



Gas pipeline co-operation between political adversaries: examples from Europe

Professor Jonathan Stern

**Director of Gas Research, Oxford Institute for Energy Studies
and
Associate Fellow, Sustainable Development Programme
Royal Institute of International Affairs (Chatham House)**

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Introduction: Natural Gas Pipeline Development in a Divided Europe

The aim of this paper is to provide an historical perspective on gas pipeline development in Europe during the 1970s and early 1980s, when the political circumstances for such development were much more difficult than today both because of the Cold War and limited membership of the European Community. The paper uses two specific examples to illustrate different problems surrounding, and potential solutions to, regional pipeline development:

- the case of Soviet gas supplies to the Federal Republic of Germany and the German Democratic Republic, and specifically to West Berlin;
- the case of the Iberian Peninsula with the option to bring pipeline gas from Algeria to Spain and Portugal, as a supplement or alternative to liquefied natural gas (LNG) supplies.

In both cases, the difficulties of developing gas trade in a divided Europe are contrasted with the more recent period where trade has been developed in a united Europe with a substantially expanded membership of the European Union.

Soviet Natural Gas Supplies to the Two German States and West Berlin

The post-World War 2 emergence of two separate German states – the Federal Republic of Germany (FRG or West Germany) and the German Democratic Republic (GDR or East Germany) – and the division of the City of Berlin into two largely-sealed zones, was one of the most vivid symbols of how the Cold War divided Europe for nearly 50 years. Energy – by means of pipelines - was one of the few physical links which eventually began to build bridges between the relatively isolated economies of the Council for Mutual Economic Assistance (CMEA) and the “western” part of Europe.¹

German gas development began early in the 20th century prior to the division of the country. By the 1960s, the industry in the FRG was based on manufactured gas from coke ovens and blast furnaces, mainly located in the heavy industrial sector in the Ruhr region. Manufactured gas was then supplemented by small volumes of natural gas produced in the FRG and much larger volumes of gas imported from the Netherlands, starting in 1963; by 1970, imports of Dutch gas had increased to 3.7 Bcm.² In the GDR, the industry was based on domestic gas of relatively low calorific produced (largely) from the Salzwedel field in the Altmark region.³ Production increased rapidly to 8 Bcm in 1974, but the low quality of Salzwedel gas meant that it needed to be mixed with town gas (manufactured from lignite) and was relatively limited in its potential applications.⁴ The limited quantities and applications of domestic natural gas meant that relatively modest networks for low calorific value natural gas (Salzwedel gas) and town gas were constructed within a limited geographical area of the country (see Map 1).

By the late 1960s, it was clear that both countries had opportunities to, and interest in, developing a large-scale natural gas industry. After the 1973-74 oil price increase OECD countries began to urgently seek diversification away from oil into other forms of energy, notably natural gas. Meanwhile, developments in the Soviet energy balance were also leading in the direction of

¹ The European CMEA-member countries were: Czechoslovakia, Hungary, Poland, Romania, Bulgaria, the German Democratic Republic and the USSR. During the Cold War, OECD European countries were referred to as “western” despite the fact that some – such as Austria – are geographically further east than many CMEA states.

² Malcolm W.H. Peebles, *Evolution of the Gas Industry*, Macmillan: 1980, Table 5.3, p.139.

³ Salzwedel gas had a calorific values around 3000 kcal/m³ compared with values for European natural gas ranging from 7600-9000 kcal/m³.

⁴ Jeremy Russell, *Energy as a factor in Soviet foreign policy*, RIIA: Saxon House/Lexington, 1976, pp. 102-3.

increasing gas supplies and exports. Russian oil output had increased very strongly during the 1960s, but in the 1970s the rate of increase in production began to fall, costs began to increase, and questions were being asked as to whether production (and export) declines were imminent.⁵ By contrast, Soviet gas production was rising rapidly and steadily with the opening up of the Siberian “super-giant” gas fields, and the laying of large diameter pipelines connecting the fields with those centres of consumption in the west of the country.⁶ From the mid-1970s, Soviet planners were telling their CMEA counterparts that they could not expect to receive increases in oil supplies, but that additional gas supplies would be available.

In 1970, a 20-year contract was signed between the Soviet foreign trade ministry and the West German company Ruhrgas for the delivery of gas to the FRG.⁷ This was part of a much larger arrangement, known as “gas for pipe”, by which Soviet gas exports were exchanged for steel pipe deliveries from German manufacturers financed by German banks with credit risks underwritten by a government credit agency.⁸ Two more import contracts were signed by Ruhrgas in 1972 and 1974 and the West German gas relationship with the Soviet Union began to expand substantially.

