the Council of Ministers adopted several measures to improve fuel price stability, including an automatic pricing formula for domestic sales of oil products, indexation of refinery profit margins and a compensatory fuel consumption tax, replacing several other taxes. In October 2001, a new Petroleum Products Law was adopted. Through this law, the automatic pricing formula was abolished. The gas market was liberalised in 2001 through a separate Gas Market Law. [583]

7. 3. 2. 7. Tax on Oil Products

Turkey's main products are the fuel consumption tax (FCT). The FCT rates for various oil products are given in Table 1. Figures 1 and 2 show Turkey's taxation of automotive fuels compared with other countries. To alleviate the effects of oil price fluctuations and the pronounced exchange rate fluctuations of the Turkish lira against the dollar on domestic oil prices, the government linked this tax to a pre-existing mechanism, called the Fuel Price Stabilisation Fund (FPSF), as of 5 February 2000.

The FPSF was established the purpose of this fund is to stabilise domestic oil prices. The Fuel Price Stabilisation Fund is financed through a compensatory FPSF tax. The tax rate fluctuates and is inversely proportional to developments in international oil prices and the exchange rate of the Turkish lira against the dollar. The tax does not apply to fuels used in generating electricity. [584]

Ex-refinery ceiling prices are now linked to CIF Mediterranean product prices. The ceiling price changes if the rolling seven-day average of the import price rises or falls more than 3%. When end-user oil product prices do not rise as rapidly as crude oil prices, payments are made

[582] ibid
[583] IEA Country Report 2002, Turkey, p. 29.
[584] Through Decree No 98/10745 of 1 July 1998.

from the FPSF to reimburse refiners' and retailers' revenue shortfalls. The fund is financed through the FPSF tax, especially during periods of low oil prices when the tax rate is high.[585]

Through this change, oil product prices were linked to international market prices and short-term fluctuations were limited to a price band. Ex-refinery prices, distributor and retailer margins are also indexed to the U.S. dollar in order to protect refineries, distributors and retailers, as well as tax revenues, from the effects of inflation. The purpose of this measure was to enhance price stability and predictability, as well as to eliminate the economic disadvantage of the inland refineries caused by transportation. Refineries, distributing companies and retailers are free to compete below the ceiling price. In 1999 and early 2000, the FPSF tax was applied only to diesel, and the rate was very low (about 1% of the end-user price).

The reason for this was the high volatility of crude oil prices at the time. By applying this low-rate tax, the government tried to relieve the burden on ultimate consumers. In January 1996, Turkey signed the Customs Union Agreement with the EU. Therefore, customs duties are applied only to oil product imports from non-EU countries.[586]

Table 23: Taxes on Oil Products, 2001

	Customs Duties %*	*FPSF TL*	*FCT TL*	*VAT %*
Premium gasoline (per litre)	4.7	5,000	431,500	18
Regular gasoline (per litre)	4.7	40,000	409,500	18
Unleaded gasoline (per litre)	4.7	40,000	424,500	18
Naphtha (fuel)	3.0	-	-	18
Naphtha	0.0	-	-	18
Kerosene (per litre)	4.7	17,750	311,500	18
Jet fuel (per litre)	4.7	40,000		18
Diesel oil (2%) (per litre)	3.5	40,000	291,200	18
Diesel oil (other) (per litre)	0.0	40,000	291,200	18
Motor diesel (per litre)	3.5	3,600	291,200	18

[585] Turkiye 1.Energy Şurası Alt Komisyon Raporları Cilt 1 "Vergi ve Sorunları "**2.Alt Komisyon**, İstanbul, 7-9 Aralık 1998, Chapter 2, p. 76.
[586] World Energy Council. **Turkish Energy Report,** Ankara: 1999, p. 68.

Heating oil (per litre)	3.5	40,150	113,000	18
Fuel oil 6 (industry) (per kg)	3.5	7,100	15,000	18
Fuel oil (power gen.) (per kg)	3.5	40,000	15,000	18
LPG (bottled),propane,butane (per kg)	0.7	40,000	185,000	18
LPG (automotive) (per kg)	0.7	40,000	185,000	40
LPG (heating) (per kg)	0.7	40,000	185,000	18
Propane (fuel) (per kg)	8.0	40,000	185,000	18

Source. Petrolişleri Genel Müdürlüğü, http://www.pigm.gov.tr /istatistik/ petrolver gien product-hthm (Download: 12.11.2003)

There is no customs duty on imports from EU and EFTA countries, nor from Romania, Bulgaria, the Czech Republic, Lithuania, Hungary, Estonia, and Israel.[587]

7. 3. 3. Natural Gas

7. 3. 3. 1. Natural Gas Demand

Natural gas production and use in Turkey began in 1976. Starting in 1987, gas demand began to grow rapidly. In 2003, the Turkish power sector accounted for about 65% of total Turkish gas demand, with the industrial and residential sectors accounting for 19% and 14%, respectively. Prior to Turkey's severe economic problems (plus price deregulation moves) in 2001, Turkish natural gas demand had been projected to increase very rapidly in coming years, with the prime consumers expected to be natural-gas-fired electric power plants and industrial users. Now, however, state natural gas and Pipeline Company BOTAS has revised its natural gas demand growth projections down sharply based on Turkey's economic problems, from about 1.6 trillion cubic feet (Tcf) in 2005 to under 0.9 Tcf in that year, a 45% downward revision [588]

Natural gas is Turkey's preferred fuel for new power plant capacity for several reasons: environmental (gas is less polluting than coal, lignite, or oil); geographic (Turkey is located near to huge amounts of gas in the Middle East and Central Asia); economic (Turkey could offset part

[587] See, www.menr.gov.tr./naturalgas.%20/en/.htm .
[588] See, IEA, energy, http://www.eia.doe.gov/cabs/turkey.html

of its energy import bill through transit fees it could charge for oil and gas shipments across its territory); and political (Turkey is seeking to strengthen relations with Caspian and Central Asian countries, several of which are potentially large gas exporters).

This growth would mean that gas TPES would be more than seven times as high in 2020 as it was in 1999 (10.6 Mtoe in 1999), and TFC more than five-and-a-half times as high (40.4 Mtoe in 1999). At these growth rates, gas would increase its share of TPES from today's 15.1% to over 25%. Gas's share in TFC would also rise, but much more moderately, from 7.8% to 10.8%, although reaching 15-16% between 2005 and 2010. Based on these figures and current supply contracts, the Turkish government expects a supply shortfall of 16-18 bcm in 2010.

