# A Gap in the Grid

## Attempts to Introduce Natural Gas in Sweden 1967-1991

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# Preface

Writing a thesis is, at times, a lonely activity, and it is hardly a secret that I am not fond of working alone. Luckily enough for my sanity, I have been surrounded by people who have helped me bring this boat to shore.

My advisors Arne Kaijser and Per Högselius secured money from the Swedish Energy Agency and set this project in motion. Arne and Per, when I went to my first thesis defence party at the division I ended up sharing a dance floor with both of you and your partners. I knew then that this was going to end well. Arne, you believed in me from day one, even in times when I did not believe in myself. Your never-ending encouragement, your patient and thourough readings of my chaotic manuscripts, your vast knowledge of my subject and your shrewd and insightful comments have safely guided me through these years. Per, your honest and clearsighted criticism, your pertinent advice on writing, your intellectual integrity, and your fast responses to my questions, even from China, have been invaluable and an inspiration. You have also both been generous with your wide intellectual and international networks, and pushed me to create my own. But, most of all, we have had a lot of fun. Thank you for everything.

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My thesis manuscript has been presented at two seminars and critizised by two brilliant oppontents, Gustav Holmberg and Ylva Hasselberg. I consider you both academic role-models, and I am ever grateful for your honest, thought-provoking and insightful criticism (and Gustav, for the candy). Pär Blomkvist read the manuscript in its last stages, and gave it a final, much needed, framing. Thank you for a timely and liberating discussion. Libby Robin came up with the title and her and Susanna Lidström fixed some crucial English imperfections at the end, thank you both for your quick and qualitative help.

Over these years I have profited greatly from the unequalled creative, welcoming and intellectually challenging atmosphere in the Tensions of Europe and SHOT networks. In particular, my first years as a Ph.D. student were marked by my participation in the international research project EUROCRIT. It was an amazing experience, which helped me grow as a scholar and as a person. My thesis is greatly indepted to the discussions held in this group, and I want to thank all of its participants, Anique Hommels, Aristotle Tympas, Erik van der Vleuten, Ivan Tchalakov, Karl-Erik Michelsen, Lars Heide, Lars Thue, Stathis Arapostathis and Tihomir Mitev. A special and very heartfelt thank you to Yiannis Garyfallos, Katarina Vlantoni, Vincent Lagendijk and Ivaylo Hristov whose warm friendship and dry commentary have made travels, conferences and summer schools unforgettable experiences.

I spent 5 months of my Ph.D. time at the HASTS program at MIT. I came back with an improved self-confidence, better written English and a theoretical frame. I want to thank the grad student collective there for welcoming me. Teasel Muir

Harmony, Ellan Fei Spero, Johanna Höffken and Professor Merritt Roe Smith especially helped make my stay memorable. I also want to sincerely thank Professor Karen R. Polenske who allowed me to take her course on infrastructures, gave me invaluable comments and introduced me to some of my main theoretical concepts.

My research at the Foreign Trade Ministry Archives in Moscow was made possible thorugh the help of Julia Lajus and Alexandra Bekasova at the European University in St. Petersburg. Thank you for you support through the jungle of Russian administration and for inviting me to your seminars and sessions. In Denmark, Mogens Rüdiger has been a great support, not only through his books on DONG and natural gas in Denmark, but also through discussions and comments. Thank you for your help, and for inviting me to Tromsø.

This thesis would not have been possible had I not been allowed to access material from the archives of Swedegas, E.ON, Energigas Sverige and the Swedish Ministry of Enterprise, Energy and Communications. I have been especially helped by Anna Borg (Swedegas), Sigvard Trönell (E.ON), Maria Pohjonen (Energigas Sverige) and Maria Wärnberg (the Swedish Ministry of Enterprise, Energy and Communications). Thank you for your generosity and your interest in my work.

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Adriano, thank you for your wonderful cover photo, and Anders and Björn, thank you for letting me and Adriano into your home for a photo-session.

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To the rest of my families and friends, thank you for your patience, for incessantly cheering me on and for occasionally taking my mind of work. A big bat-thank you to those who arranged a “doktorandhippa” for me at the exact time when I needed it the most. This book is for you.

When Elin Bommenel emailed me in 2007 suggesting I apply for a Ph.D. position at KTH, I sat at Web-Ugol, an Internet café in Irkutsk, Siberia, and laughed out loud, startling the Russians around me. The idea of me working at KTH seemed about as likely as me writing a book about natural gas. Thank you, Elin. I regret nothing.

Stockholm, 28 April 2013 Anna Åberg

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Fig. 1: The European natural gas grid. Map courtesy of ENTSOG, http://www.entsog.eu/maps/transmission-capacity-map/2012

# Chapter 1: Introduction

## A Gap in the Grid

Natural gas has been one of the fastest growing fuels of the last 50 years, developing from a marginal component in overall energy supply in the 1950s to one of the world's most important energy sources in the early 21st century. In the European Union, it currently accounts for about 25% of total energy consumption.[1] Imports and exports play critical roles, with many pipelines and liquefied natural gas (LNG) routes transcending national borders. The grid not only serves to interconnect countries that have historically been friendly neighbours and trusted trade partners, but also connected polities on opposite sides of the former Iron Curtain.[2] Today, the natural gas pipeline system embraces almost all countries in Europe, as well as a number of non-European regions. Stretching from the northern regions of the North Sea down to the Saharan desert in the south, to Central Asia and Siberia in the East and the coast of the Atlantic Ocean in the west, the network constitutes one of the largest infrastructures in the world.

Importing natural gas has been a way for many countries to diversify and strengthen their overall energy supply, but it has also created dependencies and vulnerabilities. The extent of these has been much debated in recent years in connection with several gas conflicts between Russia and Ukraine, and in discussions regarding new transnational connections such as the Nord Stream pipeline through the Baltic Sea. However, the positive characteristics of natural gas have attracted more and more users. Natural gas enjoys the reputation of being a very efficient fuel, especially in industrial processes, as well as being the most environmentally friendly of all fossil fuels. Moreover, it is widespread. Many European countries have indigenous sources of natural gas, and, for those who do not, immense deposits are available nearby, notably in the North Sea, the Sahara, the Middle East and Siberia.

In Sweden, natural gas has largely escaped public debate. Instead energy debates have been dominated by other energy sources, such as hydropower, nuclear power and oil. One of the few times natural gas drew public attention was during the debate about Nord Stream. However, this discussion was not about natural gas as an energy source, but rather about the question of letting a foreign state company build a large infrastructure within Sweden's economic zone. The debate centered on the long-term environmental and geopolitical

[1] http://www.eurogas.org/uploaded/Statistical%20Report%202011_091211.pdf

[2] For a discussion regarding the development of the European gas grid, see Per Högselius, Anna Åberg and Arne Kaijser, 'Natural Gas in Cold War Europe. The Making of a Critical Infrastructure', in *The Making of Europe's Critical Infrastructure: Common Connections and Shared Vulnerabilities*, ed. by Per Högselius and others (Basingstoke and New York: Palgrave Macmillan, 2013); David G. Victor, Amy M. Jaffe and Mark H. Hayes, *Natural Gas and Geopolitics: From 1970 to 2040* (Cambridge (UK): Cambridge University Press, 2006).

implications of this foreign built and maintained infrastructure, not the gas itself.[3] The lack of public debate is mirrored by a very limited role for natural gas in the Swedish energy system. In contrast to most other European nations, Sweden has not seen natural gas grow into a big energy carrier, and despite increasing use, it still only accounts for about 2-3 % of total energy consumption.[4] In geographical terms, the Swedish gas grid is limited to the southwestern part of the country. While it is part of everyday lives for one segment of the Swedish population, Swedes in other places are hardly aware of its existence.

This relative anonymity of natural gas today stands in contrast to the extensive historical activity that has taken place on the Swedish natural gas scene. There have been many attempts to introduce natural gas in the country during the last 50 years. Efforts have been instigated by state commissions of inquiry, Nordic Council investigations, industry lobbying and have involved negotiations with a range of countries: Denmark, Norway, Germany, the Soviet Union, Iran and Algeria. From the 1960s and onward, an interest in natural gas led Swedish actors from different spheres (politics, industry, lobby groups) to organise themselves, gather knowledge about natural gas and start networking with actors in other countries. The political debate surrounding natural gas in Sweden has also at times been quite fierce. Below is a "counterfactual" map. It depicts arrange of different projects proposed for Sweden as part of a Nordic gas grid in the last half-century. I have drawn the suggested pipeline routes in red, and LNG ports as blue circles.

[3] For a discussion about the Nord Stream debate see e.g. Vladislav Savić, *Vladimir Putin och ryssskräcken* (Stockholm: Norstedt, 2010); Robert L. Larsson, *Nord Stream, Sweden, and Baltic Sea Security* (Stockholm: Swedish Defence Research Institute, FOI, March 2007); Anna-Lisa Fransson, Ingemar Elander and Rolf Lidskog, 'Framing Issues and Forming Opinions: The Baltic Sea Pipeline in Swedish Media', *European Spatial Research and Policy*, 18 (2011), 95–110.
[4] Energimyndigheten, *Energiläget i siffror 2012*, (Eskilstuna: Energimyndigheten, 2012), figure 24. In the region through which the Swedish natural gas pipeline passes, natural gas provides around 20% of the primary energy.

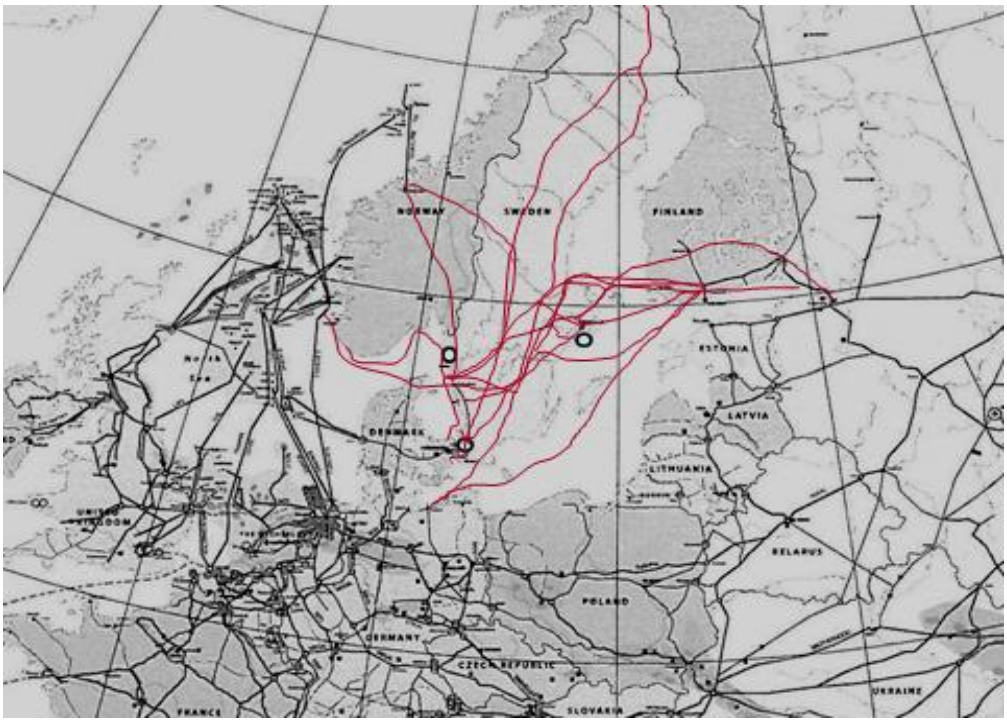

Fig 2: Counterfactual map (red lines and blue circles) of natural gas pipelineshistorically proposed for Sweden but never built. Map by author.

These projects have reached varied levels of completion, and the plans have been more or less grandiose, but the image serves to show how much activity and effort has gone into making the Swedish/Nordic gas grid a reality. So far all this activity has resulted in only one pipeline. More than thirty years ago, in 1980, the Swedish government signed its first natural gas import contract, and five years later, gas started flowing to the southern Swedish province of Skåne from Denmark. At the time, there were plans to extend the Danish-Swedish pipeline to the East Coast of Sweden as well as to connect the grid to both Norway and the Soviet Union. However, this larger expansion still has not taken place, and today, the Swedish natural gas grid only stretches along the West Coast, with a few minor extensions, as seen on the map in the beginning of Chapter 9.

Sydgas, as the Swedish part of the Danish-Swedish pipeline system is known, is also the only natural gas pipeline crossing a Nordic border. In many other sub-regions of Europe, gas sources have been developed slowly, first catering to one country, and then their neighbours. Despite the presence of natural gas in the Nordic region, however, natural gas links between the Nordic countries are conspicuously absent, and the European natural gas grid – which is otherwise ubiquitous – seems to have by-passed this region. There are only two exceptions: one pipeline from Russia to Finland, and the Danish-Swedish connection.

Why is there this gap in the European grid? This thesis examines the factors that make this area different from the rest of Europe with regard to the natural

gas issue. The Nordic countries have had close cooperation in other sectors, such as electricity, where the region has aroused world-wide attention as a model for transnational cooperation. What makes the gas issue different? In light of the pipelines being constructed across the former Iron Curtain and the Mediterranean, it may seem ironic that friendly and culturally close neighbours such as Denmark, Finland, Norway and Sweden have not been able to establish connections with each other.

When looking at a particular fuel and how it has been incorporated into a system, there are many parameters to take into account. Availability is, of course, a major reason why certain fuels have been used or not used in a certain geographical area, but it is not the only reason. Economic, technological, and cultural factors have also played into the question of energy choices. Opinions regarding suitable energy fuels and carriers in a certain country vary over time and between actors in different settings. An energy source considered cheap, clean, and efficient at one time, may, in a not too distant future or in another part of the world, be described as dirty, unsafe and expensive. Thus, oil has been lauded for its environmentally clean properties compared to coal, and nuclear power has been seen as a way to get away from environmentally destructive oil at different points in history. These perceptions of energy sources are only one example of parameters that are important in the context of an energy system. Influential actors also drive particular energy decisions. They perceive risks and opportunities with regard to new fuels, and use different strategies in order to launch large scale infrastructure projects. In this study, I will examine the strategies used by actors in the Swedish natural gas sector.

In this chapter, I will first outline the specific characteristics of the natural gas system, and put it into both an international and national (Swedish) context. I have chosen to anlyse the natural gas system from a project perspective, which will be presented together with my research questions. Finally I will discuss my sources and how they have been used. Relevant research is presented throughout this chapter, as well as in chaper 2, in which I describe the Swedish energy system in greater detail.

## The Nature of Natural Gas

Natural gas consists of a mixture of different hydrocarbon gases, which are created through a biological process in the sedimentary layer, where organic debris transforms into oil, coal and gas, over time. The main component is methane, although natural gas can contain other gases as well, notably ethane, propane and butane. Natural gas can be found in underground deposits, either alone or together with oil and coal. In the early history of the petroleum business, gas was seen more as a nuisance than anything else since it was difficult to transport, and when found in association with oil it was generally flared (burned). As gas technology has improved, natural gas can now be

transported over long distances either through pipelines or as liquefied natural gas, LNG. Regardless of the transportation method used, the technological system surrounding natural gas production and transportation is extensive. In a grid system, the gas has to be transported under high pressure maintained through compression stations along the pipeline. Since it is difficult and expensive to store gas, much of the natural gas has to be used at the same speed as it is extracted.[5]

A natural gas grid forms a particular case of international cooperation and energy politics. In his report, *Troll Dance* (1985), Måns Lönnroth describes the natural gas market as a closely knit network with a common culture and even its own kind of mythology. He makes the following comparison with the oil trade:

> If the relations between the sexes are seen as a metaphor, oil trade has a certain touch of the atmosphere of a large ocean city – myriads of essentially narcissistic buyers and sellers, quite often anonymous, accordingly with a strong touch of infidelity and short term gains at the expense of deeper relations. Gas trade on the other hand is, at least in Western Europe, much more similar to those marital relations between feudal families on the continent of medieval Europe that eventually shaped the nation states. The emphasis is on common interest, long term alliances, trust and confidence – in short, stability.[6]

Lönnroth refers here to the long-term contracts that continue to shape the natural gas business, to a large extent. Since a gas project means big initial investments in a large technological system, which cannot be used for any other purpose, certain trade mechanisms must be in place to ensure that both the buyer and the seller get their investments back. This has been handled mostly through bilateral contracts between actors in different countries concluded for a period of 20-25 years. These contracts focus on mutual interest, long-term alliances, trust and dependability. The deals also have a long lead time. As the infrastructure has to be built, the contracts are signed long before the actual gas flow starts. These factors create a mutual dependency between the countries involved, which, in turn, may have consequences on foreign politics and attitudes. It becomes important that the partner country is in a financial and social position that benefits the exchange, which may motivate the parties to encourage stability in, and avoid conflicts with, their respective counterparts' country.

Although many of the countries connected to the European natural gas grid have indigenous natural gas resources, today natural gas connections and flows

[5] For information on natural gas see e.g. Melvin, Alec, *Natural gas: Basic Science and Technology*, (Bristol: Adam Hilger in association with British Gas, 1988).
[6] Måns Lönnroth, *Troll Dance - The Next Act on the West European Gas Scene* (Stockholm: The Beijer Institute, 1985), p. 8.

are to a large extent transnational, and even those countries that do have their own natural gas are still more or less dependent on imports. As gas technology has developed to allow gas pipelines to transport gas over greater and greater distances, many countries have become tied together through the dealings around natural gas. The geopolitical implications of infrastructure construction over national borders have often been considered to be volatile. Therefore, the contracts mentioned by Lönnroth with their long timeframes, re-negotiation clauses and promises of mutual aid are central to many natural gas deals, and they are considered to be sturdy enough to hold even in the fiercest of geopolitical storms.[7] Not everyone, however, agrees with this claim. In the opinion of Victor, Jaffe and Hayes, the editors of *Natural gas and geopolitics – From 1970 to 2040,* the assumption that long-term contracts create security of investment is an "energy security myth".[8] They have found several instances when a gas contract has not managed to prevent the breach of a deal.

Despite the problem of energy dependence, risk, and possible environmental disaster, energy systems are becoming more and more entangled over borders throughout the world. The development of the natural gas system embodies a tension: On the one hand the system provides a stable, long-term, versatile, efficient and relatively clean energy supply. On the other hand it creates a long-term dependence on a foreign country of a kind that is anathema to the common discourse on national self-sufficiency. The perspective of the natural gas grid as a transnational critical infrastructure is therefore crucial.

The grid character also has implications for the way natural gas is introduced in a country. The level of investment means that a big decision has to be made, where several actors work together in order to handle this large undertaking.[9] Following up on Lönnroth's allegory, one can compare this process with oil. Oil transports are dependent on already existing infrastructure, and the technology for using oil is quite readily available even on a smaller scale. This is not the case with natural gas. In order for natural gas to become available to consumers, large, collective decisions and investments are needed, since the infrastructure has to be constructed. This calls for strong actor alliances, and is also why the state is often a main actor in the field.[10]

[7] J. D Davies, *Blue Gold: The Political Economy of Natural Gas* (London, 1985), p. 4-5.
[8] Victor, Jaffe and Hayes,p. 22.
[9] Of course, there are local differences, and within certain countries with indigenous sources, the grids have evolved slower and by way of smaller decisions.
[10] See e.g. Arne Kaijser, 'Trans-border Integration of Electricity and Gas in the Nordic Countries 1915-1992', *Polhem, Tidskrift för teknikhistoria*, 1 (1997). It has been argued that in a functioning market economy, public involvement would not be necessary. See, e.g., Erik Moberg, *Naturgas i Sverige: Ett bidrag till diskussionen om statens roll i samhället* (Stockholm: Industriförbundets förlag, 1991). However, state companies have historically been strong actors in the natural gas field.

Large initial investments and public involvement are traits that are shared with many other large technological systems, such as district heating, highways, etc., but what makes the natural gas network special is that it combines a technological rigidity with a transnational character, which makes it necessary to employ the kinds of governing mechanisms previously outlined by Lönnroth. If one was to compare to another transnational large energy network, the electricity grid, one would observe that even though the electricity grid is as connected as the natural gas grid, its governance is completely different. The electricity system is more flexible due to the fact that there are many different and exchangeable sources within each country and the transnational flows have more the character of mutual exchanges rather than a one-way relationship between buyer and seller as is generally the case with regard to natural gas.[11]

The other way of transporting gas is to condense it into a liquid by cooling it to ca -162°C and transport it in large sea or road tankers. This makes the gas route less rigid than in the case of a pipeline, but not necessarily less costly since the tankers as well as the LNG-terminals where the gas is liquefied and de-liquefied, demand large investments and contracts to secure supply. As the technology has developed, however, the cost of LNG terminals and transportation has fallen, and every year a larger and larger part of natural gas transport is made by LNG.[12]

One of the biggest concerns of a natural gas project is the security of supply. The fewer the suppliers, the riskier the endeavour. This is why one of the most common risk management strategies with regard to natural gas is to connect to several suppliers. However, this strategy also has an ironic counterpoint; while trying to escape the risk of having only one supplier, the buyer expands the grid to include more suppliers, and thus becomes more and more dependent on the fuel itself. This is one of the basic mechanisms that have allowed the natural gas grid to expand so quickly over Europe, despite the many risks and investments involved. This development has been interpreted as a complex process, where different views of risk and vulnerability have been negotiated, and the resulting transnational connections have led to new dependences and vulnerabilities, but also to a certain degree of stability.[13]

Taking into account the international nature of natural gas, as well as the Swedish situation, with no indigenous gas resources, the international context becomes very important in this investigation. Historians Alexander Badenoch and Andreas Fickers have argued that technological infrastructures can be

[11] Kaijser, 'Trans-border Integration of Electricity and Gas in the Nordic Countries 1915-1992'; Vincent Lagendijk, *Electrifying Europe: The Power of Europe in the Construction of Electricity Networks* (Amsterdam: Aksant Academic Publishers, 2008).
[12] See *BP Statistical Review of World Energy,* June 2012, http://bp.com/statisticalreview; *Eurogas' Statistical report 2011* and *2012*, http://www.eurogas.org/figures_statistics.aspx
[13] See Högselius, Åberg and Kaijser.

perceived as the "essence of European integration."[14] Despite this, literature regarding infrastructure has largely had national perspectives. During the past few years researchers have aimed to remedy the lack of research regarding large infrastructures in Europe and their connections to European integration.[15] Some of them argue that technology transcending borders can be regarded as a form of hidden integration, that has at least as much importance when it comes to tying Europe together as the top-down politics of the European Union.[16] Moreover, much of the research shows that although the national state is still an important actor in technical issues, it becomes harder and harder to delineate the nation state in a practical sense, since the material and institutional structures in place to cope with the large infrasystems to a larger and larger extent are of transnational character.