In 1973, the FRG received its first gas deliveries from the USSR which (perhaps not coincidentally) was the same year that the first Soviet gas was exported to the GDR. Exports to the two German states expanded rapidly reaching 17.2 Bcm in 1980.⁹ But despite this increase in trade, the Federal German government had a problem of how best to supply energy to West Berlin. The western part of the city had been completely cut off from other sources of electricity since 1952 and was dependent on coal and oil, with all fuels needing to be brought in by rail as there were no pipeline connections.¹⁰ In 1975, the USSR and the FRG reached agreement on construction of a 1200MW nuclear power station in the Soviet republic of Kaliningrad. The West German company Kraftwerkunion planned to build the proposed plant - costing \$600m - with a portion of its output sent to West Berlin. The project reportedly failed because of price disagreements and also because the GDR objected to becoming a transit route for electricity supplies to West Berlin.¹¹

Although the electricity project failed, it proved to be the forerunner of Soviet natural gas exports to West Berlin, an extremely significant development because of the transit implications of the pipeline link. Although Soviet gas was being exported to both the FRG and the GDR, these deliveries were arriving via different pipeline routes (see Map 1): one pipeline travelled north via Prague to cross the East German border at Sayda; while the main pipeline route carried on west, crossing the West German border at Waidhaus (and from there across the FRG to France).

It was impossible for a pipeline to reach West Berlin without transit via the GDR, but a pipeline for delivery of Soviet gas had already been constructed as far as Berlin. Despite the fact that only a very short extension was required for Soviet gas to reach West Berlin, such a development carried with it extreme political significance and sensitivity for all of the different parties involved:

⁵ A famous CIA report published in 1977 predicted that the USSR could become a net importer of oil by 1985. Marshall I. Goldman, *The Enigma of Soviet Petroleum*, George Allen and Unwin: 1980, Chapter 8.

⁶ Jonathan P. Stern, *Soviet Natural Gas Development to 1990*, DC Heath/Lexington Books: 1980, Chapter 2.

⁷ This first contract was signed prior to the creation, in 1973, of the Soviet gas export agency Soyuzgazexport. See the historical account of exports on the Gazexport website: www.gazexport.ru

⁸ As well as large diameter pipe, the Soviet gas industry needed to import compressor stations, in particular the large capacity turbines, mainly from French and Italian companies. Angela E. Stent, *Soviet Energy and Western Europe*, The Washington Papers/90, Praeger: CSIS, 1982, pp. 22-24.

⁹ 10.7 Bcm for FRG and 6.5 Bcm for GDR; Jonathan P. Stern, *International Gas Trade in Europe*, Heinemann: PSI/RIIA, 1984, Table 2.4, p.65.

¹⁰ Stent, *op.cit.*, p.27.

¹¹ *Ibid.*

- neither the GDR nor the USSR wished to endorse the political legitimacy of West Berlin with commercial agreements specific to that territory; the GDR was extremely sensitive about the development of any relationship – political or commercial - with FRG which suggested an form of interdependence.
- The UN authorities which oversaw the government of West Berlin were concerned about the security implications of gas supplies which might be severed by the GDR. They demanded that measures be taken to deal with such an eventuality and coincidentally, this led to the discovery of a small geological structure below West Berlin which was suitable for gas storage.

However, the size and potential profitability of the 1981 long term Urengoy gas pipeline contract with the German company Ruhrgas for (plateau volumes of) 10.5 Bcm/year (due to commence in 1983) was such that not only was the Soviet side prepared to make concessions but it was willing to put pressure on the government of the GDR to do likewise. This contract contained within it, a separate agreement, signed in the Spring of 1983, for supplies to West Berlin to start in the autumn of 1985 and eventually building up to 0.65 Bcm/year.¹² This contract – quite aside from any consideration of supplies to West Berlin – was destined to encounter substantial political resistance, but not from Germany.

Soviet gas exports to Western Europe – and especially to Germany – were the subject of major and repeated controversy between the United States and its European allies during the period 1960-90. In the 1960s, the United States had succeeded in passing a resolution within NATO to embargo exports of large diameter pipe intended for use in the Friendship oil pipeline; an embargo which was lifted only in 1966 when it became clear that it had caused the Soviets only minor inconvenience and delay.¹³

In 1981, as the negotiations on gas contracts related to the Urengoy pipeline were drawing to a close, newly-elected American president Ronald Reagan arrived in the White House in the wake of the Soviet invasion of Afghanistan with a mission to halt the spread of Soviet power. The new Administration took the view that the sale of any kind of equipment and technology which would allow the Soviet Union to earn additional hard currency, was undesirable on security grounds. Some Americans went further in their conviction that increased European dependence on Soviet gas supplies would weaken the political resolve of Europe, and would cause countries to submit to political pressures under threat of gas supplies being cut off.

At the Ottawa Summit in July 1981, President Reagan attempted to persuade European leaders to reject imports of additional gas from the USSR. When this failed, the American Administration first tried to offer financial incentives and then applied extra-territorial sanctions to those components of gas compressor stations, being supplied by European companies, which were of American origin. This created a political crisis in relations between the US and its European allies. Eventually, after several months of dispute, the US lifted the sanctions and the Urengoy pipeline(s) went ahead with rather more Soviet, and rather less American, equipment than had been intended.¹⁴