The reason for this growth is that the largest increase in gas use is anticipated in power generation, where gas demand is expected to double between 2001 and 2010. With a demand of slightly under 8 bcm in 1999, the power industry accounted for 64% of total primary gas demand, followed by residential demand with slightly under 2.9 bcm and industry with 1.4 bcm. In all consuming sectors, gas has replaced oil and coal. The government has encouraged the use of natural gas to replace lignite in the residential sector to reduce urban pollution.[589]

7. 3. 3. 2. Production

Turkey has limited gas resources. The country's total natural gas reserves are estimated at 19.2 bcm and recoverable gas at 13.1 bcm. As of end-1999, cumulative production of natural gas was 4.3 bcm, with 8.8 bcm of recoverable gas remaining. In 1999, about 670,000 tonnes of oil equivalent (731 mcm) or 6% of primary gas supply was produced. The government expects this amount to be a blip: throughout the 1990s, production was less than a third of this figure, and it is expected that it will fall back to or below that lower level in the near future. There are 14 gas fields, two of which have been producing since the 1970s. These fields include: Hamitabat, Umurca, Karacaoglan, Karacali, and Degirmenköy, Kuzey Marmara (offshore), Silivri, Camurlu, Ardic, Kumrular, Havrabolu-Gelindere, Tekirdag- Sig and Derin-Barbes. The Camurlu field is in south-eastern Turkey. All the others are in Thrace. TPAO owns the first ten fields in the above list. The Kuzey Marmara field in the Marmara Sea was Turkey's first offshore field. Production began in 1997. Its depletion, and that of the Degirmenköy field, is expected by 2004. The Kuzey

[589] IEA .**Turkey** . Energy Report. p. 73.

Marmara and Degirmenköy fields are then to be used for underground storage with an annual storage capacity of 1.6 bcm. Table shows natural gas production in Turkey by producer.[590]

Table 24: Natural Gas Production by Producer, 1999

Operator	Production (mcm)
TPAO (public)	718
Perenco N.V.	9
TGT	3
TGT-HTI	1
Total	**731**

Source: PIGM. http://www.pigm.gov.tr/istatistik/dogalgazuretimiensor.htm (Download: 7. 12. 2003)

7. 3. 3. 3. Tortuous Pipeline

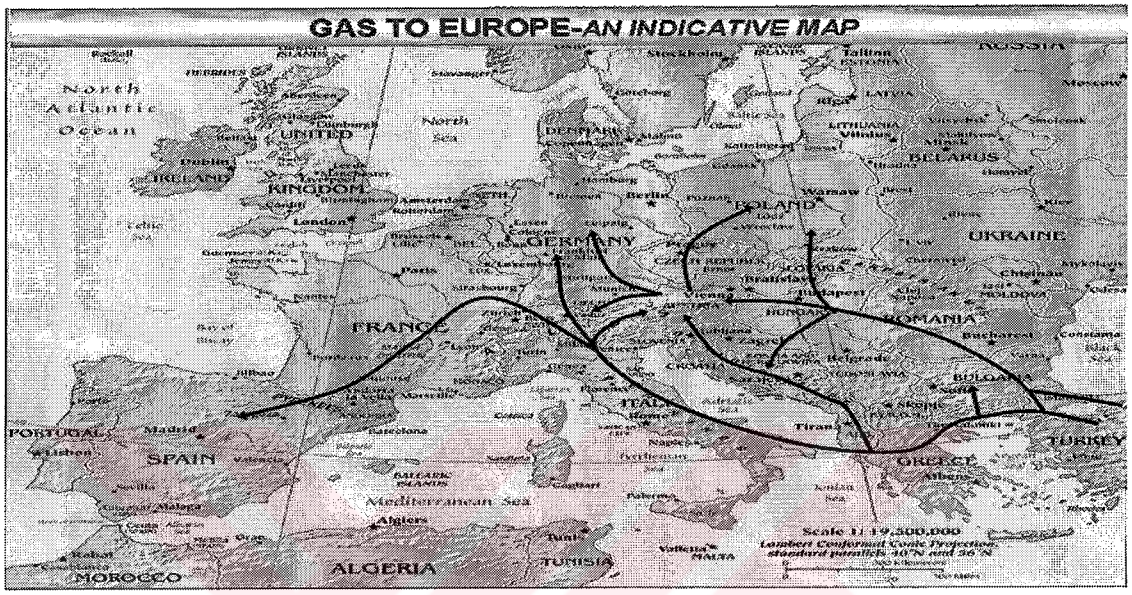
Turkey is also vitally interested in shaping pipeline systems to bring Caspian oil and gas to the West. Its preferred export route for later Azeri oil from Baku is the proposed 1,100-mile pipeline, which would cross through Turkey to Ceyhan. It is also interested in the plan to move Turkmenistan gas along the bed of the Caspian Sea from Turkmenistan to Azerbaijan and then across Turkish territory to Europe, as indicated by discussions in December 1997 between Turkey's prime minister Yilmaz and Azerbaijan's president Aliev.[591]

This Russo-Turkish agreement promises Gazprom a lion's share of the expanding world gas market. In then-prime minister Chernomyrdin's words, it means that Russia and Turkey "should be strategic partners" in the twenty-first century.[592]The AIOC oil companies had also agreed in principle to the route, after reassurances from Turkey that it would foot the bill in case the project exceeds Turkish government cost estimates.[593] Shah Deniz gas is of critical strategic importance for the East-West Corridor strategy because it will also contribute to the construction of Baku-Ceyhan. If both lines are laid parallel, the capital and operational expenses will be greatly reduced. On the other hand, if the construction of the Shah Deniz gas pipeline fails for any reason,

[590] World Energy Council. **Turkish Energy Report**, Ankara, 1999, p. 70.
[591] Interfax (December 28, 1997), in WNC: SOV (December 28, 1998).
[592] ITAR-TASS (December 11, 1997), in WNC: SOV
[593] Washington Report on Middle East Affairs, Volume 19, Issue 1, .2000, p. 23.

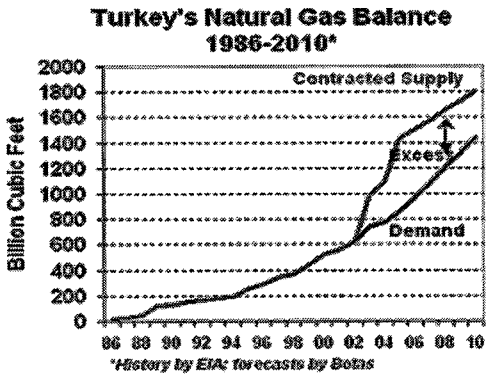
the East-West Corridor fails with it.[594]Also natural gas pipeline through Iran and Turkey is the latest indicator of the enormous influence of energy politics and profits in the geostrategic framework of Middle East, Central Asia, and shouthern eastern Europe.it also important reflection of US toward these regions. [595]

Map 5: Gas to Europe



Source: BOTAŞ. http://www.botas.gov.tr/haritalar/harita3.html(Download: 23.03.2004)

Figure 51: Turkey' Natural Gas Balance



Source: IEA, Energy, http://www.eia.doe.gov/cabs/turkey.html(Download:1204.2004)

[594] Congressional Daily Digest, 106 th Congress, March 3, 1999, pp. 203-212.
[595] John Sitilides, "Turkey and Emerging Global Energy System " **Western Policy Center,** August 1997, p. 1.