In view of the integrated energy systems, energy policy to a large extent is international policy. If nothing else, this is clear when considering today's discussions concerning the dependence of Western Europe on oil and gas from Russia, Algeria and the Middle East, and the recent conflicts between Russia and Ukraine over natural gas. Since most countries are not able to secure their national energy requirements through indigenous supplies, they are forced to import energy in some form. There is also a strong regional side to the natural gas infrastructure relating both to energy security and to regional cooperation. As mentioned earlier, only one natural gas pipeline crosses a border between two Nordic countries. Yet, the idea of building a Nordic gas grid has been investigated many times, and has been discussed in, among other instances, the Nordic Council.[17] In this regard the Nordic natural gas story is part of a longer history of Nordic cooperation on different levels and with different degrees of success.[18] The attempts to build a natural gas pipeline through Sweden are one

[14] Alexander Badenoch and Andreas Fickers, 'Europe Materializing? Toward a Transnational History of European Infrastructures', in *Materializing Europe: Transnational Infrastructures and the Project of Europe*, ed. by Alexander Badenoch and Andreas Fickers (Basingstoke, Hampshire: Palgrave Macmillan, 2010), p. 2.

[15] See e.g. Lagendijk.; Erik Van der Vleuten and Arne Kaijser, *Networking Europe: Transnational Infrastructures and the Shaping of Europe* (Sagamore Beach: Science History Publications, 2006); Suzanne Lommers, *Europe - On Air. Interwar Projects for Radio Broadcasting* (Amsterdam: Amsterdam University Press, 2012); Irene Anastasiadou, *Constructing Iron Europe. Transnationalism & Railways in the Interbellum* (Amsterdam: Foundation for the History of Technology & Aksant Academic Publishers, 2011); Johan Schot, Thomas J. Misa, Ruth Oldenziel, a.o. (2005), 'Tensions of Europe: The Role of Technology in the Making of Europe', Special issue of *History and Technology,* 21, (2005); Frank Schipper & Johan Schot, a.o. (2011). 'Infrastructural Europeanism, or the Project of Building Europe on Infrastructures', Special issue of *History and Technology*, 27, (2011).

[16] See in particular Thomas J. Misa and Johan Schot, 'Inventing Europe: Technology and the Hidden Integration of Europe', *History and Technology*, 21 (2005), 1–20.

[17] The Nordic Council is an official inter-parliamentary body for co-operation between the Nordic countries. Today, Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands. Greenland and Åland work together in this co-operation.

[18] Bengt Sundelius and Claes Wiklund, eds, *Norden i sicksack. Tre spårbyten inom nordiskt samarbete*, (Stockholm: Santérus Förlag, 2000); Nina Wormbs, *Vem älskade Tele-X: Konflikter om satelliter i Norden 1974-1989* (Lund: Gidlunds Förlag, 2003); Per Lundin, 'De små stegen:

part of the process of creating a larger European natural gas grid, as well as a part in a regional energy political context. Both levels are important for an understanding of the history of natural gas in Sweden.

## Swedish Energy Policy and Natural Gas

Researchers who have approached the subject of Swedish energy history and policy have often done so from the perspective of a certain energy source or carrier, such as hydropower, hydrogen, district heating, the electric system, cogeneration plants, nuclear power, and renewable energy[19]. Nuclear power, hydropower and renewable energy have been thoroughly researched. This focus mirrors the importance of these energy carriers in Sweden, both in use and as

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Nordiskt telesamarbete i ett historiskt perspektiv', *Polhem, Tidskrift för teknikhistoria*, 2-4 (1999), 168–200; Kaijser, 'Trans-border Integration of Electricity and Gas in the Nordic Countries 1915-1992'.

[19] For the case of hydropower, see e.g. Evert Vedung and Magnus Brandel, *Vattenkraften, staten och de politiska partierna* (Nora: Nya Doxa, 2001); May-Britt Öhman, *Taming Exotic Beauties: Swedish Hydropower Constructions in Tanzania in the Era of Development Assistance, 1960s-1990s* (Stockholm: Royal Institute of Technology, 2007); Eva Jakobsson, *Industrialisering av älvar : Studier kring svensk vattenkraftutbyggnad 1900-1918* (Göteborg: Göteborgs Universitet, Historiska Institutionen, 1996). For hydrogen, see Martin Hultman, *Full gas mot en (o)hållbar framtid: Förväntningar på bränsleceller och vätgas 1978-2005 i relation till svensk energi- och miljöpolitik* (Linköping: Institutionen för Tema teknik och social förändring, Linköpings universitet 2010); Hanna Jönsson, *Vätgasens historia i Sverige. Aktörer och aktiviteter inom vätgas- och bränslecells-området mellan 1960 och 2005* (Göteborg: Institutionen för energi och miljö, Chalmers tekniska högskola, 2006). For distric heating, see Jane Summerton, *District Heating Comes to Town: The Social Shaping of an Energy System* (Linköping: Affärslitteratur AB, 1992). For the electric system, see e.g. Mats Fridlund, *Den gemensamma utvecklingen. Staten, storföretaget och samarbetet kring den svenska elkrafttekniken* (Stockholm: Brutus Östling Bokförlag Symposium, 1999); Per Högselius and Arne Kaijser, *När folkhemselen blev internationell: Elavregleringen i historiskt perspektiv* (Stockholm, 2007). For cogeneration plants, see Mikael Hård and Sven-Olof Olsson, *Istället för kärnkraft: Kraftvärmens framväxt i fyra länder* (Stockholm: Carlsson, 1994). For nuclear power, see e.g. Björn Wittrock and Stefan Lindström, *De stora programmens tid: Forskning och energi i svensk politik* (Stockholm: Förlaget Akademilitteratur AB, 1984); Stefan Lindström, *Hela nationens tacksamhet: Svensk forskningspolitik på atomenergiområdet 1945-1956* (Stockholm: Stockholms Universitet, Statsvetenskapliga institutionen, 1991); Jonas Anshelm, *Mellan frälsning och domedag: Om kärnkraftens politiska idéhistoria i Sverige 1945-1999* (Stockholm: Brutus Östlings Bokförlag Symposium, 2000*)*; Evert Vedung, 'The Politics of Swedish Energy Policy', in *Building sustainable energy systems : Swedish experiences*, ed. by Semida Silvera (Stockholm: Energimyndigheten, Svensk Byggtjänst, 2001), pp. 95–130; Maja Fjaestad, *Visionen om outtömlig energi: Bridreaktorn i svensk kärnkraftshistoria 1945-80* (Hedemora: Gidlunds Förlag, 2010); Thomas Jonter, *Sverige, USA och kärnenergin: Framväxten av en svensk kärnämneskontroll 1945-1995* (Stockholm: SKI, 1999); Maja Fjaestad and Thomas Jonter, 'Between Welfare and Warfare': The Rise and Fall of the "Swedish Line" in Nuclear Engineering', in *Science for Welfare and Warfare: Technology and State Initiative in Cold War Sweden*, ed. by Johan Gribbe, Per Lundin and Niklas Stenlås (Sagamore Beach: Science History Publications, 2010). For renewable energy, see e.g. Inga Carlman, *Blåsningen: Svensk vindkraft 1973 till 1990* (Uppsala: Kulturgeografiska institutionen, 1990); Jonas Anshelm, Att ersätta kärnkraften med bioenergi - om en omstridd idé i den offentliga energipolitiska debatten i Sverige 1979-2000 (Linköping: Program energisystem, Linköpings universitet, 2009); Ann-Sofie Kall, *Förnyelse med förhinder. Den riksdagspolitiska debatten om omställningen av energisystemet 1980-2010* (Linköping: Linköpings universitet, Institutionen för TEMA, 2011); Helena Ekerholm, *Bränsle för den moderna nationen. Etanol och gengas i Sverige under mellankrigstiden och andra världskriget.* (Umeå: Institutionen för idé- och samhällsstudier, Umeå universitet, 2012).

objects of discussion and policy.[20] (I will return to the studies tracing the introduction and development of the electric system (including hydropower and nuclear power) in Chapter two).

The energy policy discussions in themselves have also been the focus of research, especially with regard to the visions of future societies and the rhetoric and discourse level of the discussion regarding new energy carriers.[21] In relation to both nuclear power and renewable energy, visions of the use of the energy carriers have often been paired with visions of new energy systems and ways of organizing society. The visions of a future society with less or no fossil fuels and abundant energy have been strongly connected to these new energy carriers. The connection between energy policy and environmental policy is, of course, strong here, and this relationship has also been explored.[22] This literature also discusses how different energy sources carry different meanings, and how they relate to discourses regarding modernity, and views of a new society.[23] Other researchers have focused on issues such as state involvement in the energy market, governance of research and development and the role of institutions and laws[24].

The history of imported fuels and especially fossil fuels has been less researched, even though they have made up an important part of Swedish energy consumption over time. Sven Olof Olsson has studied Swedish coal imports during World War II, and Thomas Jonter has analysed the discussion regarding state involvement in the Swedish petroleum industry right after World War II.[25] Natural gas, however, has almost always been absent from these histories. One exception is Martin Hultmans *Full gas mot en (o)hållbar*

[20] Evert Vedung has stated that "Nuclear power, not oil, is the hub around which Swedish energy politics and policy rotate." In Vedung, p. 3.
[21] Anshelm, *Mellan frälsning och domedag*; Hultman; Kall; Fjaestad.
[22] Karl-Göran Algotsson, *Ord och handling i svensk miljöpolitik* (Stockholm: Norstedts Juridik, 1996); Anshelm, *Mellan frälsning och domedag;* Hultman; Kall; Åsa Knaggård, *Vetenskaplig osäkerhet i policyprocesse: En studie av svensk klimatpolitik* (Lund: Statsvetenskapliga institutionen, Lunds universitet, 2009); Magnus Linderström, *Industrimoderniteten och miljöfrågans utmaningar: En analys av LO, SAF, Industriförbundet och miljöpolitiken 1965-2000* (Linköping: Institutionen för Tema teknik och social förändring, Linköpings universitet, 2001).
[23] See Anshelm, *Mellan frälsning och domedag*; Ekerholm, Helena, 'Cultural Meanings of Wood Gas as Automobile Fuel in Sweden, 1930-1945', in *Past and Present Energy Societies: How Energy Connects Politics, Technologies and Cultures*, ed.by Nina Möller and Karin Zachman, (Biefeld: Transcript verl., 2012); Kall; Hultman.
[24] For the case of state involvement in the energy market, see Erik Moberg, *Svensk energipolitik: En studie i offentligt beslutsfattande* (Stockholm: Svensk energiförsörjning, 1987); Erik Moberg, *Behövs energipolitiken?* (Stockholm: AB Timbro, 1985); Marian Radetzki, *Svensk energipolitik under tre decennier: En studie i politikermisslyckanden* (Stockholm: SNS Förlag, 2004). For governance of research and development, see Wittrock and Lindström; Ragnar E. Löfstedt, *Dilemma of Swedish Energy Policy* (Aldershot: Avebury Ashgate Publishing, 1993). For the role of institutions and laws, see Vedung and Brandel; Högselius and Kaijser.
[25] Sven-Olof Olsson, *German Coal and Swedish Fuel 1939-1945* (Uppsala: Almqvist & Wiksell Förlag, 1975); Thomas Jonter, *Socialiseringen som kom av sig: Sverige, oljan och USA:s planer på en ny världsordning 1945-1949* (Stockholm: Carlssons Bokförlag, 1995).

*framtid*, where the author shows how the proponents of fuel cells and hydrogen argued for the use of natural gas as a possible solution for fuel cells.[26] Another is Åsa Knaggård who briefly discusses the role of natural gas in the energy and climate debate in the end of the 1980s.[27]

Although hydro-power, nuclear power and biofuels/renewables have all been surrounded by conflicts (especially hydropower and nuclear power), they can be considered as succeeded systems, in the sense that they have become dominant in policy and in the Swedish energy system. The natural gas system, however, despite existing on the Swedish market, has an allure of failure, at least when looking at the literature on the subject, which has mostly focussed on the small amount of natural gas in the Swedish system. The modest use of natural gas in Sweden has often been blamed on an energy political instability. In the article "The Missing link: Attempts at establishing a Nordic gas grid", Gunnar Agfors argues that Sweden is the missing link for establishing an integrated Nordic gas market, due to its geographical place in the centre of the region.[28] According to him, the process of tying the Nordic gas grids together has been slowed down because there have been too many competing energy sources in the region. Also, since Sweden is a key actor in this process, the Swedish market situation has been of great importance. Due to the lack of stability in energy and environmental policies in Sweden, there has been a hesitancy to invest in such a long term, capital-intensive project.[29] A similar analysis of an irregular energy policy in connection to energy research programs has been made by Björn Wittrock and Stefan Lindström, who characterise Swedish energy politics as crisis politics, in which measures are taken without long term thinking to back them up. They point out that insecurity during crises leads to a willingness to show the ability to act in a decisive manner. Thus projects that may be considered controversial under "normal" conditions can be carried out in a situation of crisis.[30] Urban Kärrmark, in the same vein, has called the previously mentioned Sydgas deal, a "panic measure". In a report written for the Swedish Energy Agency regarding natural gas, he describes the decision to introduce natural gas in Sweden as one way of countering the oil price problem, which was having repercussions on the Swedish economy as a whole.[31]

In *Naturgas i Sverige: Ett bidrag till diskussionen om statens roll i samhället*, Erik Moberg instead underscores the insecurity connected to the irregular

[26] Hultman, pp. 89–96.
[27] Knaggård, pp. 123–125.
[28] Gunnar Agfors, 'The Missing Link: Attempts at Establishing a Nordic Gas Grid', in *Nordic energy systems*, ed. by Arne Kaijser and Marika Hedin (Canton: Science History Publications, 1995). p. 223.
[29] Agfors, pp. 233–235.
[30] Wittrock and Lindström, p. 45.
[31] Urban Kärrmarck, *Naturgas i ekonomins och i politikens tjänst* (Stockholm: Statens Energimyndighet, 2008), p. 83.

decisions and rhetoric regarding nuclear power in Sweden.[32] The aim of Moberg's text is to use natural gas as a case study to discuss state involvement in energy politics, but he also writes an overview of Swedish natural gas history, with the Sydgas deal as main focus, up until 1991. Moberg concludes that Swedish energy policy as a whole since the 1970s has not complied with basic market economy principles, but instead has been guided by central state involvement. In his opinion, the natural gas case shows that state involvement is not necessary in the energy sphere, and has instead led to rent seeking and political rather than economic bases of decisions.[33]

Another aspect of the Swedish energy context that seems to have had a decisive impact on the natural gas issue is the actor aspect. In the report *Energiorganisationen i Norden*, Sven Olof Olsson studies the connection between electricity and natural gas distribution in the Nordic countries, as well as the effects of the existing experiences in electricity and town gas distribution on the introduction of natural gas in the Nordic countries. He draws the conclusion that the introduction of natural gas in Sweden has been hindered by the existing energy organisation. If power companies in a country have a strong position, they are more likely to be conservative concerning the introduction of new energy forms. If, as the case is in Sweden, big power companies (e.g. Vattenfall and Sydkraft) have been the major players on the gas scene, they will not prioritize the introduction of a new energy fuel, unless they really have to. Their main priority will always be electricity.[34] Therefore, the involvement of these organisations have hindered as much as helped the introduction process. In comparison, natural gas has been introduced in countries where there have been two competing organisations for electricity and natural gas, as is the case in Finland and Denmark.[35] He also considers the relationship between town gas and natural gas, and concludes that when town gas was phased out, countries like Sweden and Finland lost the habit of handling gas, on a technological as well as economic and consumer level. According to Olsson, this is one reason to why the introduction of natural gas in Sweden has met with resistance.

The claim that power actors in Sweden have been slow to adapt to new energy sources is also suggested by Arne Kaijser. He discusses the incentives and obstacles for transborder integration of the electric and gas systems in the Nordic countries and compares the process of integrating the Nordic power grid with the attempts to create an integrated Nordic gas grid. Kaijser asserts that the power industry in the Nordic countries has been hesitant to introduce new energy sources, and usually prefers sticking to what they know. This is especially true when the new energy source risk bringing major changes to the overall

[32] Moberg, *Naturgas i Sverige,* p. 123.
[33] Moberg, *Naturgas i Sverige*, pp. 120–123.
[34] Sven-Olof Olsson, *Energiorganisation i Norden* (Göteborg: BAS, 1992). p. 123.
[35] Olsson, *Energiorganisation i Norden*, p. 124.

organisational structure of the power industry, as may be the case with natural gas.[36]

Thus, while most research in Swedish energy history has not included natural gas, when it has been treated the framework has mainly been to discuss the "failure" of natural gas in Sweden. However, the projects that did not evolve into a final product were still relevant for the process of introducing natural gas into Sweden, and I believe that by looking at the projects that were not carried out we can better understand the ones that were. Not labelling the projects as failures also means taking the actors' judgement of the future seriously. All projects were seen as plausible by at least some actors at different points in time.[37]

Most of the accounts mentioned above are based on interviews or oral accounts, official government documents and annual reports. As far as I can see, no author has usad any archival material concerning natural gas in Sweden. In the case of Moberg and Kärrmark, there is also a great lack of transparency in the used sources. The earlier focus has further been on the Sydgas project, and, to some extent, the developments in the 1980s. No attempt has been made to write a history of natural gas in Sweden and place the fuel into a larger narrative of Swedish energy history. This is what I aim to do. I will study the actors who have propagated natural gas, and their views both of the fuel and of the energy system into which the gas will be introduced. These actors have belonged to state institutions, commercial companies and organisations, and they have been negotiating different visions of a future Sweden where natural gas has a place.

## Project Perspectives

Infrastructures are an intrinsic part of our lives, and we largely take them for granted, as long as they do not malfunction. However, the construction of an infrastructure cannot be taken for granted. The story of an infrastructure project spans a long time frame, a myriad of actors from different sectors as well as in different countries, and many changing contexts. In many ways, they are chaotic endeavours. How can we understand the process of constructing and governing an infrastructure?

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[36] Kaijser, 'Trans-border Integration of Electricity and Gas in the Nordic Countries 1915-1992', p. 38.

[37] Since I look at many projects that never become realised, I could be tempted to label them as "failures". However, my goal is to not uncritically add to the literature judging the Swedish/Nordic natural gas projects and labelling them by after-the-fact constructs such as "failure" or "success". In this I am inspired by the notion of backwards and forwards history coined by historian Göran B. Nilsson. He argues that in order to avoid what he calls "chronological imperialism" it is important write history forwards and to the best of one's ability not judge the actors by what you already know happened. This is one way of avoiding to write the "winners'" history, which can lead to an essentialist and linear way of looking at history. Göran B. Nilsson, 'Historia som humaniora', *Historisk Tidskrift*, 1 (1989), 1–15.

*A "Messy Evolution"*

Within the field of infrastructural planning, Roger Miller and Donald Lessard have looked into the management and function of what they name Large Engineering Projects (LEPs). Miller and Lessard have an evolutionary perspective on LEPs, and they conclude that "successful projects are not selected, but shaped."[38] This shaping takes place on many levels, and actors shape institutional arrangements, negotiate to form coalitions, and try to create legitimacy for the project by garnering support for it in interest groups, and countering opposing forces in a combination of "deliberate actions and responses to emergent situations." Shaping takes place in episodes over the course of a project, and after each episode a sort of closure is achieved, which closes some possible paths forward, and opens up others.[39] The idea of a perfectly planned project that goes smoothly from planning to execution, according to Miller and Lessard, is an old, modern ideal that no project can live up to, and instead they advocate outlining a governance framework that recognizes that projects are "essentially evolutionary and messy".[40]

Thomas P. Hughes is known for developing the Large Technological Systems approach. One of Hughes' main arguments is that a system does not just consist of the technology, but also of the institutions and actors that are integral to the functioning of the system. It is the complex interplay between technology, organizations and regulations that are in focus of this analysis.[41] However, I have found Hughes' more recent work, *Rescuing Prometheus* to be of more use to me as point of departure for analysing the natural gas system. In *Rescuing Prometheus*, Hughes looks at four large technological projects in post-war America, which he categorizes to various degrees as modern and post-modern. Hughes refers to the post-modern projects as both "collective, creative endeavours" and "chaotic and evolutionary" a vocabulary which resounds in Miller's and Lessard's writings.[42] One example of a postmodern project is the CA/T (Center Artery Tunnel) project in Boston, about which Hughes concludes that "CA/T is not an elegantly reductionist endeavour; it is a messily complex embracing of contradictions."[43]

These descriptions of chaotic projects are echoed in Swedish historic accounts regarding large projects. Jane Summerton has written about the introduction of district heating in Mjölby, and she describes the process in this way:

[38] Roger Miller and Donald R. Lessard, 'Evolving Strategy: Risk Management and the Shaping of Mega-Projects', in *Decision-making on Mega-projects: Cost-benefit Analysis, Planning, and Innovation*, ed. by Hugo Priemus, Bent Flyvbjerg, and Bert Van Wee (Cheltenham, MA: Edward Elgar Publishing, 2008), p. 146.
[39] Miller and Lessard, p. 164.
[40] Miller and Lessard, pp. 162, 169.
[41] Thomas P. Hughes, *Networks of Power: Electrification in Western Society* (Baltimore and London: The Johns Hopkins University Press, 1983).
[42] Thomas P. Hughes, *Rescuing Prometheus* (New York: Pantheon Books, 1998), p. 5.
[43] Hughes, *Rescuing Prometheus*, p. 304.

> The process called for extensive negotiation, strategies of convincing, truces and trade-offs, open conflict, shows of force and attempts to "lock in place" enrolled others. It was a complex, at times fast-paced, process in which technological, economic, political and institutional issues were indeed closely intertwined.[44]

Other studies of large projects carried out by Swedish actors have shown similar characteristics.[45] Thus, both a historical perspective and a project planning perspective show that projects such as a natural gas infrastructure are, to put it bluntly, messy affairs that are not easily analysed through the use of planning schematics, models and strict templates.

*Risk, Opportunities and Contexts*

Roger Miller and Donald Lessard ascertain not only that project processes are evolutionary and messy, but also that project performance is the

> …output of processes of shaping, countermoves and facing emerging risk. The project that has been built differs from the original concept because of unexpected events imposed redesigns or voluntary changes in the concept.[46]

Thus, infrastructure projects are constantly evolving. One reason for the "evolutionary and messy" aspect of the project process is the long planning horizons and lead times that are involved, which heightens the tendency of a project to change shape over time. The longer the time period involved, the greater the risk of political or economic decisions leading to a change in scope or ambition or of practical problems leading to a change in siting or technology. Another reason is that decision-making and planning are multi-actor processes where conflicting interests meet. "Decisions are never final, but are remade, recast and reshaped."[47] Thus:

> Large engineering projects (LEPs) are high-stake games characterized by substantial irreversible commitments, skewed reward structures when they are successful, and high probability of failure. Their dynamics also change over time. [---]Once built, most projects have little flexibility in use beyond their originally intended purpose. Managing risk thus becomes a real issue.[48]

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[44] Summerton, p. 243.
[45] Wittrock and Lindström; Wormbs, *Vem älskade Tele-X. Konflikter om satelliter i Norden 1974-1989*; May-Britt Öhman, 'Kidatu vattenkraftverk i Tanzania: Vatten och elektricitet från kolonialtid till biståndsepok', in *Artefakter: Industrin, vetenskapen och de tekniska nätverket*, ed. by Sven Widmalm and Hjalmar Fors (Hedemora: Gidlunds Förlag, 2004), pp. 61–116.
[46] Miller and Lessard, p. 163.
[47] Miller and Lessard, p. 162.
[48] Miller and Lessard, p. 146.