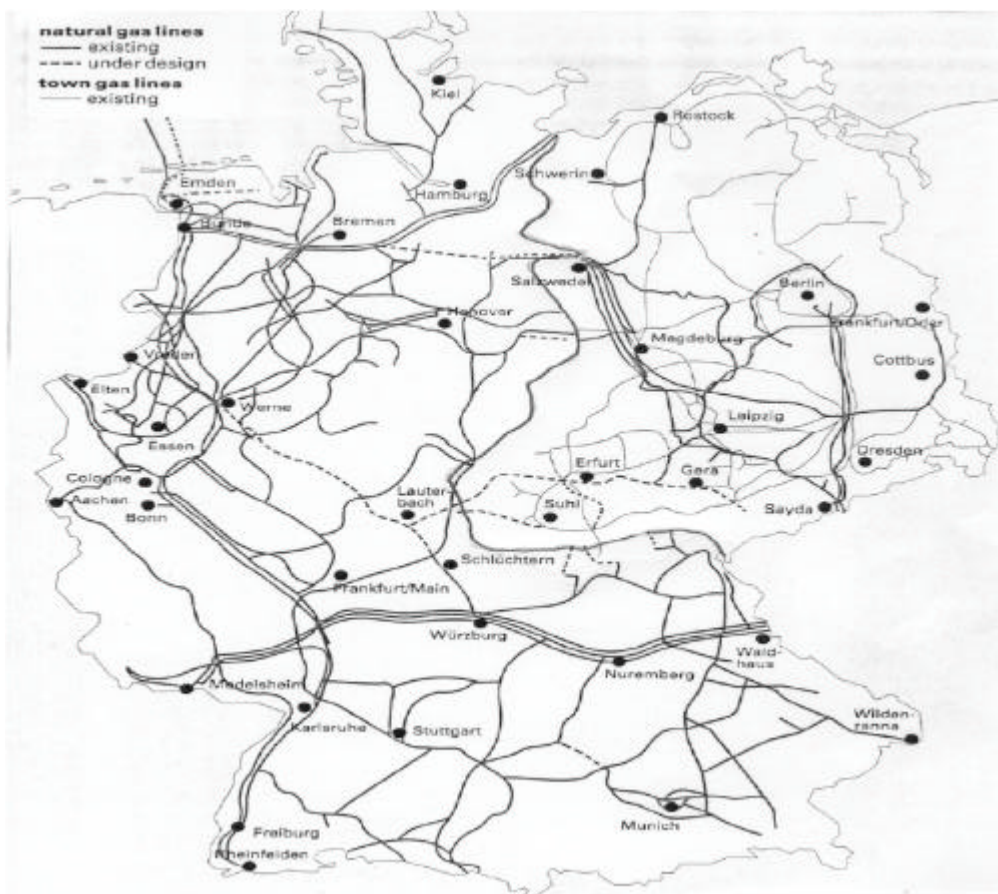
By the time the Berlin Wall came down in 1989, followed by German reunification, Soviet deliveries already accounted for more than 30% of FRG gas demand and there had been several years of supplies to West Berlin without any problems.

¹² Bundesverband der deutschen Gas-und Wasserwirtschaft, *The West German Gas Industry, Facts and Trends*, Essen: 1985 Edition, p.16.

¹³ Stent, p.23.

¹⁴ Bruce Jentleson, *Pipeline Politics, the complex political economy of East-West trade*, Cornell University Press: 1986, p.183-203.

Map 1 - The German Natural Gas Network in 1991



Source: Ruhrgas, 1991.

Soviet gas exports to Europe became an extremely profitable and successful business for both sides, a business which has further expanded and prospered in the post-Soviet period. The reunification of Germany has led to the unification of the gas industry. Immediately following the fall of the Berlin Wall, Verbundnetz Gas (VNG) was created from the East German gas company Schwarze Pumpe, with equity from Federal German and other international gas companies, in particular the West German companies Ruhrgas, Wintershall and BEB.¹⁵

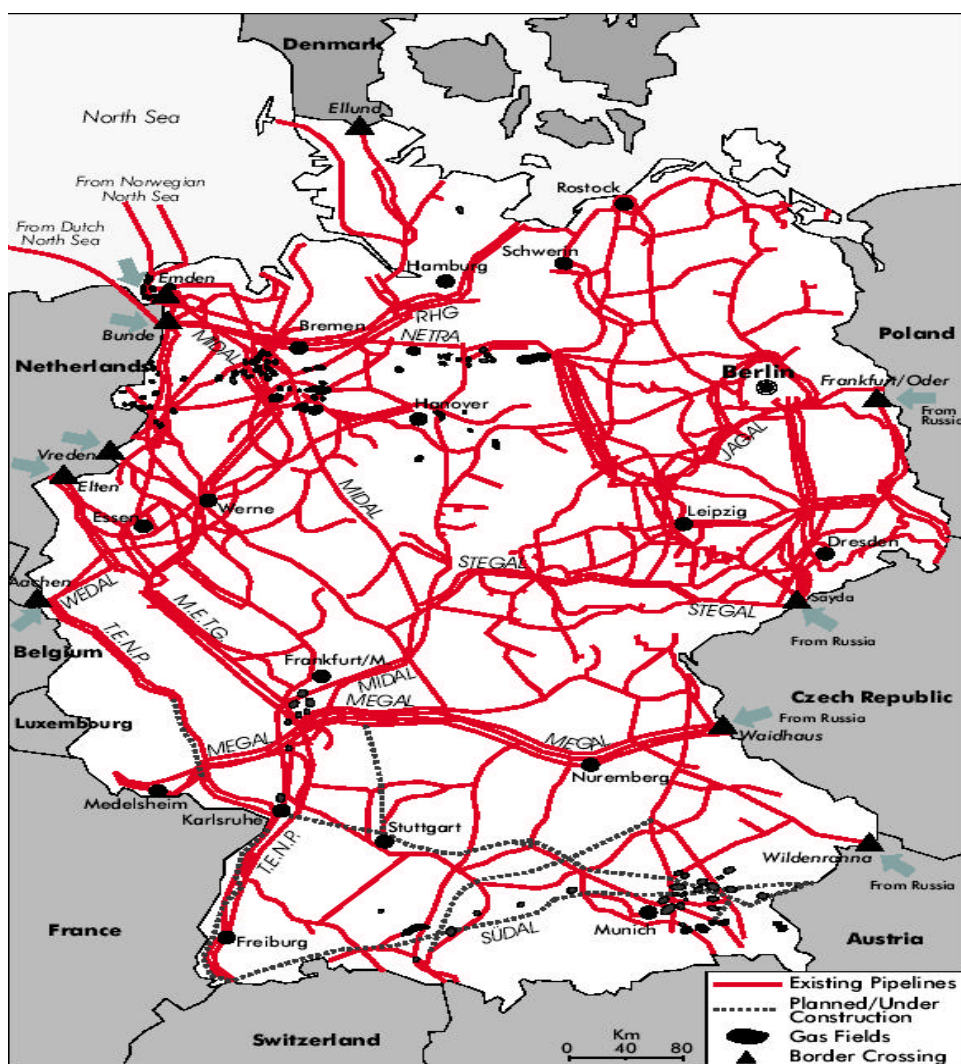
Following the creation of VNG, investments of DM1.6-2.6bn each year were poured into the industry during the 1990s, of which the majority were devoted to regional and local distribution networks. These investments transformed the energy balance in the eastern part of Germany.¹⁶ Gas demand in the eastern lander increased from around 12 Bcm in 1990 to nearly 16 Bcm in 2000 but the composition of the total shifted significantly; in 1990 only 60% of the total was high calorific value (CV) imported natural gas with the remainder comprising low CV domestic gas and towngas.¹⁷