This sharp downward revision in Turkey's projected natural gas demand could have significant repercussions, since Turkey already has signed contracts for far more natural gas than it is expected to need. To date, Turkey has signed deals for around 1.8 Tcf per year of natural gas imports in 2010, more than 25% above the BOTAS forecast for Turkish gas consumption (1.4 Tcf) in that year. Of this total, over 25% is already coming from Russia via Bulgaria (the "Progress Pipeline"), 11% from Iran, and 11% from Algeria and Nigeria combined in the form of liquefied natural gas (LNG)

7. 3. 3. 4. Government Intervention and its Reform

With adoption of the new Natural Gas Market Law (Law No. 4646) on 2 May 2001, the regulation of the gas industry is about to change. The aim of the law is to establish a competitive gas market where all legal entities can carry out import, export, wholesale trade, transportation, distribution and storage under licence from a new energy market regulator. The law also has the purpose of harmonising Turkish legislation with EU law. The act foresees a 12-month transition period that can be extended once by six months by the Council of Ministers. The following are core provisions of the law.[596]

Natural gas supply, transmission and distribution are to be unbundled. BOTAS is to be split into two State Economic Enterprises after the year 2009, one responsible for trading, and the other for transmission. The two local distributors owned by BOTAS in Bursa and Eskisehir are to be corporatised and privatised subsequently. No importer will be allowed to import more than 20% of Turkey's gas consumption during any one year. BOTAS will be required to sell part of its gas import contracts to comply with this provision. Gas export will be allowed under an export licence.

Only gas producers will be allowed to sell more than 20% of annual gas consumption in the domestic market. Gas companies will not be allowed to establish another company in the same field of activity, but will be allowed to integrate vertically to up to 50% of the shares of the companies concerned.[597]

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[596] Doğal Gaz Piyasası Kanunu(Elektrik Piyasası Kanunu'nda Değişiklik Yapılması ve Doğal Gaz Piyasası Hakkındaki Kanun) 2 Mayıs 2001 – Çarşamba Kanun No: 4646 -- Kabul Tarihi: 18.04.2001

[597] IEA. Country Report Turkey, p. 80.

To ensure security of supply, gas importers and wholesalers must inform the government about the source and security of their gas imports, and they must store 10% of the gas they import in five years. BOTAS as owner and operator of the nation transmission network, as well as other owners and operators of LNG and storage facilities, is to offer services under a system of non-discriminatory, regulated and published tariffs and access conditions. These tariffs and access conditions are to be regulated by a new regulatory agency. Third parties will also be allowed to build pipelines. BOTAS and other potential grid operators are to undertake investment in accordance with government plans and programmes. The regulatory agency is to control this investment, as well as service quality.[598]

Private companies will be able to engage in wholesale and retail trading. These companies have to obtain a licence from the regulatory agency. Wholesale transactions regarding natural gas, oil and oil products, deliveries from independent pipelines and other services will not be regulated, and prices will be formed in the market in freely negotiated contracts.Eligible consumers will be free to select a supplier of their choice. Eligibility is to be determined by the regulator.

Distribution rights for cities and municipalities are to be awarded under a franchise bidding system. Once a distributor has won a franchise, his prices and conditions will be reviewed every five years by the regulator. Distributors have to construct, operate and extend distribution equipment as specified in an authorisation contract with the regulator. Once the franchise for a distribution area has been awarded, the selected operator has to allow the local government to participate to up to 20% in the company capital. The size of public participation, to be remunerated at nominal share price, is to be determined by the regulator.

The regulator will develop four different categories of gas prices: for connection, transmission/storage, wholesale and retail sales. Prices for connection will be determined between the regulator and distribution companies. Network tariffs will be based mainly on distance and volume. Storage tariffs will be freely determined between storage companies and users. Transmission and storage companies will have an obligation to prove to the regulator that their services are economical and safe. Wholesale prices are to be negotiated by the trading parties, but

[598] World Energy Council. **Turkish Energy Report**, Ankara, 1999, p. 74.

the regulator maintains some oversight of wholesale prices. [599] The distribution companies must prove that they provide gas from the cheapest source and they must operate efficiently and safely during their licence period. Distributors' retail sales prices for captive consumers are subject to rate-of-return regulation. They are reviewed annually by the regulator at the end of October, and the revised prices are to come into force by 31 December each year. So natural gas is bringing many benefits toturkeyincludingincreased diversication and improved environment.[600]

7. 3. 4 Electricity

7. 3. 4. 1. Industry Overview

Turkey's electricity supply industry is dominated today by large, publicly-owned companies. The industry dates back to 1902, when a 2 kW dynamo was connected to a water mill in Tarsus. The first larger-scale power plant was built in Istanbul in 1913. In 1935, several government institutions with authority relating to electricity production were established. These included the Electric Power Resources Survey and Development Administration (Elektrik Isleri Etut Idaresi, EIEI), which still exists today. EIEI carries out surveys and preparatory work to identify hydro potential, and plans and prepares dam and hydro plant projects. EIEI is also involved in studying energy conservation and the use of new and renewable energy resources.[601]

Construction of power plants began on a larger scale, by both private and publicly-owned entities in the 1950s. At the beginning of the decade, installed capacity was about 408 MW. The main private operators at the time, operating under state concession, were Cukurova Electric Company (CEAS), which supplied the regions of Adana and Icel, and KEPEZ Electric Company, which supplied the south-western region of Antalya. Among the publicly-owned entities were Iller Bankasi, a state-owned bank, as well as a number of municipalities and trade unions.

7. 3. 4. 2. Electricity Market: Law, Purpose, Scope and Definitions of Law

The purpose of this Law is to ensure the development of a financially sound and transparent electricity market operating in a competitive environment under provisions of civil

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[599] IEA. Country Report 2000 ,Turkey. p. 86

[600] John p.Ferriter,"Turkey Energy policy Review" **IEA**, 16 October 1997. p. 4.