A risk, according to Miller and Lessard, is "the possibility that events, their resulting impacts and their dynamic interactions will turn out differently than anticipated."[49] This is a quite broad view of risks, and includes not only calculable risk, but also uncertainties. The three main risk categories Miller and Lessard see in their projects are market-related risks (including financial and supply risks), technical/operational risks, and institutional/social risks (including for example the risk of changing regulatory conditions and the risk for opposition from different interest groups). These risks have to be managed in different ways, for example through contracts where risk is allocated, by lobbying for advantageous institutional arrangements or by transferring risks through hedging or insurance. Certain risks are not possible to manage, and therefore have to be embraced instead. Of course, project participants would not be there unless there were also opportunities for them to benefit. Both risks and opportunities can change, and call for changes in the project configuration. This means that opportunities, as well as risks, have to be managed, and above all taken. Miller and Lessard point to what they call opportunity failure. This occurs when too many opportunities are lost, and key players may lose legitimacy.[50] As in the case of risk, opportunities are constructed within groups, in accordance with the interest and priorities of the actors.

To start up and manage an infrastructure project is to a large extent an exercise in negotiation, conflict, and bargaining within a certain energy political context. Miller and Lessard claim that the main function of institutional arrangements is precisely to anchor projects in their economic and political context. Therefore it is important to have strong networks, both formal and informal, and to be flexible.[51] In his history of a French public transportation project that never happened, *Aramis or the Love of Technology,* Bruno Latour sees the relationship between project participants and their context differently. The individual actors and organisations making up a technological project construct both the project (with all the calculation and planning this entails) in itself and the context the project is put in. In his words:

> The context is not the spirit of the times which would penetrate all things equally. Every context is composed of individuals who do or do not decide to connect the fate of a project with the fate of the small or large ambitions they represent.[52]

Context is thus important, but Latour wants us to remember that actors make decisions as with regard to which context to give priority to in a certain

[49] Miller and Lessard, p. 148.
[50] Miller and Lessard, p. 147, 152.
[51] Miller and Lessard, pp. 158–160.
[52] Bruno Latour, *Aramis or the Love of Technology* (Cambridge, Mass.: Harvard University Press, 1996), p. 137.

situation. He points out that the actors surrounding a technological project decide whether or not to bring to bear a certain context to the project. In the case of Aramis, the personal rapid transit system Latour examines, it had the possibility to be both a great modernization project and a tired project devouring public funds. It could also be decontextualized and abandoned, and some actors may have never heard of it at all. All of this can happen at the same time, regardless of any overarching context.[53]

The consequence of this, however, is that if actors choose their own contexts, then the so-called "big explanations", that is the political and economic reasons for the collapse of a large project, would not mean anything. Explanations such as "it wasn't profitable" or "it was not politically acceptable" are in Latour's view not at all useful; they are only interesting when someone wants to assign blame or get rid of responsibility. But if these explanations are not enough, then what is? Latour answers that in order to explain why certain decisions are made or are not made; we have to look at small networks, in other words small groups of people who *speak for* the economy or the politics of a project. As he points out,

> The few elected officials recruited by the project certainly don't count as Politics; the economists who calculate profit margins don't constitute Economy; the handful of engineers who evaluate Aramis' technological refinement certainly don't equate with Technology.[54]

*Actors and Organisations*

In a sociotechnical system such as the one described by Summerton, as well as by Miller and Lesssard, above, actors thus have to negotiate, convince, compromise, and take risks. Bruno Latour points out that

> [T]he only way to increase a project's reality is to compromise, to accept sociotechnological compromises. The compromise is all the more difficult to bring about in that it really should blend social and technological elements, human and nonhuman agents. Behind the actors, others appear; behind one set of intentions there are others; between the (variable) goals and the (variable) desires, intermediate goals and implications proliferate, and they all demand to be taken into account.[55]

This makes decision-making problematic, and dependent on strong actors with a high degree of interest in the projects. Hughes introduces the concept of system-builders, referring to the actors who participate in the construction and development of a technical system. They seek to overcome obstacles to the establishment and extension of the system, and actively work both on a technological, institutional and social level to secure the success of the system.

[53] Latour, pp. 137–138.
[54] Latour, p. 133–134.
[55] Latour, pp. 99–100.

In *Rescuing Prometheus* he underscores that system builders in the post-modern era have to cross traditional boundaries of, for example, funding and political stage setting and they are deeply embedded in organisational structures, and have to be environmentally and politically aware.[56]

In a Swedish context, these potential system builders can often be found somewhere within what political scientist Bo Rothstein and others call "the corporate state". Rothstein has studied the corporative tradition of the Swedish state, and how this tradition has evolved over time. He points out the strong relationship between Swedish interest groups of different kinds and the public administration. Civil servants in cooperation with these interest groups have played decisive roles both in deciding the Swedish political agenda and to carry it out.[57] Corporatism, in the form it has been exercised in Sweden, has been described by Rothstein as a sort of contractual mutual exchange situation. If representatives from interest groups gathering a large number of citizens are involved in the decision making and implementation of state policy, this can give legitimacy to the democratic process. The legitimacy comes both from the representation of the interest groups (bottom-up influence), and from the possibility of the representatives to garner support for the decisions of the Riksdag within their respective organisations (top-down influence).[58] The positive side of this cooperation is that the meeting and discussion between interest groups changes decision-making in a way that is of general interest to the public. However, in order for this to actually happen, all parties have to believe that their decisions have importance.[59] The organisational models seen in the development of the electricity grid in Sweden, for example, are embedded in this model of organisation where interest groups have been able to influence the implementation of energy policy through their participation in national boards and agencies, as well as in public enterprises and limited companies, and where there has been a strong cooperation between private, municipal and state actors.[60] In the thesis we meet actors who create coalitions in complex networks, but who mostly work within the above-mentioned system, at least in the case of Swedish actors.

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[56] Hughes, *Rescuing Prometheus*, p. 7. The concept of the system-builder was developed by Hughes in his book *Networks of Power.*

[57] Bo Rothstein, *Den korporativa staten : Intresseorganisationer och statsförvaltning i svensk politik* (Stockholm: Norstedts Juridik, 1992), p. 345.

[58] Bo Rothstein and Jonas Bergström, *Korporatismens fall och den svenska modellens kris* (Stockholm: SNS Förlag, 1999), pp. 43–44.

[59] Rothstein and Bergström, p. 45. The view of corporate participation started to change in Sweden in the mid-1970s, and during the 1980s several re-structurings of the public administration took place. This led to a changed role for interest groups in the 1990s. However, during the period covering my investigation, the participation of interst groups in Swedish national boards and agencies was pronounced.

[60] See Chapter 2. Bruno Latour is known for his work on Actor Network Theory. I have chosen, however, to focus on certain aspects of Latour's work on projects, without adapting the full ANT methodology.

## Purpose of the Study and Research Questions

Earlier research on Swedish energy systems, as mentioned, has mostly studied the establishment and development of hydropower, nuclear power and renewables, that is, energy systems that despite certain conflicts and criticisms have become dominating systems in Sweden. The natural gas system is a different case; Figure 2 illustrates that natural gas never enjoyed the expected growth in Sweden. This distinguishes natural gas in Sweden from other energy systems, as well as from most other countries in Europe. Certain characteristics of the natural gas system can be said to render its introduction into Sweden more difficult. Natural gas is neither based on an indigenous resource nor is it easy to transport transnationally as are oil and coal. A vast transnational infrastructure is needed, both in terms of actual pipelines and in terms of actor coalitions and long-term contracts. Nevertheless, as discussed, all large-scale engineering projects need large investments and vast actor networks. Further, other countries have invested heavily in natural gas. What makes the Swedish natural gas case different? Is the Swedish natural gas case especially messy and complex?

To answer these questions, my aim in this thesis is to study the long-term process of introducing natural gas in Sweden by following actors in Sweden and other countries in their attempts to negotiate and construct a natural gas infrastructure. As most of my predecessors, I am guided by the question concerning why all the work invested in a natural gas infrastructure had such meagre results. I will, however, approach this question from a broader perspective than earlier studies, starting from the first plans to introduce natural gas in the end of the 1960s and following the process up to 1991, when an important shift happened in Swedish energy policy, which changed the conditions for natural gas expansion. I believe that a broader perspective is necessary in order to explain such a complex long-term process. Most of the natural gas projects I will analyse have been in a state of evolution for quite some time, regardless of whether they were finalised. By seeing these *evolving* and *chaotic* projects as arenas where different actors construct, negotiate and perceive *risks* and *opportunities*, as well as *contexualize* the projects, I want to show how the natural gas sector in Sweden has itself evolved and been shaped.

Over time, many actors in and outside of Sweden have been active in the process of introducing natural gas in Sweden. I intend to describe and analyse this long-term process, while also putting it into both a national and transnational context. In order to govern and carry out large, messy projects, such as the ones studied by Miller and Lessard, Hughes, Summerton and Latour, strong actors or actor coalitions are needed.

- Which actors, domestic and foreign, engaged in the introduction of such an infrastructure in Sweden? Which coalitions did they form? How did these actors promote or oppose natural gas over time?

The actors shaped projects by managing risks and problems as well as opportunities. They needed to navigate both the chaotic process of a large infrastructure project, and the previously- mentioned hazardous waters of Swedish energy politics. They could also create legitimacy for a project, or oppose it by relating it to different contexts.

- Which risks and opportunities did the actors perceive, and how did they navigate between them? How did the transnational character of the projects influence their view of the risks and opportunities involved? How did actors relate and compare natural gas to other energy sources/carriers in the Swedish energy system, and how did this affect their perception of risk and opportunity? Finally, how did the actors relate the natural gas issue to political, economic and social contexts?

## Method and Source Material

This thesis examines many parallel processes. My main methodological approach has been to identify and follow the main actors involved in the attempts to introduce natural gas in Sweden. By studying the way they perceive risks and opportunities, I have tried to understand how a range of actors view the messy complexity of a natural gas project. I follow actors in different countries through my material, whereby I have chosen to divide my narrative into domestic developments, on the one hand, and negotiations with foreign actors, on the other. This also has consequences for the source material used in the different chapters. In the early stages of the Swedish natural gas history, there were no organisational bodies specialised in natural gas. Instead actors with an interest in natural gas gathered in arenas such as state commissions of inquiry and delegations. I have used their archives to map the different actors involved in the creation of a Swedish natural gas sector. Among these organisations and institutions were the Swedish Ministry of Industry, the Swedish Gas Association, power companies, and representatives from the industry. Of these actors, the Ministry of Industry and the Gas Association had a long-lasting influence on the natural gas business in Sweden. However their connection to the natural gas sphere is not reflected in their archives to any great degree, and therefore I have only had limited use of these. Through the help of informants I have been able to access material from what is today the Swedish Ministry of Enterprise, Energy and Communications (formerly the Ministry of Industry) which has been of great use. The two companies in Sweden that have been active as system builders and commercial actors within

the natural gas sector are Swedegas AB and Sydgas AB. Materials from these two companies have been of primary importance in my research.

Public state minutes and commissions regarding natural gas, as well as the frequent energy bills from the 1970s and 1980s, have helped me follow the political developments and state involvement. I have supplemented this material by private material from my informants, press material and interviews with involved actors. The interviews have not been structured, and I have used them mainly as a way into my material, helping me to find my way to important materials and events. When used in the text, they mostly regard events with little archival material, and opinions differ as to what really happened. In these cases, they illustrate the way actors perceive certain events.

In the chapters following transnational negotiations my goal has been to allocate equal attention to actors in different countries. This has proven difficult due to certain structural differences. As an example, I have been able to visit the archives of both Sydgas AB (now E.ON) and Swedegas. In contrast, I have not been allowed access to Swedegas' Danish counterpart, DONG's (Dansk Olie og Naturgas A/S) material. DONG has retained the same business structure as when the Sydgas project was negotiated in 1979/80, and is still a commercial company involved in selling gas through the pipeline. As a result, their material is still confidential. To follow the Danish side of the Sydgas negotiations I have instead used the Danish state archives, mainly from the Danish Energy Ministry and Energy Board, as well as material from the Swedish Foreign Ministry regarding the natural gas issue. The Swedish Foreign Ministry archives contains correspondence, reports, and minutes from negotiations, as well as source material from the countries involved, in the form of press clippings, speeches, and contracts. I have also used government documents from Finland, Norway and Denmark. Sometimes I have been able to follow Swedish proceedings only through foreign archives. One example is the letter from Svenska Petroleum to the Swedish Ministry of Industry discussed in Chapter 6, which I have only found in the archives of the Danish Energy Ministry.

Regarding material from gas negotiations with the Soviet Union, I have used the archives of the Soviet Foreign Trade Ministry, (Ministerstvo Vneshnei Torgovli or hereinafter "Minvneshtorg"), which had overall responsibility for trade with the Soviet Union. The material from the Minvneshtorg consists to a large degree of meeting minutes that have been transcribed into Russian. This means that there is one extra layer to get through, and it is difficult to know whether everything was correctly understood. This material is quite extensive up until the later years of the 1980s when the archives change, and material becomes scarcer. As a result, I have not been able to use this material with regard to the negotiations between Sweden and the Soviet Union during the second half of the 1980s. Since I have not been allowed to access the Swedish Foreign Ministry

records after 1982 either, this thesis does not cover the negotiations in this phase in the same detail as in the 1967-1981 period.

One section in which I have mainly used press material is the section regarding the deep gas drilling in the Siljansringen area. I have not had the possibility to delve deeper into this subject, but I still find it important to mention in the Swedish natural gas context.

### Disposition

The chapters of this thesis shift between a transnational and a national narrative. Whereas Chapters 2, 4, 6, and 8 have a more national Swedish focus, Chapters 3, 5, and 7 deal with negotiations between Sweden and other countries, and thus highlight the promises and pitfalls of transnational negotiation. The chapters sometimes overlap chronologically, and three periods can be distinguished in my study: Chapters 3 and 4 cover roughly the period 1967-1976, Chapters 5 and 6 1976-1986, and Chapters 7-8 1986-1991.

**Chapter 2:** Natural gas was introduced into an already developed Swedish energy system. What did that system look like? What were its specific characteristics? In Chapter two I will provide a short background of the earlier development of the Swedish energy system, and some of the main institutions and energy carriers that formed its backbone.

**Chapter 3:** Between 1967 and 1976, Sweden negotiated intermittent natural gas imports with the Soviet Union. In this chapter we follow these attempts. The chapter, to a large degree, focuses on these negotiations of a transnational infrastructure and how national conditions influenced them. At this point in time, natural gas trade as a field was still being formed. Sweden and the Soviet Union faced different problems, but they had in common the fact that they were navigating in a constantly changing landscape, both on a national and on an international level. How did the actors cope with this? And why was no deal ever concluded?

**Chapter 4:** This chapter overlaps in time with the previous one, but here the focus will be the development of a Swedish natural gas sphere, of which we only catch glimpses in Chapter three. Thus, we turn to a national perspective, and I will outline the activity that took place as Swedish actors tried to organise a structure surrounding a possible future natural gas infrastructure. How did the core actor groups in Sweden perceive the risks and opportunities surrounding natural gas? How did these groups act in order to create a functioning institutional structure, and to gather knowledge and contacts? What was the relation between state and private actors?

**Chapter 5:** After having followed the creation of a natural gas sphere in Sweden, as well as the first, non-concluded negotiations with foreign parties, I examine in detail the negotiations with Denmark that would lead to the construction of Sweden's only transnational natural gas pipeline. At this time, a natural gas institution was in place, but was it enough to be able to conclude a natural gas deal? Which were the factors that contributed to this contract being signed? Which were the main points of agreement as well as disagreement between the negotiating parties?

**Chapter 6:** After Sweden's first natural gas contract was signed, the project had to be carried out. In this chapter, I outline the direct national aftermath of the Sydgas deal. What did the distribution of labour and risk between the actors look like during the construction of the pipeline, which was inaugurated in 1985? Which problems occurred when such an infrastructure as a natural gas pipeline was fitted into the already existing system? During this period, oil prices fell, leading to a crisis for the Sydgas project. How was this crisis handled? How did it affect the political discussion regarding natural gas?

**Chapter 7:** After having concluded a contract with one supplier, the next logical step to ensure a secure supply was to connect to other suppliers. Several attempts at this were carried out during the 1980s, and in Chapter seven, I trace those attempts. While Chapter six followed national Swedish developments, this chapter focuses on the transnational strategies of securing national supply. In which ways did Swedish actors try to connect to new suppliers? Why did these attempts fail?

**Chapter 8:** During the second half of the 1980s, when Swedish actors were trying to connect to new suppliers, changes in political attitude towards natural gas, as well as changes within Swedegas lead to a crisis within the company in 1991, where my investigation will stop. What happened to the idea of future expansion of the natural gas network at this time? How did the overall change in the Swedish energy system affect the natural gas visions? And how did the actors handle the new situation?

**Chapter 9:** In the final chapter, I will discuss the messy complexity that I have observed, and its different aspects: the many and instable actor coalitions on different levels, the complex market situation, the changing political and energy policy contexts and the fact that many of the natural gas processes simply did not end up as expected.

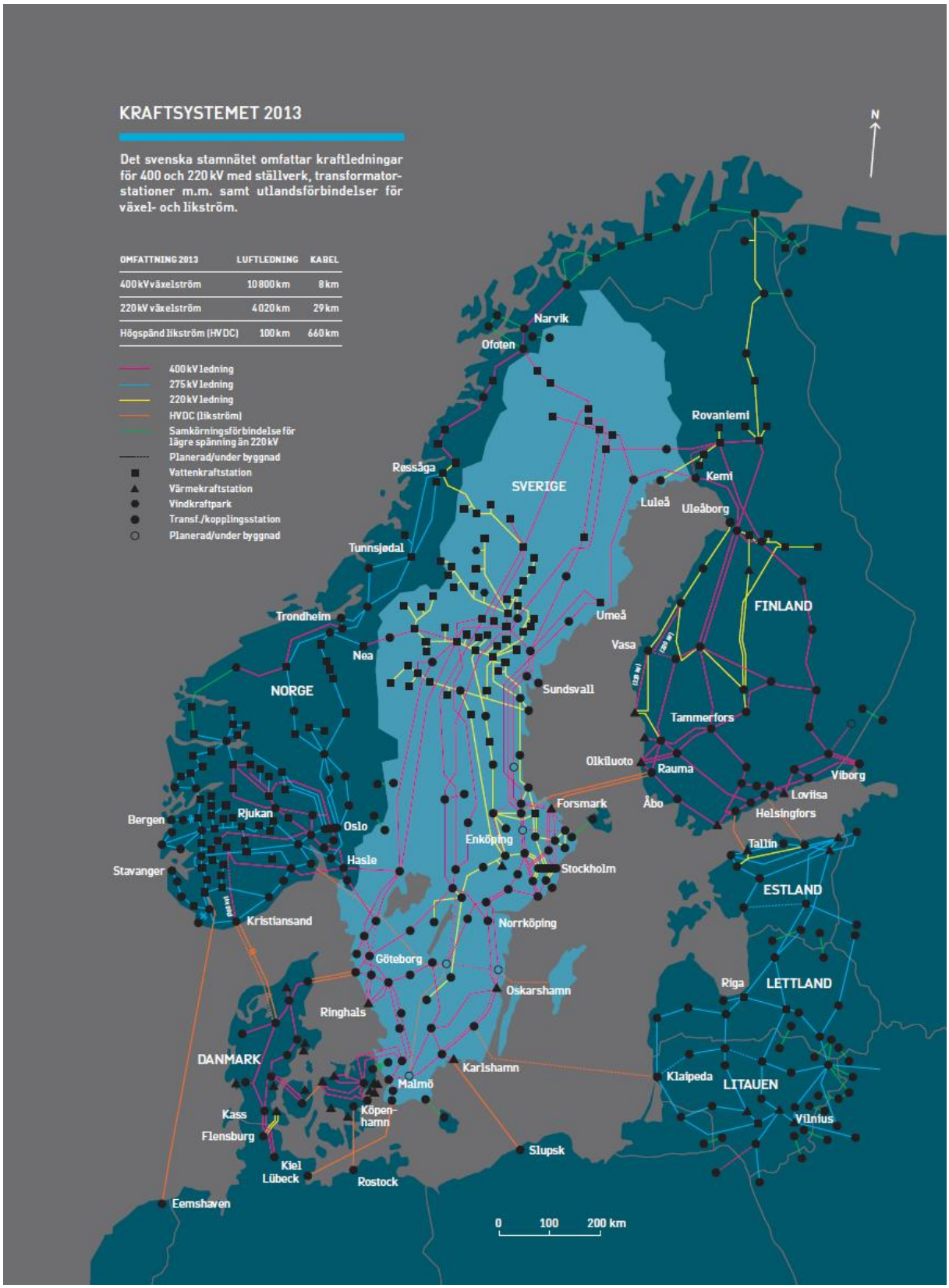

Fig. 3: The Northern European power grid. Map courtesy of Svenska Kraftnät (Swedish National Grid).

# Chapter 2: The Swedish Energy System: An Introduction

Those attempting to introduce natural gas into Sweden had to consider the already existing structures of the Swedish energy system and its main actors. One of these structures can be seen on the left: the Nordic power grid. In this chapter I aim to present some of the main characteristics of the Swedish energy system that will be of importance for the natural gas story. Chronologically, this introduction will end around the mid-1960s, where I will start my investigation.

## From Wood to Oil

Although Sweden has abundant energy resources in the form of wood and water, the country has very little fossil fuels. Importing and prospecting for fuel have both been the main strategies to ensure Sweden's fossil fuel needs. Until the mid-19th century, wood and charcoal were practically the only sources of thermal energy in Sweden. With the advent of industrialism, fuel demand rose and at the end of the 19th century this led to an increase in coal and coke imports.[1] The presence of coal made it possible to switch over from wood to the new fuel in several sectors. In towns, central heating fuelled by coal started to replace wood-fuelled stoves, and coal was introduced in many industrial processes. While earlier, many households as well as industries had been self-sufficient with respect to wood, coal supply was in the hands of importers. The use of fuels largely passed from the hands of the individual to larger organisations.[2] The growing use of coal created new dependencies and vulnerabilities. For example, the coal price in Sweden was directly influenced by coal workers' strikes in England. Since attempts to find coal in Sweden ended in disappointment, the most promising resource that most actors believed could help lessen the coal import dependency was hydropower, the "white coal".