¹⁵ The details of the creation of VNG and the battle for the control of the East German gas industry can be found in Barbara Lippert and Rosalind Stevens-Strohmam, *German Unification and EC Integration: German and British Perspectives*, Pinter Publishers: RIIA, 1993, pp. 86-88.

¹⁶ Klaus-Ewald Holst, *The Role of VNG as a Link Between East and West at the Crossroads of Europe*, 6th Annual Central European Gas Conference, Leipzig, 6-9 June 1999.

¹⁷ This rate of demand growth may not seem remarkable but the huge fall of economic activity in the eastern part of the Germany post-reunification must be taken into account.

Map 2 - The German Natural Gas Network in 2001



Source: International Energy Agency, *Energy Policies of IEA Countries, Germany 2002 Review*, OECD/IEA, 2002, p.80

By 2000, town gas had been phased out and more than 90% of total consumption was high CV natural gas. In 1989, 73% of residences had been heated with coal and 21% by district heating based on solid fuels; by 1998, the share of coal had fallen to 10%, direct gas heating was 44% and district heating based on gas was 21%.¹⁸

Map 2 shows the growth of the gas network in Germany by 2002. Comparing this with Map 1, it is clear that the industry has expanded massively in the eastern part of Germany as a result of deliveries of Russian gas and also supplies from other sources, such as the Norwegian North Sea. In 2003, gas demand in Germany amounted to a little less than 100 Bcm (compared with 80 Bcm in 1991) including imports of nearly 35 Bcm of Russian gas via multiple pipelines.¹⁹

It is difficult for those who were not involved in the problems of gas pipeline development during the 1970s and 80s to imagine the degree of political sensitivity raised by the issue of cooperation between the two German states. Not only did this raise issues about the specific vulnerability of West Berlin in the event of an East-West crisis. When this is added to the objections from those –

¹⁸ Ibid.

¹⁹ Cedigaz, *Natural Gas in the World, 1992 Survey*; and Cedigaz, *The 2003 Natural Gas Year in Review: Cedigaz' First Estimates*, IFP: Rueil Malmaison.

mostly in the United States - who believed that Soviet gas supplies would place Europe at a political and strategic disadvantage and that strict limits should be imposed on the extent of this trade, the extent of the difficulty becomes apparent.

For these reasons, more than a decade passed between the first deliveries of Soviet gas to East and West Germany and the transit of gas to West Berlin. Although political developments were impossible to foresee, less than a decade after the first gas reached West Berlin, Germany was reunified and a unified and successful gas industry was built by two states which had been political adversaries for several decades.

Pipeline Gas Supply in the Iberian Peninsula

For much of the 20th century, the Iberian Peninsula was politically and economically isolated from the rest of Europe due to lack of democratic government and institutions in both Spain and Portugal. With the Portuguese revolution of 1974, followed the next year by the death of Spain's General Franco, that situation began to change. A decisive moment in the modern history of both countries occurred in 1986 when they both became member states of the European Community. Until that time, not only were they isolated from the rest of Europe but also – for long periods of time – from each other. In the words of one (Portuguese) writer: “Much more than conflict, ignorance and suspicion are the key words for the historical relations between Portugal and Spain.”²⁰

Because of a lack of domestic gas resources and its location on the south western periphery of Europe, much of first thirty years of European gas development had little impact on the Iberian Peninsula. Neither Spain nor Portugal developed a national – and in the case of Portugal any – gas network infrastructure. Dutch gas found sufficient markets in north west Europe – although it was delivered into the rapidly expanding Italian market from 1974. For thirty years, Russian gas never penetrated further west than France – only moving into the UK, Belgium and the Netherlands in the 2000s.²¹ Not until 1993 did North Sea gas from Norway arrive in Spain via a pipeline through France.²²

Portugal

Right up to the end of the 1980s, the possibility of pipeline gas supplies to Portugal seemed extremely remote. As late as 1989, the International Energy Agency noted that:²³

The only current markets for gas are for LPG and a small town gas system (in Lisbon) detailed studies aiming at the introduction of natural gas through development of an LNG terminal and a transport network are under way.