[601] See, http://www.teias.gov.tr/ *Annual Development of Turkey's Installed Capacity By Primary Energy Resources (1940-1983)*

law and the delivery of sufficient, good quality, low cost and environment-friendly electricity to consumers and to ensure the autonomous regulation and supervision of this market. [602]
The scope of this law covers generation, transmission, distribution, wholesale, retailing and retailing services, import, export of electricity; rights and obligations of all real persons and legal entities directly involved in these activities; establishment of Energy Market Regulatory Authority and determination of operating principles of this authority; and the methods to be employed for privatization of electricity generation and distribution assets.[603]

By 1970, installed capacity had increased to about 2,235 MW, and both growing power consumption and the government's electrification plans required more coherent organisation of the power industry. At that time, only 7% of all villages were electrified. As a consequence, the government established the Turkish Electricity Authority (Türkiye Elektrik Kurumu, TEK) as a fully state-owned and staterun entity that year. All electricity activities were concentrated within TEK, although CEAS, KEPEZ, the municipalities and Iller Bankasi retained ownership of their assets. In 1982, electrification had reached 61% of all villages, and installed capacity had grown to 6,639 MW. All plants and networks owned by municipalities and unions were transferred to TEK that year.[604]

Following the reform programme and the opening of the Turkish economy in 1983, TEK's statutory monopoly was abolished by the 1984 Electricity Act (Law 3096 of December 1984), and it became possible for private companies to engage in power generation, transmission and distribution under the BOT system. TEK was corporatised, with a new legal status as a State Economic Enterprise (SEE). Between 1988 and 1992, CEAS and KEPEZ were once more allowed to operate their generation, transmission and distribution equipment, and to sell electricity in their service areas. During the same years, ten new entities obtained geographically limited licences for generation, transmission, distribution and supply. Today, CEAS has seven power plants, of which six are hydro plants totalling 580 MW and one is a 100 MW oil-fired plant.

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[602] See, Electricity Market Law Law No: 4628 Ratification Date: 20.02.2001 Enactment Date: 03.03.2001 Part One General Provisions Section One

[603] See, Added as per the Regulation published in the Official Gazette dated 28 February 2003, no. 25034. This Regulation covers the procedures and principles regarding the calculations and reporting by licensees subject to revenue control and tariff regulation as per the provisions of the Electricity Market Tariffs Regulation published in Official Gazette no. 24843 on 11/08/2002.Electricity Market Tariffs Regulation, August 2002 This Regulation has been drafted in compliance with the provisions of the Electricity Market Law No. 4628.

[604] http://www.teias.gov.tr/istatistikler/3.xls *Annual Development of Turkey's Installed Capacity By Primary Energy Resources (1984-2001)*

KEPEZ Elektrik operates four hydro plants totalling 127 MW in the western Mediterranean region. During one of the waves of privatisation and reform[605], a decree made TEK subject to privatisation legislation. As a result, TEK was split into two separate state-owned companies: Turkish Electricity Generation- Transmission Corporation (Türkiye Elektrik Üretim-Iletim A.S., TEAS) and Turkish Electricity Distribution Corporation (Türkiye Elektrik Dagitim A.S., TEDAS).[606]

TEAS is responsible for generation from thermal power plants, including operation and dispatch of all plants, as well as the construction of thermal power plants. Most hydroelectric plants are planned by EIEI and designed, constructed and operated by the Directorate-General of State Hydraulic Works (Devlet Su Isleri, DSI). Once completed, the plants are run by TEAS. TEAS's responsibilities also include transmission, system planning and expansion, wholesale trade, and imports and exports.

In 1999, Turkey's installed power generation capacity reached 26,117 MW, and 99.9% of its population was connected to the electricity grid. Since 1984, foreign private investors have been invited to participate in the Turkish power industry to help address the country's strong power demand growth, with mixed success. As a result, TEAS owned 82% of installed capacity in 1999, concessionaires likes CEAS and KEPEZ 2%, industrial autoproducers 10% and other production companies 6%. In 1999, TEAS accounted for almost 64% of all generation in Turkey. Further reform efforts are under way in order to introduce competition in the power industry, with the purpose of attracting investment, providing competitivelypriced electricity to consumers, preparing for EU accession, and ensuring compliance with IMF and World Bank support programmes.[607]

7. 3. 4. 2. Electricity Demand

Demand for power in Turkey is growing rapidly. Annual growth rates of power consumption have been 8% or higher. Turkey had about 27 GW of installed generating capacity in 2000, but for years has had problems supplying the rapidly growing demand, leading to frequent power cuts during peak times. The winter peak season 2000/2001 was expected to see a shortfall

[605] See, Law No. 513 of 13 August 1993.
[606] TEAS was separated into three entities on 4 April 2000.
[607] See, Electricity Generation Company Law (TEİAŞ) which date on 8.6.1984 and Law no 233, Law no 399 and date 22.1.1990, and law no, 4628.

of available generating capacity of up to 7 TWh, because of the combined effects of renewed strong growth in economic activity and electricity demand after the severe 1998/99 recession, a spring drought that left low water levels in Turkey's dams, and the delays experienced in attracting new private investment in generating capacity. [608]

The government responded to this supply shortfall by preparing a decree that stipulates changes in work shifts in government operations, cancellation of lunch breaks in government offices to make optimal use of daylight, reduction of street lighting and measures to combat electricity pilferage, which is estimated to amount to some 10% of power generation. The government is also seeking to import more electricity from Bulgaria, and to address short-term supply problems through the use of "mobile", barge-mounted power plants. Owing to the frequent power cuts, a sizeable number of Turkish citizens own household-sized generating units fuelled by diesel.

Because of the economic crisis in winter 2000/2001, the expected supply shortfall has not yet materialised. Instead, Turkeys' power demand decreased, and the expected growth rate of power consumption is 0% for the first half of 2001 and 3% for the second half of 2001. Capacity augmentation in the order of 1,600 MW (mostly hydro) is expected in 2001. However, water levels in the dams are low, and according to DSI, Turkey is going through a period of relatively dry years that could last for the next four to five years. For these reasons, it seems possible that a power supply shortfall may still occur at a later stage.

According to forecasts prepared by the Ministry of Energy and Natural Resources, the country will need about 60 GW of capacity by 2010, and about 105 GW by 2020. Gross power generation is expected to have to rise from about 116 TWh in 1999 to more than 555 TWh in 2020, about a fourfold increase. This implies power demand growth rates of at least 8% per annum for the coming decade and at least 6% per annum for the following decade. Figure 17 shows past and expected future development of electricity demand in Turkey by sector. The experience of other countries offers reason to doubt whether the anticipated high growth rates will be sustained over such a long period. In a recent review, the State Planning Organisation (DPT)

[608] On 3 March 2000, the Council of Ministers issued a Decree (Law No. 310) that provides for TEAS to be split into three separate companies: Turkish Electricity Transmission Company (Türkiye Elektrik Iletim A.S.), Electricity Generation Company (Elektrik Üretim A.S.) And Turkish Electricity Trading and Contracting Company (Türkiye Elektrik Ticaret ve Taahhüt A.S.). On 20 February 2001, a new Electricity Market Act was adopted, laying the foundation for a competitive power market

argued that the forecasts were too high and that less capacity was needed than forecast by the MENR and contracted for by TEAS. Whereas the MENR expects that between 2000 and 2005 about 70 TWh of new generation will be required, DPT estimates that only 55 additional TWh are needed. The World Bank supports the DPT assessment. However, it is clear that there is a need for rapid build-up of new capacity, which may well, is in the order of 3 GW per year for at least several years. The government has estimated that this would require investment of between $3.5 and 5 billion per year.