Oil products were also imported in growing quantity, adding to foreign dependence. This raised the issue of control over the fuel market. During the 1920s, neither the government nor the Swedish parliament (*riksdag*) wanted to regulate or financially subsidize the use of fuels or otherwise directly influence the fuel market. They only supported research on domestic fuels and information regarding energy saving. From the 1930s up to World War II, more subsidies were given to domestic fuels of different kinds, in order to reduce the use of imported coal and oil. The motive for subsidies was to create work opportunities and to sell more Swedish wood. Subsidies were needed, since imported fuel was generally cheaper than domestic fuels.[3]

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[1] Arne Kaijser, 'From Tile Stoves to Nuclear Plants: The Historical Development of Swedish Energy Systems', in *Building Sustainable Energy Systems: Swedish Experiences*, ed. by Semida Silveira (Stockholm: Svensk Byggtjänst, 2001)57–93, p. 2.
[2] Kaijser, 'From Tile Stoves to Nuclear Plants', p. 4.
[3] Lars Lundgren, *Energipolitik i Sverige 1890-1975: Sammanfattning av studie utarb. på uppdrag av Framtisstudien Energi och samhället* (Stockholm: Sekretariatet för framtidsstudier, 1978), p. 18.

State control over fuel production and imports was discussed but ultimately rejected during the 1930s. Lars Lundgren has speculated that the issue may have been too controversial for an agreement to be reached.[4] The Government wanted to stimulate the use of domestic fuels and reduce imports. However, trends during the period in between the wars turned out to be completely different. Coal and coke went from covering about one-third of the Swedish fuel requirements after the First World War to almost two-thirds on the eve of the Second World War. One main reason for this was the abundant supply of coke and coal in Europe.[5]

The Second World War showed the vulnerability of Sweden with regard to fuel imports. The earlier pattern was reversed during the war, and the use of wood fuels increased rapidly. Sweden bought coal mainly from Great Britain, Germany and Poland. During the War, Sweden was cut off from Great Britain after Hitler's invasion of Denmark and Norway, and Swedish imports of coal and coke from Nazi Germany, mainly in exchange for iron ore, greatly increased.[6] After the war, oil demand increased all over Western Europe, and Sweden was no exception. In 1951, oil consumption in Sweden was 15 times higher than in 1938, despite the rationing during the war. Oil had become cheaper than coal, and it was both easier to use and simpler to transport. As Lundgren describes it, oil floated into the Swedish energy system without any difficulty, and without any state involvement.[7] After the supply problems during the Second World War, new discussions were raised regarding a possible nationalisation of the oil business in Sweden. This idea, however, was rejected.[8] Instead, Swedish oil imports were handled by Swedish oil companies such as Nynäs Petroleum AB and OK Petroleum and national subsidiaries of foreign oil companies such as Esso, BP, Gulf Oil, Shell and Texaco. Oil consumption rose steadily and reached its peak around 1970.[9] Most of the oil emanated from the Middle East and North Africa, which supplied Sweden with around 75% of its oil supply in 1972.[10] The Soviet Union was another important oil supplier.[11]

## Power Positions

During the 1880s, small local electricity grids developed in towns or around factories using either nearby waterfalls or imported coal to generate power. During the 1890s, alternate current technology emerged making it possible to

[4] Lundgren, p. 19.
[5] Olsson, *German Coal and Swedish Fuel 1939-1945*, p. 11.
[6] Olsson, *German Coal and Swedish Fuel 1939-1945*, pp. 11–12, 157.
[7] Lundgren, pp. 29–30.
[8] Regarding a possible nationalisation of the Swedish oil business see Jonter, *Socialiseringen som kom av sig*.
[9] Astrid Kander, *Economic Growth, Energy Consumption and CO2 Emissions in Sweden 1800-2000*, Lund Studies in Economic History, 19 (Stockholm: Almqvist & Wiksell Förlag, 2002), p. 52.
[10] SOU 1972:25, *Naturgas i Sverige: Slutbetänkande av 1968 års utredning om rörtransport av olja och gas*, p. 90.
[11] See Chapter 3.

transfer electricity over longer distances. This enabled larger waterfalls outside urban areas to be used for electricity generation.[12] This, in turn, led to an interest in harnessing the large waterfalls further north in Sweden, and in the early 20th century several important laws were passed in order to make it easier to utilize waterfalls. The utilization of these larger waterfalls and the construction of large regional power grids were costly, and in order to finance the system, regional power companies were formed with local utilities/and or industrial users of electricity often being major shareholders. One example of this was Sydkraft, founded in 1906, which built and ran hydropower stations in the Lagan River.

Many of the large waterfalls were state-owned, and their harnessing was seen as a national priority. Sweden had a tradition of state involvement in infrastructure development, and in 1909 Sweden became the first country in the world to set up a public enterprise (affärsverk) within the power sector, called the *Kungliga Vattenfallsstyrelsen* (later shortened to *Vattenfall*).[13] In the 1910s, Vattenfall established three large regional systems and quickly became the largest electricity producer in Sweden. Towns and industries started to buy their electricity from Vattenfall and regional power companies, who could produce electricity to a lower cost. This created a "division of labour" between regional power producers who had regional monopolies, and the local distributors who bought the electricity and distributed it.[14] Along with this structure, a number of organisations for cooperation between producers and distributors were created. Another characteristic of early Swedish power distribution was that the producers and distributors were generally owned by their customers: industries, municipalities, and, in the case of Vattenfall, by the state. All these actors wanted cheap power for industries and citizens, and therefore all of them had an interest in keeping prices down.[15]

Vattenfall remained the main force in the electricity area, especially when the board was given the exclusive right to build and operate all new lines of 220 kV or more, and in 1946, Vattenfall became the only company to manage the large trunk lines from the waterfalls in northern Sweden. With the responsibility for the trunk lines came a responsibility for securing the national supply of electricity in Sweden. The struggle for control over the trunk lines pitted Vattenfall against other producers, but over time they came to agreements regarding the use of the trunklines, and these resulted in a continuing close relationship between the main producers. It also, however, led to a kind of

[12] Högselius and Kaijser, p. 21.
[13] Kaijser, 'From Tile Stoves to Nuclear Plants', p. 8. A public enterprise denominates what is in Swedish called affärsverk. A public enterprise in Sweden is a special form of administrative board for commercially oriented activities. It does not fall under the law of limited stock companies, but has a larger degree of freedom in financial terms than other public authorities. Nevertheless, it answers to the government in the same way as other authorities.
[14] Högselius and Kaijser, p. 24.
[15] Högselius and Kaijser, pp. 35–37.

hierarchy, where the biggest companies worked together, with Vattenfall, of course, as the "leader".[16]

Eva Jacobsson describes the development of the hydropower system as the "industrialisation of rivers", and she has shown that the early history of hydropower development included quite a lot of conflict, especially with regard to the creation of the water laws and regulations in the early 1900s. Landowners whose lands were affected by dams fought against the system-builders of the hydropower industrial complex: Vattenfall, the municipal power companies and their engineers and lawyers. In this fight, the modern industrial use of Swedish waters won over agrarian interests.[17]

Evert Vedung and Magnus Brandel have shown that all Swedish political parties, despite conflicts regarding organisation and regulation, were united in their support of hydropower development up until the 1960s when a movement against the dams and for the preservation of the remaining rivers developed. This movement started in local and regional interest groups but ended up gaining support in all the political parties, and at the end of the 1960s, the Social Democrats found themselves alone in their support of additional dams, meeting opposition not only from a coalition of right wing parties but also from the Communist Party.[18]

Although the establishment of hydropower and the electric grid led to certain conflicts, the different stages of grid development had strong support from many different types of actors and organisations. Hydropower was an indigenous power source, and although the infrastructure was costly, it fit into the rhetoric favouring self sufficiency and modernisation. In addition, the power companies who became powerful early on in the electricity development continued to have a strong influence on the development of the Swedish energy system, including the natural gas system.

During the first half of the 20th century an almost total electrification was achieved in Sweden. One ground pillar of this rapid development was the close cooperation between the power industry and domestic producers of electric equipment. Through this cooperation, industries and other major consumers were equipped with the machinery they needed. The most prominent of these producers was the electrotechnical company, ASEA, (Allmänna Svenska Elektriska Aktiebolaget). Mats Fridlund has called these co-operations "development pairs". The cooperation between ASEA and Vattenfall grew steadily from the early 1900s through different initiatives related to technological development, and in the 1940s and 1950s, this cooperation

[16] Högselius and Kaijser, pp. 26-27, 37–38.
[17] Jakobsson, p. 254 ff.
[18] Vedung and Brandel, Chap. 5–6, 22.

became institutionalized. Several individuals from the two institutions were instrumental in this process. Another important factor was that both the state (here represented by the public enterprise Vattenfall) and the large companies (in this case, ASEA) saw themselves as having a common mission to act for the development of the nation. Fridlund points out that this type of cooperation between the state and large companies has been characteristic in Sweden after World War II, and is an integral part of what is often referred to as "the Swedish model".[19]

ASEA and Vattenfall were also to be instrumental in the next development on the electricity arena in Sweden, the introduction of nuclear power. A nuclear research program was launched in Sweden at the end of the 1940s.[20] Although the first ventures into nuclear power in Sweden were military in essence, the Atomic committee, which was set up in 1945 in order to distribute research money and give suggestions to the government regarding the future organisation of nuclear activities in Sweden, consisted of representatives not only from the military but also from the academic sector and from industry. A representative from ASEA was one of the original members.[21] In 1947, in agreement with a bill based on the report of this committee, the Riksdag created a limited company, AB Atomenergi, of which the state owned four-sevenths, with the rest of the company being owned by 24 different companies, mainly from the power sector and heavy industry.[22] Although the mission of this company was to handle nuclear development for civil use, it continued to work closely together with the defence research agency, and soon a group from this agency was transferred to AB Atomenergi to work on the construction of the first Swedish reactor.[23] During the early 1950s, a movement to use atomic power in a peaceful manner arose on an international arena, and an optimism regarding future use of atomic power spread. This motivated the actors in the electricity field in Sweden, in particular ASEA and Vattenfall. The government, however, gave the main responsibility for the Swedish nuclear activity to AB Atomenergi, despite criticism from major actors within the power sector.[24] From the mid 1960s, Vattenfall and the power industry ordered nuclear reactors from the newly formed ASEA-Atom, a merger between ASEA and AB Atom. For Vattenfall and the other major power companies, nuclear power was a long-term alternative to fossil fuels as well as a complement to hydropower.

[19] Fridlund, p. 217-219. In this context, as explained by Fridlund, the Swedish model is a broad concept often referring to certain characteristics of Swedish development roughly between 1930 and 1950. It generally emphasises three elements: the Swedish modern welfare state, the institutionalised cooperation between unions and employers, and a decision-making process focused on mutual agreement.
[20] Wittrock and Lindström, p. 49 ff.
[21] Fjaestad, p. 44.
[22] Lindström, pp. 90–92.
[23] Fjaestad, p. 47.
[24] Lindström, pp. 113 ff., 241 ff.

Neither the development of hydropower nor of nuclear power was questioned to any higher degree before the 1960s. Environmental issues, however, were gaining ground globally in the late 1960s and early 1970s. In 1968, the Swedish Environmental Protection Agency was created and protests against the expansion of new hydropower increased.[25] At the end of the 1960s, trans-border air pollution and acid rain caused by sulphur emissions was discovered, and in the early 1970s the safety of nuclear reactors was challenged.[26]

## The Rise and Fall of Town Gas

From the 1840s and onwards, gasworks were built in the larger towns in Sweden, and used coal to produce town gas for lighting and cooking. Although the first gasworks were privately owned, municipalities later started to build and operate gasworks themselves, and at the turn of the century gas supply was mainly operated by municipal authorities and considered a public utility.[27]

One consequence of the expanding power sector was that electricity became a source of competition for town gas, first in the area of lighting, and later in household use. Gas stoves dominated the market up through the Second World War but after the war, electrical stoves gained in efficiency, and became cheaper. At the same time, power production and distribution had been improved. Fuel oil also entered the Swedish market, competing with coke, which had been produced and sold by the gasworks. Arne Kaijser calls the 1950s and 1960s "the decades of gasworks closings".[28] Another reason for the decline of the gasworks was that gas had something of a "crisis of confidence" regarding the further development of gas use. Stove-manufacturers, builders, households and industries no longer regarded town gas as a fuel of the future, and this led to a downward spiral where gas stopped being installed in new housing and gas stoves were no longer being improved, leading to even more gasworks being shut down.[29]

Another important trend in the 1960s was that town gas works converted from coal-based to oil-based production. Oil had many advantages over coal but the transition was expensive, and due to this, as well as the reasons enumerated above, many gasworks closed instead of transitioning. In Sweden, only the big gasworks survived the change. The few town gasworks that still existed in the end of the 1960s were all planning for a phase-out. Those who managed to stay

[25] See e.g. Jonas Anshelm, *Socialdemokraterna och miljöfrågan: En studie av framstegstankens paradoxer (Stockholm: Brutus Östlings Bokförlag Symposium, 1995)*; Vedung and Brandel.
[26] Arne Kaijser, 'Under a Common Acid Sky: Negotiating Transboundary Air Pollution in Europe', in *Cosmopolitan Commons: Sharing Resources and Risks across Borders*, ed. by Nil Disco and Eda Kranakis, Forthcoming, p. 262 ff.
[27] Arne Kaijser, *Stadens ljus: Etableringen av de första svenska gasverken* (Malmö: Liber Förlag, 1986), p. 176.
[28] Kaijser, *Stadens ljus*, p. 207.
[29] Kaijser, *Stadens ljus*, pp. 179,-203, 209–210.

in operation up until the introduction of natural gas in Sweden in the 1980s survived, and have now been converted to natural gas.[30]

## Concluding Remarks

The development of the Swedish energy system led to power producers becoming strong actors on the Swedish energy market. Another example of this is district heating. During the 1950s and early 1960s in Sweden the first wave of district heating expansion took place. At that time, district heating plants were built as combined heat and power plants, and the main goal was to produce electricity as a complement to hydropower. Therefore, in most municipalities, the existing electricity actors also managed the district heating system.[31] A second wave of district heating development came in the 1980s, as we will see later.[32]

As seen in the town gas case, there was a competition between gas and electricity, which was to a large degree based on their common system characteristics; they compete on roughly the same markets, and they have similar characteristics in that they have economic scale benefits, that is, the cost declines as the distribution network gets larger. I will return to this competition later on in the book, since it is vital to the discussion about the Swedish natural gas market.

The Swedish state has had different roles in the development of energy infrastructures, as well as in other infrastructure development in Sweden. Arne Kaijser has pointed out that the Swedish state often acted as a "helping hand". He sees the institutional organization of the railway system serving as a model for the telephone and electricity systems. These systems created institutional patterns specific for Swedish infrastructure management, the public enterprises responsible for building and operating "trunk lines" on a national scale, while leaving it to private actors to construct and operate regional and local networks. During the early 1900s, the state took an even more supportive role in delivering cheap electricity to Swedish industry (through Vattenfall) as well as buying components from the nation's industries. The previously-mentioned cooperation between Vattenfall and ASEA was a part of this added new dimension of the role of the state.[33]

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[30] Olsson, *Energiorganisation i Norden*, pp. 53-54; http://energimyndigheten.se/sv/hushall/Din-uppvarmning/Gas/

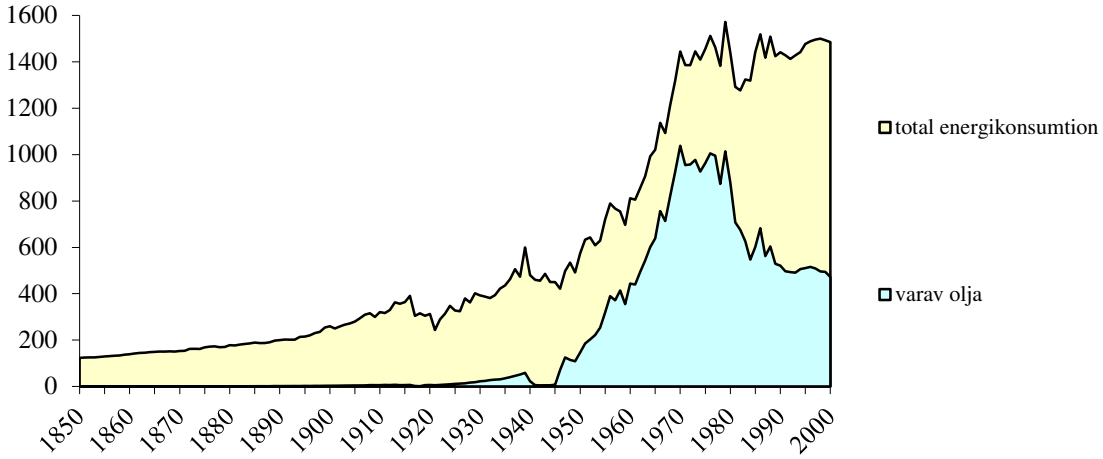
[31] Summerton, p. 18.

[32] See Chapter 6.

[33] Arne Kaijser, 'The Helping Hand: In Search of a Swedish Institutional Regime for Infrastructural Systems', in *Institutions in the Transport and Communication Industries: State and Private Actors in the Making of Institutional Patterns, 1850-1990*, ed. by Lena Andersson-Skog and Olle Krantz (Canton, Mass.: Science History Publications, 1999), pp. 223–244; Arne Kaijser, *I fädrens spår: Den svenska infrastrukturens historiska utveckling och framtida utmaningar* (Stockholm: Carlssons Bokförlag, 1994).

When the interest in natural gas was awakened among Swedish actors, the organisations and institutional patterns discussed above were in place, and they would influence the way various actors perceived the possible role of natural gas in the Swedish energy system. The next chapter outlines the first attempt to introduce natural gas in Sweden.

**Fig. 4: Total energy- and oil consumption i Sweden 1850-2000 (PJ).**




Based on historical data and estimates from Kander, *Economic Growth, Energy Consumption and $CO_2$ Emissions in Sweden 1800-2000*, p. 219-228.

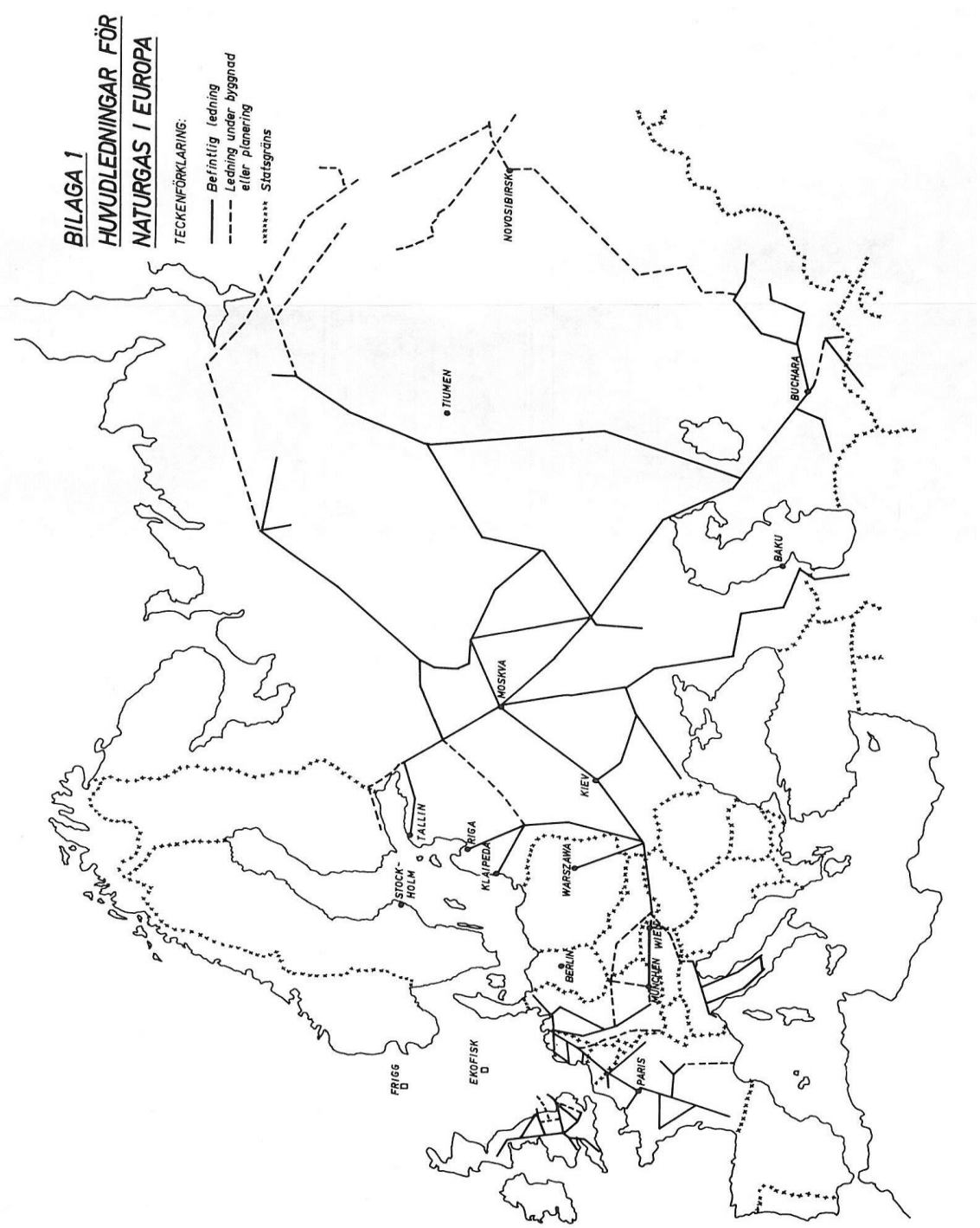



Fig 5: The main trunk lines from the Soviet Union into Western Europe in 1972. Map from the SOU 1972:25

# Chapter 3: Pipes and Politics: Soviet Negotiations 1967-1976

The first discussions regarding natural gas import to Sweden was with the Soviet Union in the late 1960s. Talks and negotiations between the two countries took place intermittently until the middle of the 1970s, but no pipeline was ever built.[1] The possibility of importing natural gas, however, prompted Swedish actors on different levels to study the possibilities of a future introduction in Sweden. Over these years, Swedish actors thus both gained their first experiences of gas negotiation and attempted to create a Swedish institutional framework for natural gas. In this chapter, I will trace the talks held with the Soviet Union from 1967 to 1976, while the next chapter will focus on Swedish internal developments during the same time.