Nevertheless, the desire to diversify the country's energy balance away from imported oil and the opportunity to attract investment from foreign investors and EU regional funds provided by European Union membership, propelled the country towards establishing a natural gas industry.

²⁰ Maria Joao Seabra, “The Portuguese-Spanish Relationship”, in eds. Alvaro de Vasconcelos and Maria Joao Seabra, *Portugal: a European story*, Principia: Lisbon, 2000, pp. 189-199.

²¹ In the late 1980s, the trade press reported the existence of a letter of intent between Soyuzgazexport and Enagas for a 25 year contract but for such small volumes that it would have been barely viable. Platts Oilgram News, 19 November 1987 cited in Javier Estrada et al, *Natural Gas in Europe: markets, organisation and politics*, Pinter Publishers: 1988, p.54.

²² Although initially this was based on a gas exchange with Gaz de France, International Energy Agency, *Energy Policies and Programmes of IEA Countries, Spain 1996 Review*, Paris: OECD/IEA, 1996, p. 43.

²³ International Energy Agency, *Energy Policies and Programmes of IEA Countries, 1989 Review*, Paris: OECD/IEA, 1989, pp. 521-2.

For much of the 1980s, the Portuguese government and companies had studied the possibility of an LNG terminal at Setubal and in 1991, a contract was signed with Algeria for deliveries to start in 1996 building up to 3.5 Bcm/year by 2010.²⁴ This had been preceded by a legal process and an international call for tenders to create a transmission company and four distribution companies for the development of gas throughout the country.²⁵ But as the construction of original LNG development was about to commence, the consortium appointed to lead it failed, and this left the option of pipeline gas centre-stage at exactly the crucial time.²⁶

Spain

The Spanish gas market was better established than its Portuguese counterpart, but for much of the 20th century only in terms of deliveries of manufactured gas. In 1969, Catalana de Gas – the regional company supplying Barcelona and a large number of other cities in the north east of the country – built the country's first LNG terminal to receive Libyan and Algerian LNG. In 1972, Enagas was established as a state-owned company wholly-owned by the company INH (now known as Repsol), responsible for all imports of gas, and the construction and operation of the gas transmission network.²⁷ Enagas took over the Barcelona LNG terminal which provided around 60% of the gas consumed in Spain in the late 1980s, the remainder coming from domestic fields. Nevertheless, in 1977 gas accounted for less than 2% of Spanish energy demand.

For much of the 1970s and 80s, Libyan and Algerian LNG deliveries to Spain did not operate as originally foreseen for a variety of reasons. In the Libyan case, the regasification terminal was completed later than intended, coinciding with the Libyan revolution and the arrival in office of Colonel Ghaddafi. This had a major impact on the contractual terms which had been agreed and required an immediate price renegotiation.²⁸ Further price disagreements closed Libya's Brega liquefaction plant entirely for the years 1972-74 and for the remainder of the 1970s, deliveries to Spain were in the range of 0.89-1.01 Bcm/year, somewhat lower levels than the 1.1 Bcm/year which had been foreseen in the contract.²⁹ The early 1980s saw the start of another round of price disputes and the complete withdrawal of Esso – the owner and operator of the Brega LNG plant – from Libya, with the Libyan company Sirte Oil taking over the plant and LNG sales. For almost the entire decade of the 1980s, Libyan supplies varied from 0.6-0.9 Bcm/year which, while lower than contracted volumes was substantially more successful than the Libyan contract with Italian company SNAM which was reduced to one or two deliveries per year.³⁰

A contract had been signed between Enagas and Sonatrach of Algeria in 1975 for 4.8 Bcm of LNG per year with deliveries starting in 1978.³¹ However, protracted commercial disputes between the Algerian company Sonatrach and all of its LNG customers – similar to those which disrupted Libyan LNG deliveries - commenced in the late 1970s and were not resolved for around 10 years.³² In the Spanish case, the dispute centred on two specific issues: the price level which

²⁴ Portugal calls on Europe's Old Guard to Launch its New Order, *Gas Matters*, July 16, 1991, pp. 1-4.

²⁵ Wladimiro Ricardo, *Planning the Introduction of Natural Gas in Portugal*, Mediterranean Markets Conference, Euroforum, Madrid, 1992. Brief details can be found in, International Energy Agency, *Energy Policies of IEA Countries, Portugal 1996 Review*, OECD/IEA, 1996, Chapter 6.

²⁶ Portugal considers its gas pipeline options after LNG fiasco jeopardises gasification drive, *World Gas Intelligence*, May 1993, pp. 15-16.