MENR and TEAS may in fact have over-contracted BOT capacity because they are aware that relatively few projects are eventually built. From this plethora, DPT selects projects according to its demand forecasts. Only projects with DPT approval are able to find financing. As explained in more detail in the section. [609]

"The Path of Reform" below, MENR has selected 29 BOT projects for the time period 2000-2004. DPT has approved all of them under the condition that they must be completed by 2002. After that, Turkey will pass to the new, competitive power market regime.[610]

7. 3. 4. 3. Generation

Turkey's electricity generation is based on hydro power and fossil generation. The share of hydroelectric generation in gross electricity output stood at about 40% throughout the 1990s, but is expected to decline in future, and is subject to fluctuations in proportion to rainfall. [611] Its share in 1999 was 29.8% (34.7 TWh), down from 38% the preceding year. Coal accounted for 31.8% (37 TWh), oil for 6.9%, and gas for 31.2% (36.4 TWh). Nearly all coal used in power generation is domestic lignite (29.1% out of 31.8%); imported hard coal accounts for only 2.7%. Renewables have only very minor shares in power generation in Turkey: geothermal accounts for 0.1% or 12 TWh, and combustible renewables for about 0.2% or 24 TWh.[612]

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[609] World Energy Council. **Turkish Energy Report**, Ankara, 1999, p. 87
[610] See, TEİAS, .http://www.teias.gov.tr/istatistikler/1.xls
[611] World Energy Council. **Turkish Energy Report,** Ankara,1999, p.82
[612] See, TEİAŞ, Annual Development of Turkey's Gross Electricity Generation- Imports-Exports and Demand (1975-2001) http://www.teias.gov.tr/istatistikler/24.xls

7. 4. The Path of Reform

7. 4. 1. Privatisation and Foreign Ownership

Until recently, the notion of privatisation was incompatible with Turkey's constitution. However, since the first wave of the liberalisation process began in the early 1980s, the country has been keen to attract direct foreign investment in infrastructure. Consequently, mechanisms were used that allowed private and foreign participation in the power industry without outright privatisation. One was the so-called build-operate-transfer (BOT) model. Turkey was among the first countries to introduce the BOT system in 1984, through the Electricity Act (Law No. 3096). The BOT system is not restricted to electricity or energy projects; it is also used for other infrastructure investment such as motorways, bridges, tunnels or water treatment plants. Under this model, private investors build and operate power plants.[613]

Plants are transferred to state ownership, i.e. to TEAS under current arrangements. But between 1984 and 1996, only six power plants with a total capacity of slightly less than 400 MW were actually built under this system: five small hydro plants and one combined-cycle gas turbine (CCGT). In the early 1990s, the continued vigorous growth in electricity demand reinforced the government's interest in encouraging BOT construction projects. To this end, the 1984 Electricity Act was complemented by the 1994 BOT Law (Law No. 3996). The BOT Law contains a number of provisions that were designed to encourage BOT investment. These include exemptions from customs duties and deferral of VAT payments on certain types of imported equipment. Most importantly, the law provides that the Turkish Treasury can back up the power purchase contracted between the BOT investor and TEAS or TEDAS with a Treasury guarantee.[614]

At the end of 1999, despite a large number of plans for BOT projects and numerous applications by foreign investors, only 14 BOT power plants with a total capacity of about 1,600 MW were operating; a further nine projects with a combined capacity of some 990 MW were under construction, vastly less than anticipated. As noted in the previous section, Turkey's project for a first nuclear power plant at Akkuyu, launched repeatedly under BOT design, failed three times.

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[613] World Energy Council. **Turkish Energy Report**, Ankara, 1999, p. 88

[614] See, www.http.doingbusunessinturkey.com./direct.asp.?en.:legislation/bot.+fdownloded+full 22 032002

Schroder observed that Turkey had opened up its energy market to foreign investors .He stressed that a secure energy supply is a crucial prerequisite for Turkey's further development, productivity and prosperity, adding that this constitutes an important contribution to environmental protection.[615]

Privatization used as a tool to relieve Turkey's budgetary problems. However, his plan to send a privatization bill before parliament without consulting his coalition partners has raised worries about the future of the government. The bill would pave the way for the sale of the country's major energy companies. Under the proposed plan, the state would still retain a controlling 51 per cent interest.

The reasons for this failure are complex. Under Turkish law, private investment in public utilities is considered a government concession. According to the constitution, all government concessions were until recently based on public administrative law, not private law, and subject to review by Turkey's Administrative High Court, the Danistay (sometimes also referred to as the Council of State). Under Turkish law, the Danistay is also responsible for dispute settlement. All types of BOT projects listed in the 1994 BOT Law were automatically defined as concessions.[616]

These legal arrangements significantly reduced the number of foreign-financed BOT projects, compared to the government's expectations, and the number of applications by investors. Not only did review by the Administrative High Court slow down the approval process, which could be very long obtaining the Danistay's could approval take years. The Danistay could also revise contracts. In numerous cases, the Danistay fundamentally changed contracts that foreign investors had spent years negotiating. A number of projects also received unfavourable assessments by the Court. Following an unfavourable Danistay assessment, the State Planning Organisation would block the Treasury guarantee, which would generally lead to investor

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[615] **Secure Energy Supply Quarantee for Progress, Schröder: Turkey will meet preconditions for EU membership,** Bundesregierung. 02.25.2004 http://www.bundesregierung.de/en/Latest-News/Information-from-the-Governmen-,10157.612497/artikel/Schroeder-Turkey-will-meet-pre.htm(Download: .25 03.2004).

[616] See, Law No. 4054 Concerning the Protection of Competition was published in Official Gazette No. 22140 dated 13 December 1994 "Law No. 4054".Law No. 4046 Amending the Constitution was published in the Official Gazette No. 23786 dated 14 August 1999.

[616] See,Law No. 3096 was published in the Official Gazette No. 18610 dated 19 December 1984. Law No. 3996, regarding the carrying out of certain Investments and Services.

withdrawal and, ultimately, to failure of the project. This was the case for the Akkuyu nuclear power plant, as well as for other energy projects, including three wind farms, in 1998.[617]

7. 4. 2. Main Stages of BOT Projects

Following a tendering procedure or an unsolicited bid, the MENR awards a preliminary agreement to a local and/or foreign investor or consortium.A Turkish company is established by the vendor or consortium. This is followed by the signature of a Memorandum of Understanding (MoU) between the company and the MENR.

The vendor establishes the legal structure of the project, including equipment and fuel supply contracts, and finalises its financial structure. This stage includes negotiation of the power purchase agreement (PPA) with TEAS, guaranteeing minimum sales and prices for the duration of the contract. The price has to be agreed with the MENR.The electricity price is set in US dollars and payments are made in Turkish lira.The PPA includes price escalation clauses.To become effective, the PPA must undergo Danistay review.The Danistay's approval is essential for the approval of the State Planning Organisation, which in turn determines whether or not the Treasury will guarantee TEAS's payments to the salesmen.