## Red Gas

Although natural gas has a long history of use worldwide, this use was geographically limited by transport difficulties. During the 1960s natural gas emerged as a potential international source of energy in Europe, spurred by the discovery of the Groningen field in the Netherlands in 1959. Earlier gas deposits in Western Europe were only sufficient to serve regional or national grids, whereas the large amounts of gas found in Groningen made exporting possible. By the mid-1960s the Dutch grid had expanded into France, Belgium and Germany. In a parallel development, the natural gas sector in the Soviet Union was expanding, taking as its starting point large deposits found in Ukraine. Soon thereafter, new Siberian findings promised a bright future for the Soviet gas industry. The journal Sovietskaya Rossiya commented in 1970 that of all geological maps, the map of Siberia was probably the one that got outdated the fastest. “Hardly a year passes without two-three new deposits being added to the northern oil and gas field garland.”[2] New technological developments also made it possible to transfer gas over longer and longer distances. This development of a natural gas infrastructure in Europe led to a heightened interest in natural gas among Swedish fuel actors.

The Soviet Union was still a net importer of natural gas at the end of the 1960s, and Soviet gas had been used only for Soviet customers. As the number of discovered fields increased, however, so did the discussions regarding how the

[1] As early as in January 1963, an official letter regarding possible import of Soviet natural gas to Sweden was sent to the Swedish Foreign Ministry by a municipal gas and water company in Stockholm (Stockholms gas- och vattenverk). Although at that time the Swedish Foreign Ministry expressed doubts at to the conditions for natural gas use in Sweden, they kept themselves informed about natural gas developments in Soviet Russia and Western Europe all through the 1960s, ‘Angående eventuell import av naturgas från Sovjetunionen’, memorandum from Blomquist to the Swedish Foreign Ministry, SE/RA/221/2210.03.2/H/H53/38, dossier 3.
[2] ‘Arctic Billions’, *Sovietskaya Rossia,* 2 November 1970. Translated from Russian and sent by the Swedish Embassy in Moscow to the Swedish Foreign Ministry, SE/RA/221/2210.03.2/H/H53/39, dossier 6.

gas should be used.[3] Alexei Kortunov, the director of Glavgaz, the government agency responsible for natural gas in the Soviet Union, was a strong proponent for export both to COMECON countries and to the Western market. One reason for this was that the Siberian fields, although rich in gas, were going to be difficult and expensive to develop and a commitment to export would justify their development.[4] The need for hard currency and new technology was also a reason to investigate the possibility of selling to Western countries instead of to COMECON members.[5] Large capital investments had to be made in order to exploit new findings of both oil and gas and transport them from Siberia, and this endeavour would be difficult to handle without technology from abroad that could be obtained through trade.[6]

One of the most important types of equipment needed for transporting fuel was steel pipe. This commodity had already played an important part in the Soviet oil trade and with regard to the gas business it was just as crucial, if not more so. Kortunov underlined the particular need for wider types of pipes (2500 mm) due to the expected development of the Siberian gas fields, which would require long transports. A larger percentage of pipe used in the Soviet Union would need to be of the winder varieties. The Soviets, themselves, were constructing three large pipe production plants, but despite this, the need for import was going to rise significantly in the near future, and Kortunov estimated that the Soviet Union would have to import between 1.3 and 1.5 million tonnes of pipe in 1970.[7] At that point in time, 77 % of worldwide capacity for production of wide-diameter pipe was in the hands of the United States, which was not particularly happy about the expansion of Soviet oil trade among their allies in Western Europe.[8] That left four other principal producers of wide steel pipe: West Germany, Italy, Japan and Sweden.

The steel industry, hoping for a large new market, played an important role in several countries during initial discussions on natural gas trade. Examples of these steel manufacturers were VÖEST in Austria and Mannesmann and

[3] Högselius, Åberg and Kaijser; Jonathan P. Stern, *Soviet Oil and Gas Exports to the West: Commercial Transaction or Security Threat?* (Aldershot: Gower, 1987), p. 31.
[4] Per Högselius, *Red Gas: Russia and the Origins of European Energy Dependence* (New York: Palgrave Macmillan, 2013), p. 33.
[5] Wöhler (Swedish representative in Jeddah) to Watz (the Swedish Foreign Ministry), 14 December 1, 1970, SE/RA/221/2210.03.2/H/H53/40, dossier 7.
[6] Memorandum 'Sovjetunionens olje- och naturgasresurser: Nya fyndigheter och värderingar', by Brandel (the Swedish Foreign Ministry), 4 May 1970. SE/RA/221/2210.03.2/H/H53/39, dossier 6; Interview with Kortunov, From the Swedish Embassy in Moscow to the Swedish Foreign Ministry, 10 November, 1971 SE/RA/221/2210.03.2/H/H53/40, dossier 7; TASS message 'Power resources of the USSR', 22 June 1973. From the Swedish Embassy in Moscow to the Swedish Foreign Ministry, SE/RA/221/2210.03.2/H/H53/40, dossier 9.
[7] Montan (the Swedish Embassy in Moscow) to the Swedish Foreign Ministry, 17 May 1968, SE/RA/221/2210.03.2/H/H53/39, dossier 5.
[8] For a more detailed discussion on US attitudes regarding Soviet-Western European energy trade, see Bruce W. Jentleson, *Pipeline Politics: The Complex Political Economy of East-West Energy Trade* (Ithaca, NY: Cornell University Press, 1986).

Thyssen in West Germany. One of the reasons the gas deal with West Germany in 1969-70 was negotiated in only eight months, while Italy had been negotiating for five years was that the German pipe industry was the most advanced in Europe. The Soviet Union needed wide pipes from West Germany.[9]

An important incentive for Western countries to import gas from the Soviet Union was diversification. As mentioned in the Introduction, there is an inherent logic within the gas trade stipulating that once a country has engaged in trade with another country, it is beneficial to connect to an additional exporter in order to gain better price leverage and security of supply. In this context, Soviet gas was a way to increase supply security. The Swedish embassy in Paris consulted the French Foreign Ministry on the subject of Soviet supply security, and was told that deliveries from Algeria and Holland were not necessarily more reliable than from the Soviet Union. The problem with the Dutch gas sector, in this case, was its ownership by large international oil companies (Shell and Esso), who could work together to put price pressure on customers who were too dependent.[10] The same question was put to the Ministry of Economics' division for Energy Policy in Bonn, where Ministerial Director Ulf Lantzke argued that import from the Soviet Union held "no risk whatsoever from a security of supply point of view." He pointed out that even when the contracts that Western Germany signed in the late 1960s would "culminate", Soviet gas would still only cover less than 10 % of the German natural gas consumption.[11]

Despite the apparent relaxed attitude of both France and Germany, a Swedish diplomat pointed out that countries such as Austria and Italy seemed to have taken the security of supply issue more seriously than France, whereas in the West German case there were mainly general political reasons to support the trade, since "they do not really seem to need either the gas or the pipe export."[12] These reasons were deeply embedded in a Cold War context; Willy Brandt, the West German foreign minister considered natural gas trade with the Soviet Union to be one way of improving the relations between the East and West bloc.[13] Brandt was not alone in this opinion. The French Foreign Ministry also underlined the importance of viewing gas import as one step towards widening relations with Eastern Europe, underlining that the supplying country (in this

[9] Montan (the Swedish Embassy in Bonn) to Bernström (the Swedish Foreign Ministry), 15 April 1970, SE/RA/221/2210.03.2/H/H53/39, dossier 5.
[10] Memorandum 'Samtal på Quai D'Orsay angående naturgasleveranser från Sovjetunionen"' from Hägglöf (the Swedish Embassy in Paris) to the Swedish Foreign Ministry, 14 May 1970, SE/RA/221/2210.03.2/H/H53/39, dossier 6.
[11] This was not a correct prediction, see Högselius. Also, there were opposing voices in Germany, See 'Sovjetisk naturgasförsörjning och de nya fyndigheterna', SE/RA/221/2210.03.2/H/H53/39, dossier 6.
[12] Memorandum 'Beredskapspolitiska aspekter inför Sovjets naturgasoffensiv i Väst', Torsten Brandel (the Swedish Foreign Ministry), 15 June 1970, SE/RA/221/2210.03.2/H/H53/39, dossier 6.
[13] Högselius, Chap. 7.

case, the Soviet Union) had to keep up good relations with the buying country, as well as the other way around.[14]

Similar ideas were expressed from the Soviet side by Nikolai Osipov, for example, at *Ministerstvo Vneshnei Torgovli SSSR*, the Soviet Ministry of Foreign Trade (*Minvneshtorg*). In a statement regarding the expansion of economic relations with Western countries he commented that the

> conclusion of these major commercial agreements is extra proof that the Soviet Union, proceeding from the Leninist principles of peaceful co-existence of states with different social systems, is always prepared to develop equitable and mutually advantageous business relations with all the states desiring it.[15]

Gas exports were also a logical extension of the oil trade. Customers in other countries already receiving oil also received offers of gas deliveries. The development of Soviet oil trade with Western Europe (in particular West Germany and Italy) had increased from the mid-1950s, and through the 1960s, prompted by a rapidly growing demand of oil as well as by a willingness to expand a stagnant Western European steel market. This development was helped by a certain measure of political détente, "peaceful coexistence" being the operative phrase at that time, for Western European leaders. This growth in trade culminated in the construction of the Druzhba pipeline, a 7,500-kilometre pipeline stretching from the Ural-Volga fields into the Soviet bloc countries, completed in 1964. Although the pipeline itself did not cross the Iron Curtain, it nevertheless facilitated Soviet oil export to Western Europe. In order to decrease transport costs, the trunk pipeline was to be built with wide-diameter pipe for a capacity of 862 000 barrels per day.[16]

## Industrial Interest

As was the case with West Germany, France, Austria and Italy, Swedish interest in Soviet oil and natural gas trade was closely connected to the pipe trade. In the aforementioned speech, Kortunov identified Sweden and Czechoslovakia as Soviets' preferred pipe producers.[17] Major orders of wide-diameter pipe from Sweden had become the basis for a close relationship between the Minvneshtorg and the main players within the Swedish steel pipe industry, most prominently the Swedish industrial consortia, Gränges and AB Johnson. These had

[14] Memorandum 'Samtal på Quai D'Orsay angående naturgasleveranser från Sovjetunionen"' from Hägglöf (the Swedish Embassy in Paris) to the Swedish Foreign Ministry, 14 May 1970, SE/RA/221/2210.03.2/H/H53/39, dossier 6.
[15] TASS message 'Deputy Minister of Foreign Trade of the USSR on the expansion of economic relations with western countries', from Jarring (the Swedish Embassy in Moscow) to the Swedish Foreign Ministry, 6 March, 1970, SE/RA/221/2210.03.2/H/H53/39, dossier 5.
[16] Jentleson. p. 86.
[17] Montan to the Swedish Foreign Ministry, 17 May 1968, SE/RA/221/2210.03.2/H/H53/39, dossier 5.

developed into large international companies over the 1950s and 1960s when Swedish export quantities increased dramatically. The post-war years in Sweden had seen a remarkable growth, both in terms of economy and social welfare, and the success of Swedish heavy industry had played a large role in that development. Iron ore and forestry were important export products, but in the 1960s, the manufacturing and transportation industries slowly increased their percentage of Swedish export.[18] This reflects a change in Swedish industrial structure, as well as in the global market. More countries joined the raw material market and the increased wages in Sweden relative to other countries and the heightened competition from countries like West Germany and Japan changed market conditions for much of Swedish industry.[19] These changes had just begun to make themselves known through a slow decline in Swedish heavy industries, and there was a need to ensure further steel orders. The Swedish embassy in Moscow reported regularly on the oil and gas industry in the Soviet Union and these reports often had a specific interest in the opportunity for pipe export.[20] In connection with their visits in Moscow, Swedish industrial representatives were also in touch with the Swedish embassy, informing them about their negotiations with the Russians.

Gränges and AB Johnson had delivered steel pipe to the Soviet Union as far back as 1960, and by 1967 they were trading in oil, coal, and even negotiating for uranium importation from their neighbour to the east.[21] In 1966 and 1967, natural gas slowly became a recurring topic in the negotiations. For example, in March 1967, the CEO of Gränges, Erland Waldenström, met with the Soviet First Deputy Minister of Foreign Trade, Michail Kuzmin in Moscow. The goal of the meeting was to discuss Soviet importation of Swedish steel pipe.[22] Gränges had delivered pipe to the Soviet Union for some time, and Waldenström was a well-known visitor to the Minvneshtorg. During a discussion regarding steel pipe export in exchange for crude oil, Kuzmin suggested that the pipe be exchanged for natural gas instead, and referred to the ongoing negotiations with Austria and Italy regarding natural gas export. These two countries were preparing to enter a natural gas deal with the Soviet Union on the condition of long-term credits.[23] Waldenström admitted he was aware of those natural gas negotiations, but did not comment on them any further. A year earlier, AB

[18] Lennart Schön, *En modern svensk ekonomisk historia: Tillväxt och omvandling under två sekel*, 3rd edn (Stockholm: SNS Förlag, 2012), p. 381.
[19] Erik Dahmén, 'Den industriella utvecklingen efter andra världskriget', in *Sveriges industri* (Stockholm: Förlags AB Industrilitteratur, 1992), pp. 58–59; Schön, pp. 381–385.
[20] For example: *Nedelya* nr 4, 19-25 January 1970; Jarring to the Swedish Foreign Ministry, 5 March 1970; several TASS-messages, SE/RA/221/2210.03.2/H/H53/39, dossier 5.
[21] See SE/RA/221/2210.03.2/H/H53/38, dossier 3; Ministerstvo Vneshnei Torgovli SSSR, fond 413, Op 31, tom 1, Dokumenty i zapicy etc. 1967.
[22] Jarring to the Swedish Foreign Ministry, 2 March 1967, SE/RA/221/2210.03.2/H/H53/39, dossier 4.
[23] Notes from meeting between Kuzmin and Waldenström, 1 March 1967, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i Zapicy etc. 1967.

Johnsson had received a similar offer.[24] Kuzmin's comment that Austria and Italy were prepared to agree to Soviet terms of credit could be interpreted as a barb to the Swedish CEO, since a large oil pipe exportation contract between Gränges and the Soviet Union had been cancelled in 1965 due to the unwillingness of Swedish banks to agree to these same terms.[25]

The discussions regarding natural gas taking place between representatives of Gränges, AB Johnson and Minvneshtorg can be seen as a part of a larger trade process, into which it was profitable to incorporate yet another energy commodity. The industry representatives frequently pointed out that in order for a natural gas pipeline deal to be concluded, it would have to be in cooperation with the Swedish government.[26] In 1968, a state commission of inquiry on oil and gas transport had just been created in Sweden (see Chapter 4), and members of this commission visited the Soviet gas ministry in August 1968.[27] State involvement guaranteed financial and institutional aid and was a prerequisite demanded by the Soviet Union.[28] It was also a way to mitigate one of the core risks inherent in a natural gas project, namely financing. Soviet representatives wanted long-term credit loans to be paid back in natural gas once the latter started flowing. Swedish banks, however, seem to have been quite wary of giving long-term credits to the Soviets, judging from earlier difficulties.[29] Another way of mitigating financial risk was to cooperate in order to have multiple actors sharing the risk. AB Johnson and Gränges reported to Minister Kuzmin that they had "strong cooperation" regarding natural gas importation.[30]

Despite the Swedish industry representatives' assurances of Swedish state involvement in future natural gas trade, Swedish Trade Minister, Gunnar Lange, seemed to be of a different opinion when he visited the Soviet Union in October 1967. He then claimed that natural gas import was not a Swedish priority at this time. Instead attempts were made to find indigenous gas resources in national waters.[31] The overall stance from the Swedish Foreign Ministry was to await

[24] Memorandum by Nauckhoff (the Swedish Foreign Ministry), 4 November 1966, SE/RA/221/2210.03.2/H/H53/39, dossier 4.
[25] Notes from meeting between Kuzmin and Waldenström, 1 March 1967, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i zapicy etc. 1967.
[26] See notes from meeting between Kuzmin and Liljekvist, 30 November 1967, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i zapicy etc. 1967. Bertil Liljekvist represented Gränges.
[27] UROG minutes 12 June 1969, SE/RA/322576/A/AI/1. They visited Alexei Sorokin.
[28] Report 'Några punkter om eventuella ekonomiska problem i samband med eventuell naturgasimport från Sovjet', by Grafström, Naturgasdelegationen, SE/RA/322983/1/1/3.
[29] Notes from meeting between Kuzmin and Waldenström, 1 March 1967, Arkhivi Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i zapicy etc. 1967.
[30] Notes from meeting between Norlin and Kuzmin, 13 July 1967, Arkhivi Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i zapicy etc. 1967. I have not, however, been able to discern any other evidence of this cooperation.
[31] Notes from meeting between Kuzmin and Norlin, 9 December 1967, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i zapicy etc. 1967.

further developments.[32] It is hard to say whether this discrepancy between the political and industry representatives was due to a difference in opinion or to communication failure. Emphasising Swedish state involvement was most likely also a positioning strategy for the industry's representatives in negotiations with the Soviets, since this was an important condition for Soviet trade. Minvneshtorg representatives, on their hand, tried to use their negotiations with other Western countries as a way of speeding up negotiations with Sweden, stressing that Sweden could be left behind. Later in the negotiations, however, when a Gränges representative tried to exert some pressure for the Swedes, he was told there was no guarantee Sweden would be able to get any gas until those negotiations were settled.[33] Part of this behaviour mirrors the fact that officials within the Soviet hierarchy were, at least according to foreign observation, very careful about not overstepping their areas of responsibility, but it is also an example of arguments used at one point in a negotiation not necessarily being valid ones at another point in the same negotiation.[34]

The endeavours of Gränges and AB Johnson took place at a time when the interest in natural gas had just started to gain momentum in Sweden. Thus, their proposals fell into a Swedish energy structure that had no legislative framework or structures to handle the complexity of a natural gas project. The companies tried to cope with this institutional risk through cooperation and state involvement, but it seems they failed to garner sufficient support for their efforts. Swedegas's representatives later claimed in a report that the Soviets had thrown this failure in their faces during later negotiations, but I have not found any evidence of this.[35] Despite this failure, their negotiations marked the beginning of a more intense interest among Swedish actors, an interest that would take many forms over the next eight years.

## Finnish Success

The Swedish Foreign Ministry and Ministry of Industry kept themselves informed about foreign gas agreements and tried to gather experience from other western countries doing business with the Soviet Union. The Embassy in Moscow reported on the gas deals the Soviet Union engaged in with Japan, Italy, France, Austria etc.[36] These deals were all pilot projects, so to speak, with regard to Soviet natural gas trade with the West. Thus, the success of any one of

[32] Memorandum 'Sovjetisk-finsk naturgasledning', by Lindahl at the Foreign Ministry, 9 July 1968, SE/RA/221/2210.03.2/H/H53/39, dossier 5.
[33] Notes from meeting between Kuzmin and Waldenström, 1 March 1967 and notes from meeting between Liljekvist and Manshulo, 3 October 1967, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i zapicy etc. 1967.
[34] James Henry Giffen, *The Legal and Practical Aspects of Trade with the Soviet Union (New York: Praeger Publishers, 1969)*. p.163.
[35] Report 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 2. The report refers to the negotiations in the early 1980s.
[36] Jarring to the Swedish Foreign Ministry, 19 January 1969, SE/RA/221/2210.03.2/H/H53/39, Dossier 5.

these negotiations would create a model for other countries. For Sweden, the most interesting negotiations were the talks between Finland and the Soviet Union. AB Johnson and Gränges were specifically interested in the Finnish negotiations, as was the Swedish oil company, Nynäs Petroleum (which was owned by AB Johnson).[37] A successful Finnish project would mean that a pipeline would be built closer to Swedish soil, making a connection to the Soviet gas grid so much easier. In addition, there might be a chance for the Swedish pipe producer to get a foot in the door with regard to the production of pipe for the construction of the Soviet-Finnish grid. Finnish industry at this time did not have enough capacity to produce the kind of wide pipe the Soviet Union would need, and one way of dealing with this would be to engage Swedish pipe producers.