²⁷ Estrada et. al, p.54.

²⁸ Judith Gurney, *Libya: the Political Economy of Energy*, Oxford University Press, 1996, pp. 187-8.

²⁹ *Ibid*, Table 9.5, p.189.

³⁰ *Ibid*; Observatoire Mediterraneen de L'Energie (OME), *Perspectives du Gaz Naturel et de L'Electricite dans le Basin Mediterranee*, OME, November 1989, p.88 has slightly different figures for deliveries. Estrada et al. p. 54 suggest that the contract had no take or pay clause and called for liftings of 0.9 Bcm in the period 1986-88 and 0.8 Bcm/yr during 1989-91.

³¹ Ali Aissaoui, *Algeria: The Political Economy of Oil and Gas*, Oxford University Press/OIES: 2001, Table 7.6, p.189. Other sources suggest that the original volume was 4.5 Bcm.

³² *Ibid*, pp. 188-194.

the Algerian side wished to increase; and the volumes of gas which the Spanish side was unable to take due to overly optimistic projections of demand, and failure to build network infrastructure partly due to the high price of gas relative to oil.³³ The dispute was only resolved in 1985 and restricted deliveries to 1.2-1.7 Bcm/year for most of the 1980s.³⁴

With significant difficulties in LNG trade during the 1980s, it was not surprising that Spanish companies sought to investigate pipeline gas possibilities. In fact, the possibility of pipeline gas had been considered periodically since the discovery of major gas reserves in Algeria during the 1950s. In the mid 1970s, the Segamo project was looking at building a pipeline from Arzew in Algeria to Cartagena in Spain which would have needed to be laid in 2000 metres of water.³⁵ At that time, political difficulties between Algeria and Morocco over the Western Sahara conflict prevented consideration of the technically more simple route via the Straits of Gibraltar.³⁶

But technical problems were not the only obstacles to pipeline development, the political relationship between Algeria and Morocco has already been mentioned but there were also obstacles from the market side. The Spanish gas market was relatively small and, with continued price disputes with LNG suppliers during the 1970s and 80s, had little incentive to expand rapidly. There was the possibility of a Portuguese market for pipeline gas, but the lack of trust between Spain and Portugal meant that the latter would have refused to depend on transit of gas through its larger neighbour. This was the major reason why Portugal had intended to develop LNG, rather than pipeline, imports.

As Map 3 shows, in 1986 the Spanish pipeline network consisted of two major lines: a coastal pipeline from Valencia to Barcelona, and a line from the Bilbao region through Zaragoza connecting to the coastal line. Despite a number of studies and proposals, no other networks had been built, and the gas market was limited to the north eastern corner of the country.

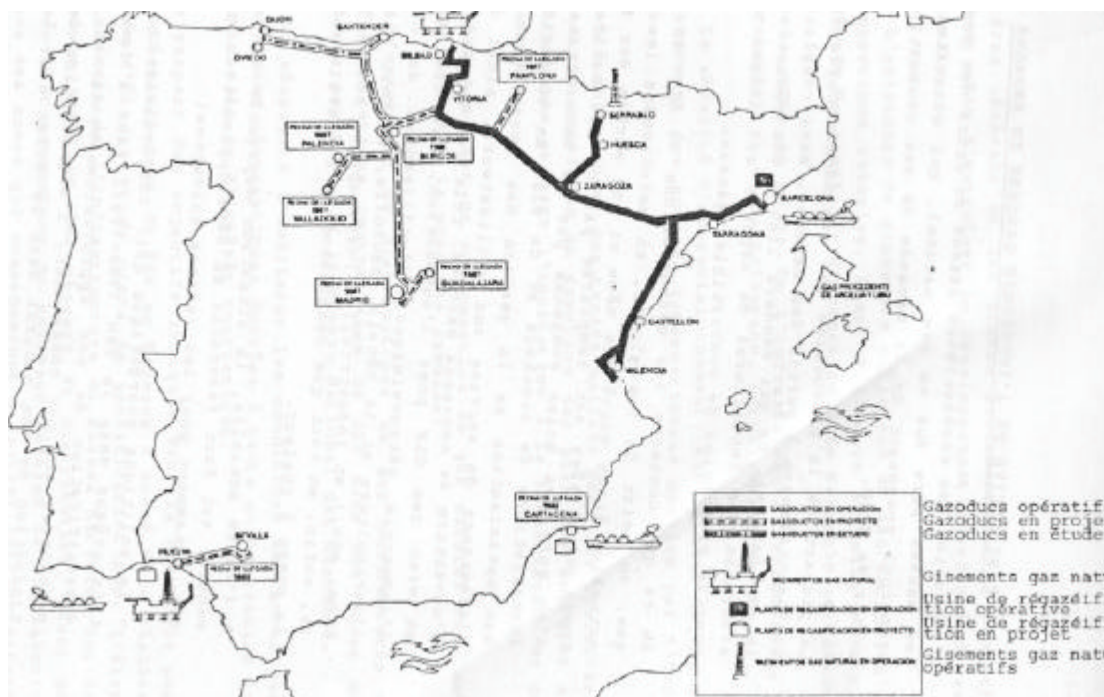
³³ Richard Gillespie, *Spain and the Mediterranean: developing a European policy towards the South*, Macmillan: 2000, pp. 90-99.