Following construction and start-up of the plant, generation costs can vary owing to changes in fuel prices, labour costs, tax law, etc. These are passed on to consumers through the electricity price, and can also be compensated through an electricity fund, which is financed through a tax on electricity consumers.The main purpose of the fund and the tax is to ensure security in electricity prices by providing an additional state guarantee to BOT schemes and by moderating sudden changes in electricity prices paid by TEAS by averaging this price on a yearly basis. Transferral of the plant to TEAS ownership is provided for after the depreciation period.[618]

Another major obstacle in establishing successful foreign BOT projects was the fact that their legal classification as a Turkish government concession rendered third-party arbitration under international conditions impossible. However, international arbitration is a key requirement for obtaining international financing. A number of secondary issues, including disparities in force

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[617] World Energy Council. **Turkish Energy Report,** Ankara,1999, p.102

[618] Turkiye 1.Energy Şurası Alt Komisyon Raporları Cilt 1 "*Yeniden Yapılanma*" **2. Alt Komisyon**, 7-9 Aralık1998 İstanbul,Chapter 12, p p. 60-98

majeure clauses, as well as regulatory and exchange rate risks, also hampered development of these projects.

To increase the number of successful BOT energy projects, the Turkish government sought to eliminate the concession classification. Among its initiatives was an amendment to the BOT Law that eliminated energy projects from the list of BOT projects classified as concessions. This amendment was overruled as unconstitutional by Turkey's Constitutional Court in 1996. In its ruling, the Constitutional Court established that generation, transmission and distribution of electricity constitute a public service, and that they were therefore subject to public-law government concessions. Following this, the government submitted a Build-Operate-Own (BOO) Law (Law No. 4283) to parliament. Under the BOO arrangement, investors do not transfer ownership of the plant to the government at the end of the contract period but maintain their ownership. The BOO Law was enacted in July 1996, and in 1997, a tendering round was opened to collect bids for BOO projects. However, in December 1999, the Centre for the Development of State Enterprises filed a lawsuit against the BOO Law. The case is still pending.[619]

7. 4. 3. Main Features of BOO Projects

The MENR launches a tender procedure that defines the terms of reference, including prices, and selects the vendor. In contrast with BOT, a Memorandum of Understanding is signed between the private company, which must be a joint venture with a Turkish company, and the MENR.

A Power Purchase Agreement is signed between TEAS and the private company.The electricity price is set in US dollars, and payments are made in Turkish lira. Electricity produced through BOO models can be sold to TEAS, to distribution companies or directly to consumers through TEAS or distributors at a negotiated price. The MENR calculates transmission fees. If the electricity is sold to TEAS, the Treasury guarantees TEAS's payments in their totality.[620]

The private operator retains ownership of the plant throughout its entire technical life, and is free to sell it. Hydro, geothermal and nuclear power plants are not part of the BOO scheme. When it became clear that the lack of international arbitration was unacceptable to foreign financiers, and that the needed foreign investment in power plants would not occur in the existing

[619] World Energy Council. **Turkish Energy Report,** Ankara,1999, p.103
[620] W EC, p.87

legal context, the government decided to change the constitution. On 13 August 1999, three amendments were made to Turkey's constitution via Law No. 4446, changing Articles 47, 125 and 155. The effects of the amendments are as follows:

A new paragraph inserted into Article 47 establishes the legal basis for privatisation for the first time. It also allows, upon enactment of an enabling law by the legislature, for public services to be performed under private law.

Article 125 now allows local or international arbitration of disputes arising in the context of public service contracts. International arbitration is possible only if the public service contracts involve a foreign element. There are no clear definitions of what a foreign element is or how international arbitration is defined.

Article 155 has the effect of limiting the Danistay's role to reviewing and advising on concession contracts, with a time limit of two months. It is currently not clear, however, whether an unfavourable opinion would be legally binding or not. In parallel to the constitutional amendments, Law No. 2572 governing the Danistay, and Law No. 2577 on administrative trial procedures were amended through Law No. 4492. These amendments limit the Danistay's authority for dispute settlement to cases where arbitration is not allowed. The BOT Law was amended through Law No. 4493; it now explicitly includes electricity projects but states that they are governed by private law.

Under Law No. 4501, passed on 21 January 2000, the constitutional amendments apply to all new BOT projects as well as retroactively to all projects which had been completed or reached the stage of approval before the law's entry into force. This meant that BOT operators could, within one month following the enactment of the law, apply to the Ministry of Energy and Natural Resources for conversion of their concession contract into private law and/or inclusion of an international arbitration clause. Of companies concerned by the changed legislation, 25 requested to change their contracts to private law, whereas four companies retained the public law status but requested the insertion of arbitration clauses. The corresponding contractual clauses could then be negotiated within four months. Following this, 17 applications were submitted to the Council of Ministers. At end-2000, 12 applications had been granted approval; five were awaiting a decision. Total BOT installed capacity was 4,885 MW. The number of proposals submitted and at various

stages of consideration had increased substantially compared to earlier years, especially in the area of wind projects.

7. 5. Turkey Community Acquis

The energy sector in Turkey used to be dominated by State-owned companies. A privatisation programme was nevertheless devised with a view to privatising areas such as coal, oil, electricity and gas. Turkey had to open up the energy sector to foreign investment in order to meet the increasing demand for energy consumption. Efforts had to be made to ensure the compatibility of the sector with the Community internal energy market. The European strategy gave high priority to the approximation of laws in this sector. The first step towards this objective was to draw up a detailed inventory of the existing legislation. [621]

The 1999 Report emphasized that the objectives of Turkish energy policy were largely in line with those of the EU. They were concerned with security and diversification of sources of supply, market principles, environmental standards and improving efficiency. The modification of the Constitution, which paves the way for privatisation, and international arbitration procedures have been important steps forward in this connection. A list of Turkish and Community legislation in this field drawn up by Turkey with a view to alignment on the *acquis* will be evaluated by the Commission. Much still remains to be done in this area.

In its November 2001 report, the Commission confirmed that progress had been made since the last report, in particular as regards the internal energy market. Turkey had adopted two key laws concerning the electricity and gas market which concerned in particular the definition of the new structure of the sectors and the status of the players in the two sectors. However, Turkish legislation had not been completely aligned on the Community legislation in this field. There had been no progress as regards security of supply, but Turkey's total oil reserves were in any case largely equivalent to the levels required by the Community *acquis*. Particular attention still needed to be paid to energy efficiency since there had been no progress in this connection since the last

[621] See, Commission Report [COM(1998)711 final - Not published in the Official Journal] Commission Report [COM(1999)513 final - Not published in the Official Journal] Commission Report [COM(2000)713 final - Not published in the Official Journal] Commission Report [COM(2001) 700 final - SEC(2001) 1756 - Not published in the Official Journal] Commission Report [COM(2002) 700 final - SEC(2001) 1412 - Not published in the Official Journal]

report. Also October 2002 Report emphasized that Turkey has made significant progress in further aligning its legislation with the *acquis* in this area, particularly in the internal energy market.