Trade between Finland and the Soviet Union had strong political connotations. The development of mutual trade after the war had been used to maintain peaceful political relations between the countries, but it had also been used as a point of political pressure by the Soviets.[38] In 1967, Finland was the first Western country to set up a permanent commission for economic cooperation with the Soviet Union. In the late 1960s, Finland had a trade deficit from the Soviet Union, and several large trade contracts were concluded, including the contract for natural gas.[39] Natural gas was also a way to handle Finland's future fuel situation.[40] Since hydropower had been developed to its limits, an increase in overall fuel import was likely and the future price of oil was thus seen as a problem. Finnish energy consumption was calculated to rise by 4.4 % per year meaning there would be a need for more imported energy beginning in 1980.[41] Finland discussed the possibility of importing gas from the Soviet Union as early as in 1963, but negotiations entered a more serious phase in 1969-1970.[42] The official discussion mainly concerned operational reliability, but there was an underlying fear regarding the consequences of being totally dependent on the Soviet Union, which might be able to use the pipeline as a means of political pressure.[43] Ahead of the 1970 Finnish parliamentary elections, part of the discussions concerned whether Finland was being forced into a natural gas

[37] Memorandum 'Sovjetisk-finsk naturgasledning', by Lindahl at the Foreign Ministry, 9 July 1968, SE/RA/221/2210.03.2/H/H53/39, dossier 5; Notes from meeting between Kuzmin and Norlin, 9 December 1967, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 1, Dokumenty i zapicy etc. 1967.
[38] Roy Allison, *Finland's Relations with the Soviet Union, 1944-84* (London: Macmillan Press Ltd., 1985), pp. 112–113.
[39] Allison, pp. 115–116.
[40] Memorandum from meeting between Osipov and Karjalainen, 18 February 1971, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 2, 4447.
[41] 'Betänkande om import av naturgas från Sovjetunionen', summary by Huldtgren (the Swedish Embassy in Helsinki) to the Swedish Foreign Ministry, 8 July 1970, SE/RA/221/2210.03.2/H/H53/16, dossier 2.
[42] Nauckhoff to Jarring, 4 November 1966, SE/RA/221/2210.03.2/H/H53/39, dossier 4.
[43] Tuija Mikkonen, "Vulnerability, Reliability, and Security of Critical Finnish-Soviet Energy Infrastructures", paper presented at Eurocrit workshop, Stockholm, 21-24 May 2008, 2, p. 8.

agreement. In addition, the favourable environmental properties of natural gas were challenged. In response to this, Pekka Rekola of the Ministry of Trade and Industry claimed that Finland was not being forced, and that the decisive factor, in the end, was purely economic: "…[t]he money decides."[44] Rekola considered the price that Austria paid to be too high. This was echoed in later reports, showing that Finland was aiming for a lower price than the rest of Western Europe.[45]

When the negotiations between the Soviet Union and Finland entered their final phase in 1971, pricing was the main issue. The Finns wanted to account for large capital investments in a new infrastructure as well as for the need, as a customer, to buy emergency storage. The Soviets considered this to be an internal Finnish issue that should not be included in the price. They pointed out that if they were to include the Soviet capital investments into the calculations, the price would be much higher.[46] The Finnish side emphasised that their market was a new one, and that the Finnish pipeline should be seen as a first step toward a similar arrangement with the other Nordic countries. Consequently, it would be profitable in the long term for the Soviets to give the Finns a good price.[47] Thus, Finnish actors used the possibility of a large-scale introduction of natural gas in Scandinavia as an argument in the negotiations. At the final meeting in April 1971, the price issue was discussed in private between the heads of the negotiation delegations and ended up at USD 14.5 /1000 $m^3$, a price that was later described by one of the Finnish negotiators to be "surprisingly accommodating".[48] The contract signed on 20 April 1971 stipulated that Finland was not allowed to sell gas to a third party, so buying gas from Finland was not an option for Swedish actors, but the contract would still bring gas infrastructure closer to Sweden.[49] Another interesting opportunity for Swedish industry was that some of the gas would be paid for in pipe and in the

[44] Interview with Rekola, translated by Huldtgren and sent to the Swedish Foreign Ministry, SE/RA/221/2210.03.2/H/H53/16, dossier 2.
[45] 'Betänkande om import av naturgas från Sovjetunionen', summary by Huldtgren sent to the Swedish Foreign Ministry, 8 July 1970, SE/RA/221/2210.03.2/H/H53/16, dossier 2.
[46] Memorandum 'O peregovoraxch po prodazhe sovetskogo prirodnogo Gaza v Finlandii mezhdu sovetskoi delegaciei, (Osipov) i finskoj delegaciei (Val'rus)', 15-20 February 1971 , Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 2, 4447.
[47] 'O peregovoraxch po prodazhe sovetskogo prirodnogo Gaza v Finlandii mezhdu sovetskoi delegaciei, (Osipov) i finskoj delegaciei (Val'rus)' 15-17 March 1971, Ministerstvo Vneshnei Torgovli SSSR, fond 413 Op. 31, tom 2, 4447.
[48] The Swedish Embassy in Helsinki to the Swedish Foreign Ministry, 5 May 1971, SE/RA/221/2210.03.2/H/H53/40, dossier 7.
[49] Amnéus (the Swedish Emabssy in Helsinki) to the Swedish Foreign Ministry, 3 May 1971, SE/RA/221/2210.03.2/H/H53/40, dossier 7; Minutes translated from Russian to Swedish 'Om frågan rörande leveranser av naturgas från Sovjetunionen till Finland samt av stålrör från Finland till Sovjetunionen', 21 May 1971, from Wollter (the Swedish Embassy in Moscow) to the Swedish Foreign Ministry, SE/RA/221/2210.03.2/H/H53/40, dossier 7.

original agreement, Gränges had been mentioned as the probable pipe producer since Finland could not produce wide-diameter pipe.[50]

## New Swedish Attempts

Since the talks in 1967-1968, there had been no negotiations between the Soviets and the Swedes regarding natural gas. Meanwhile, in January 1970, during the Fenno-Soviet negotiations, members from the Swedish commission of inquiry on pipeline transportation of oil and gas visited Finland to exchange information on natural gas issues. The Swedish commission members, however, had orders from home not to discuss Swedish participation in the Soviet deal, but to instead concentrate only on technological exchange.[51] After the Finno-Soviet negotiations were concluded, the Finns asked for a decision from the Swedes regarding whether Sweden wanted to have a connection to the pipeline. Otherwise, it would be dimensioned only for the Finnish gas requirements. The Swedish Ministry of Industry, however, wanted the final state commission report to be concluded before taking any direct contacts with the Soviet Union.[52] The Swedish focus was thus only on investigating the conditions for introducing natural gas, and in the end, Finland was forced to enter the Soviet deal without any reassurances from Sweden. Despite this, Soviet-Finland was still considered the most likely route by the Ministry of Industry.[53]

The natural gas issue was raised again at the mixed Soviet-Swedish governmental commission meeting in November 1971. In preparation for this commission meeting, the Ministry of Industry organised a meeting with officials from the Ministries of Trade, Foreign affairs, Finance, Agriculture, and Communication, in order to coordinate action in the area of natural gas. At this meeting, department secretary Jan Thyberg from the Ministry of Industry pointed out that the natural gas issue in all likelihood would be brought up frequently over the following years. Despite this, and although the overall consensus was that natural gas would be a valuable addition to the Swedish energy market because of its environmental advantages and as a replacement for oil, it was decided that the issue should not be pursued at this commission meeting. The Swedish delegation would only hand over to the Soviets a memorandum outlining the Swedish conditions for natural gas import**.** [54]

At the Soviet-Swedish governmental commission meeting, Minister Kuzmin pointed out that the gas market had changed during the past two years, and that

[50] Memorandum from Amnéus (the Swedish Embassy in Helsinki) to the Swedish Foreign Ministry, 3 May 1971, SE/RA/221/2210.03.2/H/H53/40, dossier 7.
[51] UROG minutes, 16 December 1969, SE/RA/322576 A I.
[52] UROG minutes, 23 April 1971, SE/RA/322576 A I.
[53] Minutes from meeting with the working committee on natural gas, 25 October 1971, SE/RA/221/2210.03.2/H/H53/13, dossier 8.
[54] Minutes from meeting with the working committee on natural gas, 25 October 1971, SE/RA/221/2210.03.2/H/H53/13, dossier 8.

many European countries were now interested in buying Soviet gas.[55] Thus, he was hesitant to make any promises with regard to a future gas deal. This attitude was also noted in new negotiations with Austria, Finland and Italy. The Soviets found problems with insufficient production or a lack of transport capacity as the reasons for the hesitancy to make further promises of deliveries. Actors in the Western countries, however, interpreted this as part of a new Soviet gas strategy toward Europe. In light of the increased energy need in Western Europe and the tightening pressure from OPEC, Moscow seemed to expect their Siberian sources to become important in the future, and tried to use the situation to obtain higher gas prices. Moreover, they seemed wary of countries trying to get a lucrative position as middle men with regard to Soviet deliveries to Western Europe.[56] Nevertheless, Kuzmin asked the Swedish delegates to send over an official statement regarding Swedish gas imports before commercial discussions could be started.[57]

A working group to study conditions for import of natural gas from the Soviet Union was officially formed in mid-January 1972 within the Swedish Ministry of Industry, and was tasked with preparing for further Soviet proposals.[58] The group included representatives from Vattenfall, the Swedish Gas Association, as well as a representative for Gränges and AB Johnson. Later, members were added from Nynäs petroleum as well as from the Stockholm gas and water works.[59] Thus, interest groups, private companies and the state were represented. The group's mission was to gather basic data in view of a future discussion regarding economic, as well as technical and scientific, cooperation with the Soviet Union. All the group's members were in some way involved in the Swedish state commission on pipeline transportation of natural gas, which was just being finalized, and they intended to use the work of the commission as a basis for estimates regarding imports from the Soviet Union.[60] The Swedish Minister of Industry, Rune Johansson, wrote a letter to Ku'zmin officially

[55] Brillioth (the Swedish Embassy in Moscow) to Ewerlöf (the Swedish Foreign Ministry), 13 January 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 7.
[56] Brillioth to Ewerlöf, 13 January 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 7; Petri (the Swedish Embassy in Vienna) to the Swedish Foreign Ministry, 2 November and 11 November 1971, SE/RA/221/2210.03.2/H/H53/40, dossier 7.
[57] Memorandum 'Naturgasfrågan' from the Ministry of Industry, 21 January 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 7.
[58] Minutes from the Cabinet Secretary at the Ministry of Industry, 14 January 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 7.
[59] Press release from the Ministry of Industry, 14 January 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 7; List of members of the working group for natural gas import from the Soviet Union, 16 March 1972, SE/RA/221/2210.03.2/H/H53/40, Dossier 8. The group members were: Erik Grafström, from Vattenfall, Claes Lindgren from the Swedish Gas Association, Industry department secretary Jan Thyberg, and Sune Wetterlundh as a representative for the cooperation between Gränges and Johnson in natural gas issues. Later, Per Elmberger from Nynäs Petroleum, Gunnar Gornitzka from Vattenfall and Lennart Johansson of the Stockholm gas and water works also joined the group.
[60] Memorandum 'Import av naturgas från Sovjetunionen', from the Ministry of Industry, 14 January 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 7.

announcing a visit to Moscow by the group later in the spring of 1972, as well as ensuring his support, and describing the significance of the natural gas issue to the development of economic and technical-scientific cooperation between the two countries.[61]

During this visit, the working group and representatives from the Swedish embassy in Moscow and the Swedish Academy of Engineering Sciences (Ingenjörsvetenskapsakademin, IVA) met with Yuri Baranovsky, the vice president of Soyuznefteksport, (Soyuznefteksport was the government body specialising in gas trade, and were subordinate to the Minvneshtorg). The Swedes had prepared a long list of questions to their Soviet counterparts, and the discussion was mainly concentrated on these questions regarding prices, credit, contracts, gas quality, etc. The representative of both parties were careful not to make any promises, and although Baranovsky used other European countries as examples when discussing the different issues, he clearly pointed out that issues like prices, pipe pressure, credits and organization were all subject to negotiation. As an example, Austria and Italy did not have the same price at the same delivery point, due to different transit costs and possibilities to substitute energy resources.[62] The question of possible LNG exports from the Soviet Union to the United States was also raised. An LNG port was planned in Murmansk for the purpose of export to that country. The Swedish actors saw an opportunity to connect Sweden to this project through an LNG port in Gothenburg. This lead was followed up by the Foreign Ministry, and was even advocated by Swedish actors during a meeting with the Soviet Prime Minister Aleksei Kosygin, but led to nothing in the end.[63] As we will see in Chapter 5, however, the idea of an LNG port in Sweden was not abandoned.

Three possible transport routes were discussed during the Moscow visit. One was via the Åland islands to mid-Sweden; a second was through Poland and East Germany to southern Sweden, and the third was to the Swedish west coast through LNG transports to Gothenburg.[64] The Swedish group considered 1976-

[61] R. Johansson to Kuzmin, 4 February , 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8.
[62] Notes by Grafström from the gas group's visit to Moscow 12-14 April 1972, 5 May 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8.
[63] Notes by Grafström from the gas group's visit to Moscow 12-14 April 1972, 5 May 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8;Memorandum 'Sovjetisk export av flytande naturgas till USA', 19 May 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8; The Swedish Embassy in Washington to the Swedish Foreign Ministry regarding LNG trade, 6 June 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8; Eng (the Swedish Embassy in Moscow) to the Swedish Foreign Ministry, 29 October 1974. At a meeting with R. Johansson in 1973, Kuzmin said he had not thought there was any point to discuss the Murmansk alternative. However, since the Swedes had brought up the subject three times during the visit of Prime Minister Kosygin, the Russians would have to consider that as an active show of interest. Memorandum 'Samtal industriministern - förste vice utrikeshandelsminister M. Kuzmin 1973-04-04' from the Swedish Ministry of Industry, 6 April, 1973, SE/RA/221/2210.03.2/H/H53/40, Dossier 9.
[64] Memorandum 'Frågeställningar som det vore önskvärt att få belysta vid tekniska överläggningar med representanter för sovjetiska naturgasmyndigheter och -organ som

80 as a realistic time frame for implementation, with deliveries of, for example, 2-2.5 billion cubic metres (bcm) in 1978, 3-4 bcm in 1980, and 4-6 bcm in 1985 to mid- and eastern Sweden. For southern Sweden the annual figure of 2-4 bcm was suggested, with expected growth to 8-10 bcm by the 1980s.[65] Baranovsky commented that for deliveries in 1976-1980, the Finnish route was the only feasible alternative, since all of the capacity of the Western European pipeline was already taken. Thus, transit negotiations had to be initiated with the Finns, since in general, the Russians sold gas within their own borders, but were now willing to build a new pipeline to the Finnish border.

The working group was chaired by Erik Grafström from Vattenfall, and his explanation to why Sweden was a latecomer to the natural gas market was its functioning oil sector. He underscored that as Sweden had not expected an oil shortage, there had not been any need for introducing a new energy form. The reasons why Sweden was now considering natural gas import were, in Grafström's words, the long-term supply security, since long-term trends on the oil market seemed more insecure, there were environmental concerns, especially the sulphur issue, and a desire to broaden mutual trade.

The balance of trade issue was more important for the group than any worry regarding a lack of energy supplies in the foreseeable future.[66] As in the case with Finland, fuel trade with the Soviet Union was strongly connected to the balance of trade. Many discussions between the Swedish Foreign Ministry and Minvneshtorg related to whether either country was importing or exporting too much, the goal being to find some kind of balance. In 1971-1972 there was a recession in Sweden, partly connected to a problem with the overall trade deficit, which in 1971 was the highest in several decades.[67] Sweden struggled with a deficit in trade with the Soviet Union from 1970s and onwards. In 1972-1974 the deficit was rather stable, only to increase over the last half of the 1970s, and reach an all time high in 1983.[68] Neither party wanted its imports to exceed its exports, but the opposite situation could also be negative in terms of political risk. An internal memo from the Minvneshtorg in 1971 pointed out that decreasing import from Sweden could seriously damage their trade relationship, and could be used by Sweden as a reason to connect to the EEC market,

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underlag för ställningstagandde till ett eventuellt införande av naturgas i Sverige', 16 March 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8.

[65] This is the approxiamte equivalent of 90-100 thousand W (2010 tillförd energy I Sverige 614 Twh, använd 395 TWh) see note in Chapter 4.

[66] Notes by Grafström from the gas group's visit to Moscow 12-14 April 1972, 5 May 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8.

[67] Asta Bergström, *Åtstramning och expansion: Den ekonomiska politiken i Sverige 1971-1982* (Lund: Lund University Press, 1995), p. 53.

[68] Statens industriverk, *Sveriges handel med Östeuropa och Sovjetunionen: I ett svenskt och internationellt perspektiv.* (Stockholm: SIND, 1990), p. 51.

something that the Soviet Union wanted to avoid.[69] In the same vein, in 1973 Soviet trade representatives in Sweden complained to their Soviet superiors that Swedish exports to the Soviet Union had been decreasing for the past two years. They were particularly worried about this trend in areas where Swedish-Soviet trade had traditionally been strong, such as pipe and paper/cellulose products. In that context, changing natural gas for other commodities could be one way of equalizing the balance of trade.[70]

In a discussion with the Swedish Foreign Minister Krister Wickman in May 1972, the Soviet ambassador in Sweden hoped that the natural gas deal would be handled faster, adding that the issue was being handled very quickly in Finland. Minister Wickman answered that Sweden was putting a lot of effort into this issue from the Swedish side, and the investigation had as its starting point "an explicit wish from the Swedish government to reach concrete results."[71] Less than a month later, the Swedish embassy in Moscow reported to the Swedish Foreign Ministry that Kuzmin wanted an official request for natural gas deliveries, including quantities and a starting year. The Minister would then present the request to Gosplan, which would make the necessary calculations regarding the possibility of Swedish natural gas import. He thought, however, that it would be difficult to manage a start of deliveries prior to 1980.[72] A formal request from Sweden was made during a meeting of the mixed governmental commission in May of 1972 for natural gas imports beginning in 1978 with a quantity of 2-2.4 bcm/yr to be increased to up to 6 bcm/yr in 1981, a quantity that could be accommodated by the Finnish pipeline after very small adjustments.[73] This request was accepted by Soviet Prime Minister Alexei Kosygin during a visit to his Swedish counterpart, Olof Palme in spring 1973. However, Kosygin pointed out that due to a restructuring of the Soviet natural gas organisation, they would not be able to start negotiations before the fall. [74]

## Östgas AB

At this point in time, the Swedish government had created a limited company to handle a future natural gas deal with the Soviet Union, Östgas AB. Fifty per cent

[69] Memorandum 'Spravka o torgovyh otnosheniyah SSSR i Shvecii v 65-71 gg', 18 October 1971, Ministerstvo vneshnei torgovli SSSR, fond 413, op. 31, tom 2, 4705.
[70] Memorandum 'po proverke hoda vypolnenia dolgosrochnogo soglashenia o torgovle mezhdu SSSR i Shveciei', 8 July, 1973, Dokumenty po torgovo èkonomicheskam otnosheniam SSSR s Shveciei, mart-dek, 1973', Ministerstvo vneshnei torgovli SSSR, fond 413, op. 31, tom 2, 6161.
[71] Memorandum 'Frågan om sovjetiska naturgasleveranser till Sverige', Nyström (the Swedish Foreign Ministry), 10 May 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8.
[72] Jarring to the Swedish Foreign Ministry, 2 June 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8. Gosplan was the central financial planning organ of the Soviet Union.
[73] Report 'K predlozheniam po razvitiyu torgovo-èkonomicheskogo sotrudnichestva', 10 April 1973, Dokumenty po torgovo èkonomicheskam otnosheniam SSSR s Shveciei, mart-dek, 1973, Ministerstvo vneshnei torgovli SSSR, fond 413, op. 31, tom 2, 6161; 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive p. 2.
[74] Östgas AB (Grafström/L. Johansson) to Baranovsky, 13 September 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9.

of this company was state owned through Vattenfall, with the rest split mostly among two municipal power companies, Svarthålsforsen and Mellankraft, and three industrial consortia, Gränges, AB Johnson, and Stora Kopparberg. Erik Grafström was appointed chairman of the board, and the CEO was Lennart Johansson. Both men previously serviced on the working group for Soviet import. Its main task was to analyse the technical possibilities to construct a natural gas pipeline through the Baltic Sea from Finland to Sweden. At an earlier orientation meeting, Baranovsky had commented that it did not matter whether the Swedish company handling gas imports was state owned or not, as long as it was reliable and stable. Still, when Johansson informed Kuzmin about the company, he made sure to underscore that 50 % was state owned, and that a state official was the chairman of the board.[75]

A consulting firm was tasked with making calculations regarding a possible route via the Åland Sea over the summer 1973, while the Soviets would further examine the issue of credits and buying equipment from Sweden. Kuzmin wanted reassurance that Gränges could be ready to deliver pipe by 1974. Johansson thought there should be no hindrance to restart or even increase production if need be, but he could not give an answer to the specific question of delivery next year.[76] Negotiations were planned to resume in the autumn.[77] In September, Östgas AB contacted Baranovsky in an attempt to open the promised negotiations, but Baranovsky stalled, saying that negotiations could only be resumed at the end of the year, or the beginning of 1974, since the problem of gas allocation had to be studied more carefully.[78] Johansson expressed surprise at this answer from Baranovsky when he met Kuzmin again a month later and underscored that if negotiations were not taken up now, it would be too late considering the estimated start of deliveries in 1978 that Kosygin and Palme had discussed in April. Kuzmin explained that internal Soviet resource issues had to be handled before any agreement could be made with Sweden, as their resources were strained due to delivery obligations to other countries. If the Swedes would be able to deliver 200,000 tonnes of large pipe for the national Soviet system during 1974, it would be easier to talk about the gas issue, since pipe could be exchanged for gas. Johansson confirmed that contacts had been made with the industry, but he needed a basic reassurance

[75] Memorandum 'Samtal industriministern - förste vice utrikeshandelsminister M. Kuzmin 1973-04-04' from the Swedish Ministry of Industry, 6 April, 1973, SE/RA/221/2210.03.2/H/H53/40, Dossier 9.
[76] Memorandum 'Samtal industriministern - förste vice utrikeshandelsminister M. Kuzmin 1973-04-04' from the Swedish Ministry of Industry, 6 April, 1973, SE/RA/221/2210.03.2/H/H53/40, Dossier 9.
[77] Östgas AB (Grafström/L. Johansson) to Baranovsky, 13 September 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9.
[78] Soyuzgaz to Östgas AB, 15 October 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9.

that Sweden would even be able to get gas. Kuzmin answered that his earlier statement regarding internal issues was the only one he could make.[79]

The issue was discussed at the next mixed governmental commission but nothing more was added, except for a statement from Sweden that the Swedish preparatory work was based on the condition that there was delivery capacity for the Soviet Union.[80] The problem of gas delivery was not unique to Sweden. Austria was experiencing similar problems, and one of the reasons quoted in that context was the possible LNG deal with the United States. An agreement regarding this deal had to be made in order for the Soviet Union to promise more deliveries to others.[81] Another reason was that the Soviet government had just concluded a big contract with West Germany.[82] Sweden was a late-comer in the game, and could therefore not count on getting gas. This was pointed out by the Soviets on numerous occasions during the talks. The Soviets also criticised Sweden for being too slow in making decisions regarding natural gas deliveries.[83]

Nevertheless, the Swedes were quite eager to close a deal at this time. The increased unemployment figures after the recession of the early 1970s led to a more expansive economic policy in 1973 with a strong focus on employment.[84] This policy continued in 1974-1975 and in the economic policy debate there was an agreement that the best way to get out of the recession was to expand the economy and spend money.[85] In this situation, a natural gas project, although expensive, could be a way of stimulating Swedish industry, or even saving jobs that would otherwise be lost. In May 1973, the Swedish Ministry of Industry tried to convince Minvneshtorg to order more pipe from a Swedish factory to ensure the survival of the factory. The ministry representative argued that in the

[79] Memorandum 'Naturgas från Sovjetunionen, samtal mellan Kuzmin och industriministern', 26 October 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9.
[80] Minutes 'Protokoll från den fjärde sessionen med den blandade svensk-sovjetiska regeringskommissionen för ekonomiskt och tekniskt-vetenskapligt samarbete', 22 October, 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9.
[81] From Jarring to the Swedish Foreign Ministry, 5 January 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9; Memorandum from the Swedish Foreign Ministry 15 February, 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9.
[82] Report 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 4. This is also the time of the first oil crisis, and although I have not been able to find any substantial link from it to these proceedings so far. I would be surprised if it had nothing to do with it, as the crisis impacted almost all energy trade at the time.
[83] Westerberg (the Swedish Embassy in Moscow) to the Swedish Foreign Minstry, 1 February 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8; Memorandum 'Frågan om sovjetiska naturgasleveranser till Sverige', Nyström (the Swedish Foreign Ministry), 10 May 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8; Jarring to the Swedish Foreign Ministry, 2 june 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8; Memorandum 'Sovjetiska gasleveranser till Sverige', 7 August 1972, SE/RA/221/2210.03.2/H/H53/40, dossier 8; Jarring to the Swedish Foreign Ministry, 10 January 1973, SE/RA/221/2210.03.2/H/H53/40, dossier 9.
[84] Bergström, pp. 69–71.
[85] Bergström, p. 118.

light of future exchange of pipe for natural gas imports, the factory needed orders to bridge the gap until a natural gas deal was completed.[86]

The natural gas pipeline from the Soviet Union to Finland was inaugurated in early 1974.[87] Only a few days later, the Finnish Foreign Ministry contacted the Swedish embassy in Helsinki regarding the possibilities of a Soviet-Swedish gas contract.[88] In their answer, the Ministry of Industry admitted that there had been no news since the autumn, but they were still counting on Soviet deliveries as a long-term possibility even though it seemed improbable for negotiations to start under current market conditions.[89] The hope of Soviet deliveries to Sweden was rekindled when it was reported that negotiations between the Soviet Union and the United States were being held up by the complicated financing problems.[90] During the spring of 1974 both Östgas and the Swedish embassy staff in Moscow tried to ask Baranovsky about further negotiations, but were given evasive answers until May when Baranovsky contacted the Swedish embassy with an offer of export.[91] This offer, however, was for only 1 bcm of gas per year up until 1980 to be compared with the original request from the Swedes of 2-6 bcm. The gas would be traded for credits of 100 million rubles to be paid in pipe, and later repaid back in gas deliveries. If this was not enough for Sweden, then the matter would have to be considered closed. He also regretted that Sweden had not asked for the gas five or ten years ago, in which case the situation would have been completely different.[92] Östgas commented that if the Soviet offer meant only one bcm of gas indefinitely, the deal would be of no economic interest to Sweden, but if there was a possibility of further increasing deliveries from 1980 and onward, then it could be an interesting start. In October, however, an official letter from Kuzmin confirmed that the Soviet Union could not deliver more than 1 bcm per year starting 1978. Since that offer had already been rejected by Erik Grafström at a meeting in Moscow, the discussion was considered closed.[93]

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[86] Notes from meeting between Koshentaevskogo (the Department for trade with Western countries) and Niklasson (the Swedish Ministry of Industry), 30 May 1973, Dokumenty po torgovo èkonomicheskam otnosheniam SSSR s Shveciei, mart-dek, 1973, Ministerstvo vneshnei torgovli SSSR, fond 413, op. 31, tom 2, 6161.
[87] Ryding (the Swedish Embassy in Helsinki) to De Geer (the Swedish Foreign Ministry), 10 January 1974, SE/RA/221/2210.03.2/H/H53/16, dossier 3.
[88] Ryding to the Swedish Foreign Ministry, 22 January 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10.
[89] Swedish Ministry of Industry to the Swedish Embassy in Helsinki, 28 January 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10.
[90] Eng to the Swedish Foreign Ministry, 8 February 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10.
[91] Eng to the Swedish Foreign Ministry, 4 March 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10; Memorandum 'PM 1974-05-16 rörande naturgas till Sverige', Östgas AB, 16 may 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10.
[92] Memorandum 'Sovjetiskt besked om möjligheterna att leverera naturgas till Sverige', 16 May 1974 SE/RA/221/2210.03.2/H/H53/41, dossier 10.
[93] Kuzmin to R. Johansson, 1 October 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10.