³⁴ For details of the dispute, see Estrada et al, pp. 203-204; for volumes see: Stern 1984, Table 3.2, p.97, and OME 1989, p.100.

³⁵ Segamo was a study company with its headquarters in Algiers owned by Sonatrach 50%, Enagas 25% and Gaz de France 25%. The project was never pursued further having been overtaken first by GME and more recently by Medgaz, a line similar to Segamo but located further west.

³⁶ The Western Sahara conflict arose from the 1974 decision by Spain – the colonial power – to arbitrarily divide the territory between Morocco and Mauritania. The Polisario liberalisation movement created a “government in exile” in Algeria and mounted attacks on Morocco from their stronghold in Tindouf. Adekaye Adekaye, *Sheiks, Soldiers and Sand*, *The World Today*, January 2000, pp. 19-22.

Map 3 - The Natural Gas Network on the Iberian Peninsula, 1986



Source: Ministère de L'Industrie et de L'Energie, *Rapport General sur la Situation des Combustibles Gazeux en Espagne, Données de 1985 et Previsions Pour 1986*, UN ECE Gas Committee, January 1987

In the late 1980s, a number of factors came together in different countries to provide a resolution of political and commercial problems and eventually led to the construction of the Gazoduc Mediterranee Europeenne (GME) pipeline which delivered its first gas to Spain and Portugal in late 1996/early 1997.³⁷ In brief these factors were:

For Algeria:

- the success of the Trans-Mediterranean pipeline to Italy in early 1980s and the recognition by Sonatrach that the profitability of pipeline gas exports was greater than that of LNG;
- the gradual resolution of Algerian LNG contractual disputes with all parties including Spain by the end of the 1980s;
- the resolution of the Algeria-Morocco dispute over the Western Sahara in 1989 – without this resolution it would have been impossible for Algerian gas to transit through Morocco to Spain;³⁸

For Spain:

- the need to introduce much larger quantities of gas into the energy balance, principally for power generation following the 1983 moratorium on new nuclear power stations and as a result;
- the willingness of the Spanish government to allow (the still state-owned) Enagas to arrange financing and itself to provide credit guarantees for the pipeline.

³⁷ This was subsequently renamed the “Pedro Duran Farrell” pipeline after the CEO of Enagas who supervised the contribution of the Spanish company.

³⁸ The Western Sahara dispute continues to this day, but the Algerian relations with Morocco improved significantly after the 1988 UN agreement between Morocco and the Polisario providing for the right of self-determination for the West Saharan people. Adebajo, loc. cit.

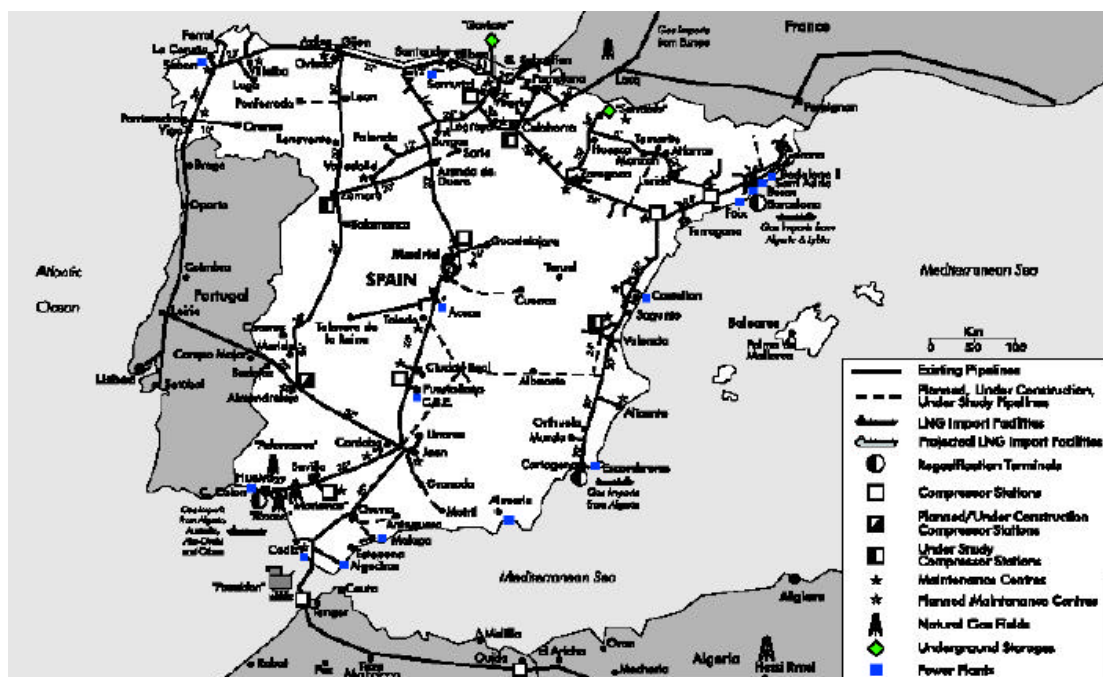
For Portugal:

- A decision to introduce gas into the country to diversify the energy balance away from oil;
- The creation of legal and commercial frameworks – including foreign investors – to launch transmission and distribution companies;
- The collapse of the original LNG project – at a relatively late stage in the development of the gas market - due to disagreements with that consortium.³⁹
- European Community financing and political commitment, made possible by both Spain and Portugal joining the Community in 1986, was critical in bringing the Portuguese into the project. The EU – via the European Investment Bank, regional funds and other institutions – was responsible for more than half of the total \$2.44bn investment and more than 70% of the Portuguese financing.⁴⁰

Despite all of these positive developments, it is important to recall that the pipeline was negotiated and built during some of the most serious civil disturbances in recent Algerian history.⁴¹ This period of internal strife between the ruling National Liberalisation Front and the Islamic Salvation Front – likened by many to a civil war - claimed tens of thousands of lives, seemed at the time likely to undermine all major energy-related investments in the country.⁴²

The project has been a great success in terms of development of gas markets on the Iberian Peninsula. In 2003, Spain imported around 7 Bcm and Portugal 3 Bcm through the pipeline. Map 4 shows how gas pipeline infrastructure has developed in both Spain and Portugal following the arrival of the GME pipeline. The network now extends throughout the Iberian Peninsula, in marked contrast to the picture in Map 3, less than 15 years previously.

Map 4 - The Natural Gas Network on the Iberian Peninsula, 2000



Source: International Energy Agency, *Energy Policies in IEA Countries, Spain 2001 Review*, Figure 19, p.75.

³⁹ Subsequently an LNG receiving terminal was built at Sines and began operations in 2004.

⁴⁰ The project was also supported by credits and guarantees from national credit agencies in Spain (CESCE), Germany (Hermes) and France (Coface). IEA, Portugal 1996 Review, *op.cit*, p. 29.

⁴¹ Hugh Roberts, Algeria's ruinous impasse and the honourable way out, *International Affairs*, Vol 71, No.2, 1995, pp. 247-267.

⁴² Jean-Pierre Audoux, Algeria: dramatic political change, *Energy Policy*, November 1992, pp. 1060-1062.

Conclusion: How natural gas pipeline cooperation was possible even between political adversaries - potential relevance for the Korean Peninsula

The two European examples in this paper – Soviet gas exports to the two German states and West Berlin, and Algerian gas exports to the Iberian Peninsula – demonstrate that natural gas pipeline cooperation was possible even between former political adversaries. In the German case, gas trade commenced even before the political problems between the countries were resolved. This may have particular relevance to the future development of gas pipelines on the Korean Peninsula.

In both of the European examples:

- Gas exports presented difficult challenges because of the political climate of hostility and lack of communication which had existed between the states for several decades;
- There was a coincidence of favourable conditions – internal and external – which enabled the gas pipeline projects to succeed;
- The outcome has been extremely successful, in terms of energy and gas development. Through cooperation, both sets of countries achieved a level of gas development which they had been unable, and would not have been able, to achieve separately.

Other factors arising from the two case studies may also be relevant. The security implications of gas transit through one country to the other were important considerations in delaying gas pipeline cooperation. In the German case after a decade of experience of gas imports, both countries were willing to take the risk of gas deliveries through and to the territory of the other:

- For the GDR (East Germany) this involved the political risk of “recognising” the legitimacy of West Berlin by allowing transit of gas to the city.
- For West Germany this involved the risk that gas transit through the GDR to West Berlin could be subject to interruption for political reasons.

In the Iberian case, gas trade to the Peninsula had been limited to LNG deliveries to Spain which – due to disputes with both the Algerian and Libyan suppliers – had been relatively unsuccessful in developing a gas market.⁴³ The historical relationship of “ignorance and suspicion” between the two Iberian Peninsula countries had made it impossible to consider natural trade involving a range of difficult political, technical and commercial issues. Not the least of these issues for Portugal - the smaller country on the Peninsula – was the issue of dependence on transit of gas through Spain.

In both cases, a major change in the political situation allowed the sponsorship of major gas industry investment – including the financing of gas infrastructure. In the German case, the reunification of Germany included the gas industry as commercial companies moved to extend and develop networks in eastern Germany with public and private funds from the former West Germany, other European companies and the European Union. In the Iberian Peninsula, it was the principally the European Union – through its various financial and regional institutions which provided both the political support and financial backing for the GME project to proceed.

These European examples demonstrate that two sets of countries succeeded in developing successful and profitable gas trade following several decades of not just adversarial relations, but economic and political isolation from each other. In the German case, a small-scale solution was found even prior to political rapprochement; in the Iberian case, Spanish and Portuguese membership of the European Union – following political democratisation in both countries - was

⁴³ In this respect there is no parallel with the Korean Peninsula where South Korea has successfully developed a national pipeline network based on diversified imported LNG supplies.

the decisive development. With the hindsight of more than 10 years in the case of Germany, and somewhat less in the Iberian Peninsula case, the benefits to the energy balances of both sets of countries are evident.

These European examples might suggest to Korean Peninsula stakeholders that:

- Successful, even if limited, gas trade between political adversaries is possible even with no significant improvement in political relations;
- fundamental change in political relations between former political adversaries can rapidly produce successful gas trade but in order for that to take place;
- there may be a need for external guarantees and financing of the pipeline project within a broader regional institutional and political framework. In the two examples given in this paper, the European Union provided the institutional, political and financial framework needed to guarantee the success of the gas pipeline projects.