The fundamental components of Community law in the energy sector are the provisions of the Treaty and Community secondary legislation, referring, in particular, to competition and State aid , to the internal energy market - notably the directives on electricity, transparency of prices, gas and electricity transport, hydrocarbons, the granting of licences, emergency intervention measures and, in particular, obligations concerning emergency stocks , etc. and to nuclear energy , energy efficiency and rules on respecting the environment.

Community legislation in the field of nuclear energy comprises a framework of regulatory and political instruments which include international agreements. It currently covers the issues of health and safety (particularly radiation protection), the safety of nuclear plants, the management of radioactive waste, investment, the promotion of research, the creation of a common nuclear market, and the questions of supply, safeguards and international relations.

The Association Agreement between the Community and Turkey and the Additional Protocol of 1970 set out the major objectives of this Association which include, among other things, the establishment of a customs union in three successive stages. The achievement of the final phase of the customs union on 31 December 1995 required Turkey to incorporate a significant amount of established Community law into its legislation, particularly in all the fields connected with the functioning of the customs union. The transposition of the Community *acquis* in other areas will be achieved through the implementation of the European strategy proposals.

The European strategy for Turkey (adopted by the Communication of 4 March 1998) provides for the stepping up of cooperation and the harmonisation of legislation with the *acquis* in certain areas. It contains the first operational proposals with respect to this matter. This strategy was welcomed by the Cardiff European Council, which invited the Commission to carry it forward and to table any proposals deemed necessary for its effective implementation. The European strategy covers the energy sector.

Turkey has made progress with aligning on the *acquis* and in its preparations for the internal energy market through the adoption of two major framework laws for the electricity and gas sectors concerning in particular restructuring and the players in the sectors. The laws provide

for the opening up to competition and the private sector of certain aspects of the energy market such as electricity generation and distribution.[622] The State still has control over certain aspects of the energy market. Despite these advances, major aspects of Community legislation concerning the internal energy market are not covered by the two laws, e.g. provisions concerning access to networks. They should be aligned to a greater extent on the two key Community directives concerning the internal energy market establishing common rules for the internal electricity market[623] Following the adoption of the 2001 Electricity Market Law, the electricity market was opened in 2002 to around 20%. However, limitations on the possibility for eligible customers to import from producers outside Turkey, as well as for generators to export power to customers outside Turkey, have not been lifted.

[622] www.eu.int./scadplus/leg/en/lvb/12700.htm.

[623] Directive 96/92/EC) and the internal gas market (Directive 98/30/EC)

8. CONCLUSION

Available evidence on liberalisation confirms the expectation of an improved economic performance of the sector, including lower costs and prices and increased consumer choice. However, along with economic efficiency, EU and Turkish government have to meet other public objectives, including security of supply and environmental protection. This thesis gives perception into how governments can successfully address this complex array of objectives in the new regulatory environment. Government should give importance to consumer.Because; a fundamental pillar of effective reform in the energy market is consumer choice. Consumer should be satisfied that is to say, giving all consumers the ability to choose their supplier. Consumer choice disciplines market players, because dissatisfied consumers can switch supplier, and it encourages innovation. As in any other market, consumer choice in the energy market is fundamental to achieving both static and dynamic efficiency, and it is difficult to envisage real competition without it.

Competition in energy markets has resulted in significant improvements in the productivity and internal efficiency of companies but translating these benefits to consumers has verified to be a crucial challenge for market reform. Consumers benefit from reform only if the other elements of the supply chain transmit the benefits of competition. This means that there is an increasing emphasis on the regulation of transmission and distribution to ensure non-discriminatory access conditions and cost-oriented tariffs, and that competition in end user supply is increasingly seen as a means of translating to consumer's efficiency gains obtained upstream in the supply chain.

Market reform and liberalisation of the energy market especially gas present significant opportunities as well as some challenges. The strong expectation is that they will yield important short and long term benefits in terms of improving economic efficiency, lowering costs and consumer prices and stimulating economic growth and competitiveness.

Other significant long term gains are expected, notably further efficiency, technical gains and service innovations, including a wider variety of pricing structures and contracts.There are wider economic benefits from improved economic efficiency in the sector.Market reform affects a wide number of policy objectives such as the environment and security of supply, not just the

objective of increased economic efficiency. By triggering far-reaching changes in economic structure, control and output, it raises issues of how best to meet these objectives in new conditions. In the case of the environment, a framework including greenhouse gas emissions trading is likely to be more effective than current policies. In the case of security of supply,

The introduction of competition into the energy market can take a number of forms. The current natural monopoly in the operation of transmission and the physical behaviour of electricity has implications for the level of competition that can be introduced. Energy Reform and market liberalisation is an ongoing process and it is in its early days. There is a long period of transition from regulated monopolies to properly functioning markets. The basic framework for regulatory reform must meet the needs of transition, establishing non-discriminatory and transparent adjustment mechanisms, as well as having the capacity to adapt and evolve to deal with the longer term, when market liberalisation has settled down.

We can say that as a concluding remarks, for the well functioning energy market EU and member states and Turkish governments should expand the scope for competition in the energy sector. In doing so, they need to clarify their key policy objectives for the sector, such as improved efficiency, as well as the important linkages with other public policies such as security of supply and environmental protection. The overall regulatory framework needs to be non-discriminatory and transparent, and provide sufficient information to market participants. Price controls should seek to maximise industry efficiency, but in Turkey energy prices used for combiting inflation tool not used for protecting consumers. EU and Turkish Governments should consider how long price controls are necessary before the market can safely be left to take over.

EU and Turkish Governments need to exercise particular care with subsidies and cross subsidies, as they distort economically efficient behaviour and pricing. Subsidies should be transparently linked to clear policy objectives.

In the absence of sector-specific rules, governments should consider whether their general competition law and enforcement mechanisms are adequate to deal with the power sector and its complexities, and strengthen them if necessary.

The issue of security of supply in liberalising power markets should be monitored.by regulator authorities within the new framework of reform and the introduction of competition,

they should seek to create the right climate for long term investment which adequately responds to the issue of diversity of supply in the entire energy market. A regulatory framework which emphasises transparency, non-discrimination and stability will help this objective. Since the issue of diversity of primary energy sources arises in the entire energy market, a solution must be applied in this wider context.

Environmental regulation and policy must be adapted; instruments to the altered industry structure, including exploiting the opportunities afforded by market liberalisation for better market-based approaches to environmental regulation, such as tradable emissions permits.Environment objectivies should not be barriers for competition

At regular pause, whether regulation is still needed to meet their underlying objectives, as liberalised markets get into their stride.Where the need for regulation remains, the mechanisms chosen should be market compatible.

When we conclude our opinions, we see same problem that EU and Turkey probably will face, because, Europe will continue to grow in the next decades, requiring increasing amounts of energy to meet demand and provide fuel for its economy. Yet this growth will bring a number of challenges to the energy sector, including:

- continued concerns about energy security
- Development of appropriate regulation in liberalized markets
- reducing of CO2 emissions from energy use.