In his earlier offer, Baranovsky also proposed another option to increase possible gas deliveries: a three-party deal with Iran, where Sweden would buy gas from Iran and exchange it for Soviet gas to be delivered through Finland. West Germany was entering into similar negotiations with Iran and the Soviet Union.[94] Östgas first considered this an option that "should not be discarded out of hand", but later they voiced concerns regarding security issues and a complicated agreement with Finland that would have to import more gas from the Soviet Union, or be a co-importer from Iran. Further, Iranian gas would be more fitting in a scenario where it was imported from the south, through West Germany and Denmark to the Swedish market. Therefore, the opinion of Östgas was that the issue should not be opened.[95] The Ministry of Industry also seemed wary regarding the deal, noting that the Soviet Union and Iran were not the best of "gas friends" at this time and that "the Russians are very uncooperative regarding deliveries of natural gas from the Soviet Union to Sweden."[96] Despite this wariness during the autumn of 1974 the Swedes regretted their decision to turn down the gas offer and in January 1975 Johansson asked again for the 1 bcm offered earlier. This time, Sweden wanted gas for a project using methane as fuel in cars and trucks. Unfortunately, Johansson was too late as the Soviet Union had already promised the 1 bcm to other countries (France, Italy, Japan and Western Germany) in exchange for pipes and long term loans. He was advised to make a new official request but Kuzmin emphasized that they could not promise anything before 1980.[97] Despite this rebuff, Johansson claimed he still saw opportunities for future importation of Soviet natural gas. Answering an interpellation from a fellow Social Democratic Party member, he underscored that "[S]trong economic factors – not lost opportunities – have been the reasons for Sweden not using natural gas today."[98]

Only six months later the Soviets again offered Sweden gas, this time in exchange for tin exports.[99] The Swedes seemed eager to engage in a deal and wanted to send a delegation to Moscow in order to discuss the needed amount of pipe as well as routes for the pipeline as soon as possible, since fast planning was vital to the deal.[100] The offer was scheduled to be discussed at the mixed

[94] Eng to the Swedish Foreign Ministry, 16 May 1974 SE/RA/221/2210.03.2/H/H53/41, dossier 10.
[95] Memorandum 'PM 1974-05-16 rörande naturgas till Sverige', Östgas AB, 16 may 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10; L. Johansson (Östgas AB) to Sjödén (the Swedish Foreign Ministry), 28 November 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10.
[96] Hagström (Ministry of Industry) to Åström (the Swedish Foreign Ministry), 21 August 1974, SE/RA/221/2210.03.2/H/H53/41, dossier 10. The Iranian leadership at the time was US-friendly.
[97] Notes from meeting between Kuzmin and R. Johansson, 23 April 1975, Dokumenty po torgovo èkonomitjeskam otnoshenijam SSSR s Shveciej, jan-dek 1975, Ministerstvo vneshnei torgovli SSSR, 413, op. 31, tom 3, 7778.
[98] Riksdag minutes, nr 92, 27 May 1975, p. 265.
[99] Memorandum 'PM beträffande naturgas', Claes Lindgren, Naturgasdelegationen, SE/RA/322983/5/6/15.
[100] Notes from meeting between Besurnikov (the mixed Swedish-Soviet trade commission) and Brillioth (Swedish Embassy in Moscow), 11 September, 1975, Dokumenty po torgovo

Swedish-Soviet trade commission in December 1975.[101] After this, a period of almost five years followed during which the issue of natural gas importation from the Soviet Union was rarely raised, but was not dead. The American *Oil and Gas Journal* reported in May 1977 that the Soviet Union made another offer to supply Sweden with natural gas, during a visit to Moscow by a team from Swedegas, the then newly-formed Swedish state natural gas company.[102] Nothing came of this, but the issue would be brought up again in 1980, and then be found in a completely different context, both for the Soviets and the Swedes.

## Concluding Remarks

Regardless of motivations of actors on both sides to engage in a natural gas deal, nothing came of the Soviet-Swedish talks. When the Soviets wanted to sell gas, the Swedes hesitated, and vice versa. It may seem a trivial comment to point out that a basic requirement for a contract is that all actors agree long enough at the same time. This, however, is not always easy to achieve, as we have seen. Despite the fact that actors on both sides clearly saw advantages and possibilities in an expanded trade, they could never really agree at the same time. Choosing priorities and contexts was not simple, especially in an international setting. On both sides, negotiations were going on between state and industry actors, as well as with other countries. In order for an agreement to be made, enough of these strong actors had to adhere to the same contexts and priorities at the same time, both nationally and transnationally. This never happened.

Part of this depended, as we have seen, on domestic events in both countries. In the early stages of the negotiations Sweden did not have the institutional structures to handle the construction of a natural gas infrastructure. The needed structure was being put into place during the early 1970s while the Swedish-Soviet negotiations went on. Different economic strategies and market situations also influenced the Swedish willingness to import gas. A natural gas grid was an expensive and technologically complex endeavour, and although the different commissions and committees had a positive outlook on gas, they all admitted to finding it difficult to fit it into the Swedish fuel market since, at least in the beginning, oil and electricity were cheap, and customers in Sweden were not prepared to pay as much as customer on the continent. Natural gas did not have a clear place to fill, and that made it less of a priority.

The Soviets, on their side, were experiencing a huge expansion of the gas trade, with new findings, exploitations and discussions regarding the place of natural

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èkonomitjeskam otnoshenijam SSSR s Shveciej, jan-dek 1975, Ministerstvo vneshnei torgovli SSSR, 413, 31, tom 3, 7778.

[101] I have not been able to find any records of this meeting, and after 1975 there are no traces in the sources of any negotiations concerning the project until 1980.

[102] *Oil and Gas Journal* , 30 May, 1977.

gas as a domestic or as a trade commodity. Thus, each country was involved in an internal process of developing the natural gas sphere, and although the Swedish development was by no means as massive as the one going on in the Soviet Union, both these internal contexts were influential to the negotiations.

For the Soviet Union, trade relations with Sweden were certainly important, but gas export to Sweden was less important than delivering gas to already existing customers or starting to export to the United States. For Sweden, gas was an interesting new possibility but other trade goods were more important in bilateral trade. As Sweden had an export deficit in relation to the Soviet Union, Sweden did not need to import natural gas to achieve a better balance of trade. Swedish actors needed, however, to sell pipe, help the industries going through a crisis, and, to some extent, make sure that the oil trade worked smoothly. Natural gas trade could be useful in this regard. Outside of the trade relation argument, the contexts of the environment, unemployment, the oil crisis, Western European natural gas development, and industrial development were all used by both actors to different degrees over time to justify a future deal.

The many actors on many levels made the project difficult to organise and this contributed to the messiness of the negotiations. Attempts were made to deal with the organisational problem on the Swedish side, as we will see in the next chapter. Miller and Lessard point out the long lead times making projects more difficult to manage, and in this case the waiting for the different parties to carry through administrative changes seem to have been one of the problems.[103] In the end, the period in which the Soviet Union entered into most natural gas contracts with Western European countries peaked over the end of the 1960s and very early 1970s. As Soviet representatives pointed out, the Swedes were simply too late. In my opinion, this lateness can be attributed to the lack of a gas infrastructure, but also to an uncertainty as to whether natural gas was a valid choice for Sweden as an energy carrier. Between the lines in this chapter we have seen how groups and institutions were created in Sweden to handle a possible Soviet gas deal, and parallel to this, there was a discussion regarding the place of natural gas in the Swedish system. In the next chapter I will look more closely at the Swedish developments, and at some of the reasons why Sweden may not have been ready for a natural gas deal.

[103] See Chapter 1.


Fig. 6: The cover of the final report on gas from the state commission of inquiry on oil and gas transportation, SOU 1972:25.

# Chapter 4: Commissions and Cooperation: Attempts to Create a Swedish Natural Gas Sector

The Swedish-Soviet negotiations were part of a larger natural gas discussion taking place in the end of the 1960s both in Sweden and in Europe. They prompted an interest on the part of several Swedish actors, but also served to show the lack of organization, knowledge and regulation of natural gas in Sweden. In the years between 1968 and 1976, this led to actors from different spheres trying to remedy the situation and facilitate a future introduction of natural gas in the country by creating an institutional framework. In the following chapter I will trace this trend. This chapter overlaps with the previous one chronologically but has a different focus, namely the internal development in Sweden. I will especially focus on three institutions: the state commission on oil and gas transportation, founded in 1968, the Natural Gas Committee created in 1973, and Swedegas, the national Swedish gas company begun in 1976.

## The First State Commission

The first ambitious effort to formulate a state interest in natural gas began with the creation of a commission of inquiry.[1] The main goal of the commission was to investigate pipe transport of oil. Overall energy consumption was expected to rise, and according to earlier investigations consumption of oil products would increase from 35 million $m^3$ to 45 million $m^3$ between 1975 and 1985. The increased energy consumption was expected to be covered mainly by oil and nuclear power. In the same vein, another commission from 1966 had calculated a doubling of oil imports over time from 1965 to 1975. Sweden had so far not used this mode of oil transport on any larger scale, but the expected expansion of oil use could make constructing pipelines more profitable.[2] Thus, the focus of the commission was first and foremost on oil, but due to the increased interest for natural gas both within and outside the borders of Sweden, natural gas was included in the commission's mandate. The Minister of Industry, Krister Wickman explained the decision to include natural gas:

> [I]t is also not excluded, that a part of the Swedish energy need in the future will be covered by natural gas. Natural gas is already being imported and exported within Europe through the connection of pipelines across borders.

[1] Commissions of Inquiry are an important part of the Swedish parliamentary system and one of the main instiutions of the "corporate state". The commission of inquiry is issued by the Swedish government and typically includes members drawn from politics (often from both government and opposition parties), public authorities, local government, interest organisations and advanced research insitutes. Their role is to investigate a given area and develop government proposals. Although their role has changed somewhat today, historically, and during my time of study, these commissions had a large importance, and paved way for many reforms and served as forums for achieveing compromises and consensus.

[2] SOU 1970: 57, *Olja i rör: Delbetänkande avgivet av 1968 års utredning om rörtransport av olja och gas*, p. 13.

> I therefore believe that the need for construction of pipelines for oil or natural gas in Sweden should be closely studied.[3]

Thus, the commission regarding pipeline transportation of oil and gas (UROG) was created in 1968. It resulted in two reports, one focused on oil pipeline transmission was published in 1970, and the other on natural gas in Sweden was published in 1972.[4] Since oil and gas, to some extent, were active on the same market, it was difficult to draw any final conclusions regarding oil pipelines without also having all the information on natural gas. Thus, despite the separate reports, the members of the commission still regarded the two reports as complementary, and saw natural gas both as related to, and a competitor of, oil.[5]

The commission consisted of a mixture of state officials and representatives of interest groups and companies. Sven Lalander from Vattenfall was appointed to chair of the commission.[6] Claes Lindgren from the Gas Association was appointed to bring his expertise in the natural gas issue. Lindgren was a civil engineer, trained at the Royal Institute of Technology, who had worked at the Gas Association since 1954. He was to become one of the most prominent proponents of natural gas in Sweden.[7]

The Gas Association had been founded as the Swedish Gas Works association in 1916, and gathered actors involved in the Swedish town gas industry.[8] These actors had several reasons to be interested in natural gas during the 1950s and 1960s when natural gas began to be sold on a larger scale across borders in Europe. There was a general stagnation of the town gas market in Sweden due to competition from electricity, which in the end had conquered the traditional markets for manufactured gas used for household purposes.[9] The remaining gasworks were also becoming increasingly costly to run. Natural gas was thus seen as an interesting possibility for the future survival of the Swedish town gas industry. The association had many international connections through their close relation to the International Gas Union (IGU) and through contacts with gas works associations in Norway, Finland, Denmark, as well as with the gas committees of the Economic Commission of Europe (ECE) and the Organisation for Economic Co-operation and Development (OECD). The director of the Gas

[3] SOU 1970: 57, p. 13.
[4] SOU 1972:25
[5] UROG minutes 16 October 1969, SE/RA/322576 A I.
[6] Lalander was well known within the power sector, and would have an especially large influence on the international development of Vattenfall, Högselius and Kaijser, pp. 194, 217, 235. Other participating institutions were the Environmental Protection Agency and the Swedish Petroleum Institute.
[7] SOU 1970: 57, p. 14.
[8] Bo Sundin, *Ingenjörsvetenskapens tidevarv: Ingenjörsvetenskapsakademin, Pappersmassekontoret, Metallografiska institutet och den teknologiska forskningen i början av 1900-talet* (Stockholm: Almqvist & Wiksell Förlag, 1981), p. 20.
[9] Kaijser, *Stadens ljus*, pp. 204–209.

Association was chosen as the chairman of the IGU in 1958, and he was also a member of the ECE gas committee during its first two years.[10] At the end of the 1960s and early 1970s, natural gas caught the attention of several companies, and the association acquired several new members. These were mainly power companies (e.g. Skandinaviska Elverk, Mellansvenska Städernas Kraft AB, Vattenfall, etc) and producers of pipeline material (e.g. Gränges AB, Kockums, etc.), but also oil companies, such as Swedish BP Olja AB, Swedish Esso AB, Gulf-Gas (Sweden) AB, OK and AB Swedish Shell.[11] A natural gas committee was created within the gas association, consisting of Claes Lindgren, Arvid Persson from Sydkraft AB, and a representative from Malmö Energiverk (a municipal energy company). One goal was to build up Swedish expertise in the natural gas area, and for this purpose they studied American literature, and started networking with gas actors in other countries, for example in Denmark.[12] Internationally compiled knowledge was important, since both the fuel and its modes of transport were completely new to Sweden.

The commission presented its first results concerning oil transportation in 1970 and then turned its attention exclusively to natural gas.[13] Their work was made easier through the cooperation with the Swedish Academy of Engineering Sciences, which had created a natural gas committee, and in parallel with the commission work on oil, wrote a report on the possible role of natural gas in Sweden.[14] Sven Lalander participated in this study and the commission was later able to use it in their continued work.[15] The Academy of Engineering was created in 1919 partly as a response to energy issues and was given state support for techno-scientific research within that area, but it would become a forum for a broader discussion of technology and development. According to the first head of the Academy, Axel Engström, one main goal of the academy was to ensure that the limited resources of Sweden were used in the most effective way. Thus, during the 1920s the Academy became a place where representatives of commerce, the state and universities could meet and discuss issues of resource use.[16] Over the years, the Academy participated in state commissions of inquiry as well as conducted its own research and helped informing the public about

[10] Material from Bengt Nilssons trips, Swedish Gas Association annual reports, Energigas Sverige archive.
[11] Swedish Gas Association annual report 1966, Energigas Sverige archive.
[12] Lennart Johansson, *Swedegas AB 1976-1986*, (Stockholm: Swedegas, 1987), p. 3.
[13] UROG minutes 12 November 1970, SE/RA/322576 A I; At an earlier meeting the commission decided that the natural gas part of the study had to be published within one year after the oil part, and should not be too ambitious. Claes Lindgren objected to this in later minutes, and considered the formulation to be too rigid in terms of scope, UROG minutes 18 March, 1970, SE/RA/322576 A I; UROG Minutes 29 April 1970, SE/RA/322576 A I.
[14] IVAs Naturgaskommitté, *Naturgas: Energibärare och råvara: Rapport från IVA:s naturgaskommitté avsedd att belysa de allmänna förutsättningarna för användning av naturgas i Sverige speciellt inom industrin*, Stockholm, 1970 (IVA-meddelande 167).
[15] SOU 1972:25, p. 12.
[16] IVA, *75 år av teknik: Ingenjörsvetenskap och industriell utveckling 1919-1994* (Stockholm: Ingenjörsvetenskapsakademien), p. 9.

technological issues. For example, in the 1920s, the Academy helped to spread information in an effort to heighten the efficient use of ovens and heating, as a part of fuel conservation.[17] Since the state commission focused on oil transport during its first two years, the initial investigation of natural gas was largely left to the Engineering Academy.

The report from the Academy of Engineering Sciences concluded that natural gas could be an interesting fuel for Sweden, just as in other countries where its introduction had resulted in savings for the industry. They estimated that natural gas could cover 14 % of the total energy consumption in Sweden in 1975, despite the fact that the overall market conditions in Sweden were considered unfavourable due to sparsely populated areas, lack of distribution infrastructure and low oil and electricity prices. The main focus of the report was the use of natural gas within Swedish industry, where it was to replace fuel oil. This would lead to considerable advantages for the work environment due to the cleanliness and efficiency of gas. The fact that it was delivered at the same time as it was consumed was seen as positive, since there would be no need for storage and purchase planning.[18] Based on the results of the Academy, the commission concentrated on investigating a future Swedish system for the transport and distribution of natural gas.[19] Gränges and AB Johnson's earlier studies of possible import from the Soviet Union were also used.[20] After the study commission report on oil was finished, a natural gas section was formed within the Gas Association. This section collaborated with the commission in its final stages of the gas report, not only through the presence of Claes Lindgren, but also by conducting a large market survey.[21]

As the commission entered into the natural gas phase, new members were added to the group. New representatives joined from the Swedish oil company, Nynäs Petroleum, the Board for Economic Defence, the Academy for Engineering Sciences and the Swedish Steam Generator Association (*Ångpanneföreningen*). The Ministry of Industry was represented by Jan Thyberg. Claes Lindgren still represented the Gas Association, which by this time counted among its members several large power companies, such as Vattenfall and Sydkraft AB, as well as municipal power companies. The commission thus gathered actors from different arenas that were interested in natural gas and had reasons to compile knowledge in the area.

Sydkraft AB was a strong regional power company with an early interest in natural gas. In February 1969, they founded a limited liability company called Sydgas AB, in order to investigate the possibilities of natural gas introduction in

[17] Lundgren, p. 16.
[18] IVAs Naturgaskommitté, *Naturgas: energibärare och råvara,* p. 10-11.
[19] SOU 1972:25, p. 12.
[20] UROG minutes, 13 September 1971, SE/RA/322576 A I.
[21] UROG minutes, 11 October 1971, SE/RA/322576 A I.