These issues will be confused by the parallel existence of an EU internal market policy, an EU environmental policy, and an EU research policy in addition to individual EU members'policies. These rapid growing approaches must be work as a team to form one consistent and firm strategy.

Another big problem which early reformers have had to deal with is that lifting barriers to entry and changing the rules is not enough: competition requires a sufficient number of competitors. If supply is concentrated in a few firms, competition generally fails to develop and prices may remain persistently above their competitive levels.and market should have been dominated by monopolist

Because of the lack of competition, seller concentration was not considered a problem. Liberalisation policies, aimed at market entry and prices may not be enough, at least in the short-term, to establish effective competition. Restructuring policies may also be needed to correct inappropriate market structures.

Additional difficulty which is so critical that is to develop techniques and approaches to meet objectives including efficiency, security of supply, environmental protection and social goals, in a market compatible way. Development of regulation compatible with undistorted

In a competitive environment, economic factors tend to outweigh technical factors in defining feasible regulations; regulators have to be independent from the regulated entities, and regulatory procedures have to be explicit and transparent.All these elements force some important changes in the management of regulation, typically leading to a reinforcement of the resources devoted to regulation and, more important, to more independent and transparent regulatory institutions. One particular risk is to develop effective regulatory approaches to transmission systems, which present difficult characteristics and which remain an essential input to supply.

Security of supply, and environmental and social objectives have to be pursued with suitable instruments that include taxes to price externalities, non-discriminatory subsidies for the development of long-term R&D projects, market mechanisms Also, social objectives whenever pursued have to explicitly and transparently regulated; for instance, obligations to supply and codes of practice for some categories of captive end users such as the elderly and disabled.

The taxation of CO2 emissions raises issues about the differential impact on energy-intensive industries, the competitiveness of national economies and the overall design of fiscal policy. As a result, taxation of emissions is still rare in the international arena. The environmental challenge is perhaps the biggest.The last tyears have seen rapidly growing concern about the environmental effects of energy production, including acid rain, nuclear waste disposal and, more recently, the issue of climate change. Environmental protection is consequently should be a top priority for governments.

We have seen that there can be same risks with applying common energy policy and goverments should take same precautions to overcome these risks

- The internal market will destroy jobs in the industry.
- The internal market dynamics will conflict with environmental protection
- Fair and balanced energy systems which respect established structures in the Member States are endangered in favour of multi-national companies and concentration of power in the hands of few.
- Public service obligations ensuring a secure and continuous supply of energy, and affordable prices should not clearly define and the market can not be relied on to guarantees these.

Liberalisation would be an effect badly for Europe's and Turkish citizens and especially the more vulnerable groups in society. Citizens, and for that matter small-medium sized businesses should not very well protected.

Large energy users get lower prices as they bring in the slight volume. And before we know residential consumers cross-subsidise the large energy users. Strong regulation is needed to protect Europe's citizens. Democratic regulation means those citizens and citizen groups.

The market will provide benefits and improve people's lives. The market neither delivers democracy and nor distributive fairness. The benefits of liberalisation and its complement privatisation do not accrue to the least well off groups in society. Further, the market has shown itself incapable of delivering environmental and consumer protection. It is only through regulation that users will be protected and environmental objectives can be met.

The results of the internal market will be judged not on the basis of low price but if the lights are kept on in a safe and sustainable manner. Liberalisation of energy sector,implementation of Kyoto obligations,ensuring safe use of energy will benefit from joint aproach. A joint aproach will ultimately lead to more energy security,fair competition in sectors and improved environment.all this will be instrumental in Community effort for prosperty,stability,security and peace in broader European region and beyond.

Without a common energy policy, our energy supply is vulnerable to political, economic and environmental crises and to the vagaries of supply and demand. In an emergency, our social, industrial and political fabric could be threatened.

Europe needs a more pro-active, co-ordinated and, above all, sustainable strategy, one which addresses not just energy supply, but also energy demand. This strategy should comprise an appropriate mix of encouragement, voluntary actions and regulations. And it should clearly define the respective rights and responsibilities of the Community and Member States.

Why regulatory intervention is so essential in electricity and gas markets in the European Union at the moment is their current state of liberalisation. It is vital that liberalisation is accompanied by the appropriate regulatory measures to ensure that it progresses smoothly. These measures must in particular address security of supply concerns, as the European Commission has repeatedly pleaded and proposed.

Turkey has also set up an Energy Regulatory Board to monitor the energy sector. It should be noted that the adoption of the two key laws and the establishment of an Energy Regulatory Board were conditions for IMF (International Monetary Fund) support for Turkey. In general, Turkey's priority in restructuring the energy sector is to attract investment and reduce State control. The two new laws have paved the way for this but there still remains much to be done.

Where security of supply is concerned, Turkey has already introduced major measures and its oil reserves are more or less at the level of the 90 days required by the *acquis*. Turkey also has an important role to play in the EU's security of supply since it is a transit country for oil and gas from the Caspian Sea, the Black Sea and Central Asia. The construction of the Blue Stream gas pipeline to bring natural gas from Russia to Turkey is continuing. In 2002, Turkey has taken steps to further diversify its supply resources and to strengthen its role as a transit country for the transportation of oil and gas. There have been no particular developments concerning energy efficiency. Turkey should pay particular attention to this area since the potential energy savings are estimated at 40%.

Turkey is geographically close to 70% of the world's proven oil and gas resources and thus a natural energy bridge between major oil producing areas in Russia, the Caspian Sea basin region and the Middle East on the one hand, and European consumer markets on the other hand. At the end of 2001, a gas pipeline from Iran to Turkey and The Blue Stream Gas Pipeline from Russia to Turkey have gone into operation. as well as the Baku-Tbilisi-Ceyhan Oil Pipeline from the Caspian basin to Turkey are currently under construction. With the development of new oil

and gas routes to bring Caspian and Middle Eastern supplies to world markets, Turkey is on the edge of becoming a regional hub for the flow of oil and gas from both the Caspian Sea region as well as parts of the Middle East. Turkey is emerging as a key energy distributor, especially for Europe. The transportation oil and gas resources through the various pipelines going through Turkey will enable the European countries to diversify and secure their energy supply.But one of the drawbacks of the Turkish energy policy is, it is defined by politicians inspite of economic needs.Most of the power generation decision taken by for political reason not for economic needs of Turkey. We hope that, integration of Turkey to EU will cause to apply more transparent and market oriented energy policies which will be benefit of Turkish people. These policies go back as a cheap energy bills to citizens.

As a coclusion EU energy policy composed of national interest of EU member states. Main concern in this policy is the national interest of member countries which is not go to meet benefit of citizens. We can say that energy policy is state centric, it is vulnerable to external affect, convergent and we see that the battle between market and state will continue until integration totally completed for the benefit of citizens.

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