Sweden. Arvid Persson, the CEO of Sydgas, later stated that the main motive for creating the company was that Sydkraft saw a future in the gas industry and wanted to reserve the name Sydgas. The first couple of years, however, Sydgas was what he calls a "desk-company" with no personnel or assignments.[22] Arvid Persson was a civil engineer who started working for Sydkraft in 1950 almost directly after his graduation from the Royal Institute of Technology. In the mid-1950s he took an interest in nuclear power, and when Sydkraft created a bureau for nuclear power he was appointed as its head. In this position he became one of the leading forces in the preparation and location of the Barsebäck nuclear power plant. In 1970, when the construction work on Barsebäck started, he turned to the natural gas issue, and as CEO of Sydgas up until 1984 he was to become a key figure in the introduction of natural gas in southern Sweden.[23]

## International Ambitions

As we have seen in the previous chapter, the Soviet Union was considered a major candidate for natural gas import, but other possibilities were also investigated. When the commission started in 1969 several prospecting companies were working in the Norwegian and Danish parts of the North Sea, looking for oil and gas, and the commission members argued that close contacts with other Nordic countries were important to the investigation, especially concerning natural gas. The first big discovery rich enough to develop was the Norwegian Ekofisk field, discovered by the American oil company, Phillips Petroleum, in September 1969.[24] This field was reported to contain an estimated 16 million tonnes oil, and gas equivalent to 4.5 million tonnes of oil per year. Phillips needed buyers for this gas, and one of the actors they approached was the Swedish Ministry of Industry. However, there was still no Norwegian decision regarding whether or not the newly-discovered gas would be transported through Norway, and the issue was up for investigation and political debate in the ensuing years while the field was being tested.[25] In 1971, Denmark, Sweden and Germany were all possible buyers of gas from the Ekofisk field. The Norwegian industrial consortium, Norsk Hydro, had proposed to create a Swedish-Danish-Norwegian transport company in order to transport gas through a pipeline from Denmark to Southern Sweden, but the Danes were quite sceptical to this solution. Jan Thyberg even reported that Danish representatives had entered an agreement with Ruhrgas to act together to buy gas from Ekofisk, without telling the Norwegian government in advance. Denmark would keep some of the gas and transit the rest to West Germany, and

[22] Arvid Persson, *Sydgas - Bakgrund och de första åren* (Malmö: Sydgas, 1992). p. 5
[23] Arvid Persson, Interview, 31 March 2008; 'Arvid Person-kärnkraft-och naturgaspionjär', *Sydsvenska Dagbladet*, 21 October 2010.
[24] Steinar Arneson, *Blått gull: Historien om naturgasen* (Oslo: Villrose Norsk Forlag, 1998), p. 116 ff.
[25] UROG minutes, 12 November 1970, SE/RA/322576 A I.

in Thyberg's opinion, this meant there would likely not be any possibility of Sweden importing the gas.[26]

Another arena where the natural gas issue was raised was the Nordic Council, an inter-parliamentary organisation for cooperation between the Nordic countries with representatives taken from the member countries' parliaments. In 1971 two members of the Swedish Riksdag (from the Conservative Party and the Liberal Party) and a member of the Finnish Parliament (from the National Coalition Party) suggested that the Nordic Council of Ministers should start joint planning for the development of pipelines for oil and gas within the Nordic area.[27] The Council of Ministers coordinates inter-governmental cooperation in the Nordic countries, gathering the Nordic ministers within specific policy areas in several "councils". During 1972, the Nordic Council of Ministers agreed to cooperate on a possible pipeline from Vestlandet in Norway to the Oslo area, but this project never materialised.[28]

These developments on a Nordic level were followed closely by the Swedish state commission. Denmark, Norway and Finland were all instrumental in the future supply or/and transfer of natural gas to Sweden, and one chapter in the early drafts of the gas report was dedicated to "cooperation with neighbouring countries". The commission also suggested to the Minister of Industry that the issue of natural gas import should be raised as soon as possible with possible suppliers. It is unclear what happened to this proposal, but there is a clear discrepancy between the level of engagement in international contacts and the final result in the report. In the end, the chapter on Nordic cooperation was removed from the report, and Claes Lindgren argued that possible suppliers and the cost of transmission should not be discussed in the final report at all.[29] The reason for this was that the commercial possibilities from both the North Sea and the Soviet Union were too vague. All three Nordic countries in question for transit and/or as suppliers of natural gas to Sweden were themselves trying to organise their natural gas business, and this made their role as possible suppliers/transitors very uncertain. It was doubtful that any agreements on deliveries could be made since the potential for supply were so insecure.[30] Due to this uncertainty, very little was mentioned in the final report regarding possible suppliers of natural gas to Sweden.

[26] Minutes from meeting with the working committee on natural gas, 25 October 1971, SE/RA/221/2210.03.2/H/H53/13, dossier 8.
[27] 'Medlemsförslag om nordisk samverkan beträffande rörledning för olja och gas', Nordic Council , A 356/e.
[28] 'Berättelse rörande det nordiska samarbetet', Nordic minister council, 21 session of the Nordic Council, Oslo, December 1972, C1/1973, p. 706.
[29] UROG minutes, 13 September 1971, SE/RA/322576 A I.
[30] UROG minutes, 23 April 1971, SE/RA/322576 A I.

## The Final Commission Report

The final report from the state commission on natural gas was published in early 1972, right before the first Swedish inquiry regarding natural gas from the Soviet Union.[31] According to the commission report, natural gas had great potential as a Swedish energy carrier mainly due to its ability to replace heavy fuel oil, particularly in large industries, heating and cogeneration plants. One of the bases of this assumption was an expected increase of energy consumption, as well as an increase in oil consumption within these areas.[32] An overall goal was thus to meet future energy needs as well as to lessen the dependence on oil from North Africa and the Middle East, which at that point supplied Sweden with 75 % of its oil supply. Nevertheless, although natural gas would most likely replace oil, this would not decrease overall import dependency since there were no discoveries of gas as of yet in Sweden. Thus, the customers would most likely still have to keep storage of oil or equivalents to gas.[33] The commission argued that natural gas could only be introduced in Sweden if it could compete with other energy sources, mainly oil and nuclear power. Although natural gas prices to some extent followed oil prices, the price a Swedish consumer would be willing to pay left very little room to cover the transfer and distribution of gas. Therefore, the market areas would have to be limited and close to the trunk lines.[34] In light of this, the commission estimated a possible natural gas market in Sweden towards the end of the 1970s of 8 bcm/year. This amounted to the equivalent of 7 million tonnes of oil, and about 10 % of the estimated energy supply.[35]

The market situation would also depend on tax issues and regulations, and an important part of those regulations were of the environmental kind. The Environmental Protection Agency had just created a program to decrease the level of sulphur in fuel oil with the goal of not allowing total emissions of sulphur dioxide to exceed 1970 levels. Natural gas could help in this regard since it is completely free of sulphur. The commission regarded natural gas as a clean product, which did not have any negative environmental effects under any part of processing, in contrast to oil, and concluded that considering the great significance natural gas could have for Swedish energy supply as an alternative source to oil import, the state should facilitate the financing of the pipeline system through a state guarantee for the needed loans.[36] Since there was no established organisation appropriate for a natural gas project in Sweden, the opinion of the commission was that a limited liability company should be created for this purpose. The function of this company would be to buy gas, market it, and to administer construction of the infrastructure, and its

[31] SOU 1972:25, p. 10; see Chapter 3.
[32] SOU 1972:25, p. 55.
[33] SOU 1972:25, pp. 92-93.
[34] SOU 1972:25, pp. 52, 56.
[35] SOU 1972:25, pp. 71-72.
[36] SOU 1972:25, pp. 79, 86-88

maintenance. Large consumers of gas were suggested as owners of such a company, and Vattenfall was specifically mentioned, although not necessarily as a majority owner.[37] Thus, the commission foresaw state participation in a natural gas project because of the particular problems the fuel would encounter on the Swedish market.

The commission was also of the opinion that measures should be taken straight away to prepare for a future natural gas introduction, for example the development of safety regulations and legal frameworks, and the preservation of the remaining town gas grids.[38] Another important measure was further research into the issue of a natural gas company with state involvement. This was discussed when Östgas AB was created in early 1973.[39] Rune Johansson and the parties involved in Östgas took the position that the issue of a national gas company should be postponed due to too many unknown factors and uncertainties in the field of natural gas, and that, for now, the creation of regional companies, such as Sydgas AB and Östgas AB, was sufficient, although Johansson proposed a strong state influence in these companies. In the end, the overall goal for the regional companies had to be to facilitate the creation of a national natural gas grid since that would be a prerequisite for giving natural gas a more prominent role in the future Swedish energy market.[40] Vattenfall, which would own 50 % of Östgas AB, considered natural gas a valuable complement to oil, and especially attractive as a fuel because of its environmental qualities. As a potential buyer of natural gas, Vattenfall thought it important that they be given the opportunity to engage in issues concerning natural gas import.[41] Only the Communist Party opposed the ownership organisation of Östgas, advocating, instead, that such a company should be completely state-owned.[42] Johansson saw natural gas only as a partial and short term solution to the energy problem, arguing that natural gas reserves at this time were not expected to last more than a few decades.[43]

Although these developments happened before the oil crisis, the main argument for natural gas import was to decrease Swedish oil dependency. A rise in oil prices was predicted due to higher global demand and a higher degree of nationalisation within the oil business, and even though gas imports would not *per se* lessen the import dependence of Sweden, it would still spread the risks. In order for Sweden to really lessen overall import dependence, it needed to find

[37] SOU 1972:25, pp. 9, 77-78.
[38] SOU 1972:25, pp. 9-10.
[39] See Chapter 3.
[40] Govt. Bill 1973:112, 'Angående vissa åtgärder på olje- och naturgaområdet', 30 March 1973, p. 11-12.
[41] Govt. Bill 1973:112, p. 4; Govt. Bill 1972:1, 'Statsverkets tillstånd och behov under budgetåret 1972/73', bil. 15, p. 119.
[42] Motion 1973:1947, Hermansson et al., Communist Party; Riksdag minutes nr. 87, 15 May, 1973, Reservation, Svensson, Communist Party, p. 94.
[43] Riksdag minutes nr. 87, 15 May, 1973, pp. 118-119.

its own oil or gas.[44] As far back as in 1969 a Swedish company for oil prospecting had been created, Oljeprospektering AB (OPAB), with the mission to prospect for oil and gas on Swedish soil. 25% was owned by Vattenfall, 25% by the state mining company LKAB and the final 50% by other power and industrial companies (i.e. the AGA gas technology company, Gränges, the Boliden mining company, and Sydkraft).[45] OPAB had started drilling in the provinces of Skåne, Östergötland, Gotland and Öland, and the exploitation of oil and gas in the North Sea had raised the question as to whether OPAB should engage in exploration abroad, as well. Some of the OPAB shareholders started negotiating for a new company, Petroswede, which would engage in prospecting outside of Sweden. The relevant actors were Vattenfall and LKAB from the state sector, and several large industrial consortia from the private sector, such as the Salén consortium, OK, ASEA and the Johnson consortium. Salén already had shares in a consortium for prospecting in the North Sea, which Petroswede took over.[46] The willingness to find new fossil fuels both in Sweden and abroad seemed to unite actors from all parts of the political spectrum, maybe especially after the oil crisis in the autumn of 1973. Members of the Centre Party specifically pushed the issue of exploration in Östergötland, as did the Communist Party.[47] The Moderate Party supported Swedish prospecting in the North Sea.[48]

The groups mobilized on and around the commission on oil and gas transportation were actively interested in the natural gas issue, but it is important to remember that the main political discussion regarding energy security during the first half of the 1970s concerned hydropower, nuclear power and oil.[49] In the early 1970s, the environmental movement opposed further development of hydropower in Swedish rivers. The hydropower issue brought to the fore new conflicts within the political sphere, and broke the traditional left-right pattern in Swedish politics. The Communist Party joined the Liberal Party, the Centre Party and the Moderate Party against the Social Democrats on the issue of dam constructions in the Kalix River.[50] The Social Democrats were forced to agree to a moratorium on hydropower development.

Although there had been attempts to diversify away from oil before 1973, the oil crisis triggered new energy policies on a large scale and a more holistic view on energy policy by the government. The Social Democratic government created an

[44] Govt. Bill 1973:112, p. 6-7, 12.
[45] Govt. Bill 1973:112, p. 5.
[46] Minutes from meeting with the working committee on natural gas, 25 October 1971, SE/RA/221/2210.03.2/H/H53/13, dossier 8; Govt. Bill 1973:112, p. 6. The company was formed in July 1973, http://www.spe.se/ds/export/spe/the_company/history/
[47] Motion 1974:129 p. 35; Riksdag minutes. nr. 21, 7 February 1974, p. 77.
[48] Motion 1974:332.
[49] It is symptomatic that the parliamentary debate about the Governmental bill on "certain measures in the oil- and gas area" was as much about energy efficiency, hydropower and nuclear power as about oil and gas.
[50] Vedung and Brandel. p. 146

energy policy delegation on the state secretary level, and started preparing a comprehensive energy policy bill.[51] A large programme for new research in the energy area was also launched.[52] The Social Democratic energy policy plan included a more active oil policy through investments in extraction of fossil fuels as well as a focus on energy saving and a goal to decrease the expected increase of energy use over the ensuing 15 years.[53]

Another part of this energy policy was to secure power production. After the problems with hydropower, one of the main ways to do this was nuclear power. Up until 1971, there had been a political consensus in Sweden regarding the introduction of nuclear power, but a major change of opinion from, first and foremost, the Centre Party and its leader Torbjörn Fälldin changed the political tone, and an intense debate regarding nuclear power started. In October 1972 Birgitta Hambraeus, a member of the Centre Party, questioned the Minister of Industry Rune Johansson regarding nuclear waste, and this became the start of a political opposition against nuclear power.[54] The nuclear issue split the Swedish political parties, albeit along different lines than in the case of the hydropower issue. The Centre Party and the Communist Party opposed nuclear development, while the Social Democratic Party, the Moderate Party and the Liberal Party largely agreed with the Social Democratic energy policy plans, and saw nuclear as a key power source in the upcoming decade.[55]

Parallel with the opposition against nuclear power, an opposition against the earlier prevailing doctrine of economic growth also grew stronger. In 1972, the Club of Rome published the influential report "Limits to Growth", causing a lively debate about the structure of Western society. Two parallel visions of a future society developed in the Swedish energy debate: the more centralised, highly technological growth society based on nuclear power, and a more decentralised, small-scale, and low-energy society.[56] These discourses developed over the 1970s, but natural gas does not seem to have been a part of either of them. The reason for this could be that gas was simply not a known fuel for the general public. It also did not easily fit in to either vision.

[51] Wittrock and Lindström, p. 113.
[52] Wittrock and Lindström, p. 114. This initiative seems to have been considered and partly prepared even before the oil crisis, but was set in motion quickly in its aftermath.
[53] Leif Lewin, *Ideologi och strategi: Svensk politik under 100 år* (Stockholm: Norstedts Juridik, 1992), pp. 314–315; Wittrock and Lindström, p. 113; I will return to some of the consequences of these investments in Chapter 6.
[54] Anshelm, *Mellan frälsning och domedag*, p. 106 ff; Sahr, 1985, pp. 20-21.
[55] Lewin, pp. 315–317. Although there was also strong internal nuclear opposition within the Social Democratic Party. See Anshelm, *Socialdemokraterna och miljöfrågan*, p. 47.
[56] For a discussion of these two visions of society, see e.g. Anshelm, *Mellan frälsning och domedag*, p. 122 ff, 183.

## The Natural Gas Committee

Over the whole period from 1968 to 1973, steps were taken towards developing a national natural gas sphere. The state commission had clearly established there was a need for an institutional body to coordinate the gas issue and develop a regulatory framework, and the creation of Östgas AB furthered this agenda.[57] Nevertheless, there was still a lack in coordination between gas actors. Therefore the Swedish Coordination Committee on Natural Gas (Naturgasdelegationen) was created. It gathered representatives from ministries involved, (mainly the Ministry of Industry), interest groups and industries, and the existing gas companies, Sydgas AB and Östgas AB.[58] The delegation was considered a committee under the Ministry of Industry, but never received any special directives, as most committees commonly do.[59] Instead, its tasks were decided through "discussions between state and private natural gas interests".[60] Its explicit goals were to "coordinate Swedish efforts to investigate and negotiate natural gas importation to Sweden".[61] The committee did not have any decision-making power, but was to function as a contact point, as well as prepare the groundwork for the Ministry of Industry by providing basic data and information. This information could then be used by the Ministry to formulate goals for the Swedish natural gas development and the means to achieve those goals. It was clearly stated, however, that all commercial activity would still be dependent on decisions within companies, whether owned by a state institution, a municipality or private interests.[62] This meant that Östgas AB and Sydgas AB had the principal responsibility for their respective commercial projects.

Between 1973 and 1976, the Natural Gas Committee compiled material regarding the problems and opportunities connected to natural gas trade. One of the main problems they studied was what they called the price gap problem, an issue that had already been raised by the earlier commission. The gap in question was the difference between the payment capacity of the Swedish market and the price asked for by a presumptive seller.[63] This price-gap was a problem in Sweden due to the need for large investments in a completely new infrastructure, but also due to the late arrival of natural gas on the Swedish energy market (and, in the words of the Erik Grafström, competed "with all

[57] SOU 1974:64, *Energi 1985-2000: Betänkande angivet av Energiprognosutredningen*.
[58] Memorandum 'Diskussions PM som underlag för upprättandet av samordnat arbetsprogram på naturgasområdet', 16 November, 1973, Naturgasdelegationen, SE/RA/322983/1/1/1; Members came from the Gas Association, energy companies, Gränges, Uddeholm AB, Statsföretag and Nynäs Petroleum.
[59] Riksdag reports on commissions 1974, I:22, p. 492-493; Riskdag communication 1975:4 I:20, p.597-598; Riksdag communication 1975/76, I:13. pp. 490-491; Riksdag communication 1976/77, I:7, p. 315
[60] Memorandum, Thyberg, 11 April 1973, Naturgasdelegationen, SE/RA/322983/1/1/1.
[61] Riksdag reports on commissions 1974, I:22, pp. 492-493.
[62] Minutes from constitution meeting for the Swedish Coordination Committee on Natural Gas, 2 May 1973, Naturgasdelegationen, SE/RA/322983/1/1/6.
[63] Report 'Prisgapsproblematiken vid svensk rörimport av nordsjögas, slutrapport', Ångpanneföreningen, Naturgasdelegationen, SE/RA/322983/1/3/3.

other energy fuels.") For example, electrical infrastructure had replaced the town-gas grids in most places, and electricity was so cheap natural gas had problems to compete.[64] The only fuel that could be easily replaced by natural gas was heavy fuel oil. Swedish population density is also low, and the market was therefore a thin one, which is a condition which does not benefit a natural gas structure. In addition to that, Sweden competed with many other countries that already used natural gas and had changed their market and tax structures accordingly. Establishing a Swedish market was therefore likely to demand a great deal of capital. A secure market over a long time frame had to be ensured in order to start introduction. External future development could affect the price gap. A sharp increase of the oil price, for example, would favour Swedish gas import. It would mean a relative decrease of the price gap, compared to other countries. If the price of heavy fuel oil would change relative to other oil products, the buying power of the Swedish market would be closer to British and continental ones. The possibility of transferring gas from Norway, for example, could also have a positive effect on the price gap.[65]

Another issue that occupied the Natural Gas Committee was the financing of a natural gas pipeline, and the extent of state involvement. Three ways of financing were discussed. The first one was through commercial external loans from a commercial prospecting company. This was the kind of arrangement used in the North Sea. While the formal security for these loans was the delivery contracts, in actuality, the real security was the resources of the companies behind the project. The second possibility was that the interested parties financed the projects themselves. The third was financing through state loans. In that case it was considered important to look at the size and conditions for such financing, as well as assess the socioeconomic advantages of natural gas import.[66] Grafström commented that "for us [the Gas Committee], a state financial support has to be seen as a basic condition for going through with natural gas introduction."[67] State subsidies as well as a restructuring of the energy tax to the advantage of natural gas were also ways to overcome the price gap. The main question remained, however: whether natural gas would mean enough positive externalities so as to induce the state to support it.[68]

[64] Report 'Några punkter om eventuella ekonomiska problem i samband med eventuell naturgasimport från Sovjet' from Grafströmt to R. Johansson, 18 October 1973, Naturgasdelegationen, SE/RA/322983/1/1/3.
[65] Report 'Naturgas- prisgapet; tänkbara utvecklingsmöjligheter ', 4 February 1974, Naturgasdelegationen, SE/RA/322983/1/1/3.
[66] Report 'Naturgas- prisgapet; tänkbara utvecklingsmöjligheter ', 4 February 1974, Naturgasdelegationen, SE/RA/322983/1/1/3; Report 'Prisgapsproblematiken vid svensk rörimport av nordsjögas, slutrapport', Ångpanneföreningen, Naturgasdelegationen, SE/RA/322983/1/3/3.
[67] Memorandum 'Naturgasfrågan – organisation', 8 September 1975, Naturgasdelegationen, SE/RA/322983/1/1/3.
[68] Memorandum 'Naturgasfrågan – organisation', 8 September 1975, Naturgasdelegationen, SE/RA/322983/1/1/3; Minutes from Coordination Committee meeting 22 November 1973, Naturgasdelegationen, SE/RA/322983/1/1/6.

One of the main socioeconomic goals to be gained with the help of natural gas was the decrease of sulphur emissions. Erik Grafström argued that the state should step in financially to bridge the price gap since it was a cost worth taking in order to achieve this decrease. The Natural Gas Committee was involved in the discussion on whether sulphur emissions should be taxed or regulated through its participation in several commissions of inquiry on the issue.[69]In a 1976 comment to a state commission concerning ways of counteracting the effects of sulphur emissions, however, the Ministry of Agriculture stated that the possibilities of introducing natural gas to Sweden were extremely insecure and that natural gas could not at that time be considered a factor in decreasing fuel oil use.[70] Both the Natural Gas Committee and Statsföretag, the coordinating body for Swedish state-owned companies, argued against the Ministry on this issue. The Committee pointed out that the energy carrier favoured by the Ministry of Agriculture, nuclear power, depended on the same kinds of energy political positions and investments as natural gas.[71]

The Natural Gas Committee maintained the contacts with other Nordic actors established by the state Commission. One of the Committee's roles was "a coordination function taking its starting point in both international and national conditions and activities in the natural gas area."[72] In the spring of 1973, they were active in negotiations regarding natural gas deliveries from the Frigg field, competing with Germany and Great Britain.[73] They also participated in Nordic Council commissions in 1974 and 1975.[74] Three different projects were investigated at this time, and the first one regarded gas from the Arctic area of the Scandinavian countries and the Kola Peninsula transferred either through Sweden to the Western European grid or by LNG transport.[75] The second investigation concerned the construction of a transmission grid from the North Sea to Norway, through Oslo and onwards to Sweden and the third, the transport of gas from the North Sea to the West Coast of Northern Jutland (Denmark) for further transportation to the Swedish West Coast and possibly

[69] Referal to the SOU 1974:101, *Miljökostnadsutredningen: Begränsning av svavelutsläpp – en studie av styrmedel,* Naturgasdelegationen, SE/RA/322983/1/1/4.
[70] Referral from the Ministry of Agriculture, DS Jo 1976:2.
[71] Per Sköld and Ernst Person (Statsföretag) to Gornitzka, 5 May 1976, Naturgasdelegationen, SE/RA/322983/1/1/17; Grafström to the Ministry of Agriculture, 14 May 1976, Naturgasdelegationen, SE/RA/322983/1/1/4.
[72] Memorandum 'Diskussions PM som underlag för upprättandet av samordnat arbetsprogram på naturgasområdet', 16 November, 1973, Naturgasdelegationen, SE/RA/322983/1/1/1.
[73] Naturgasdelegationen, SE/RA/322983/2/2/11.
[74] Nordic Council report 'Nordisk energisamarbejde: Baggrund og forudsætninger. Rapport fra Embedsmandskomiteen forindustri-og energipolitik', Stockholm, 1975.
[75] Report 'Preliminær udredning af mulighederne for naturgasudnyttelse – Herunder for industrielle formål – i Nordkalotområdet baseret på en eventuel ilandføring fra den norske kontinentalsokkel', Naturgasdelegationen, SE/RA/322983/3/4.

Norway.[76] The three projects were discussed in a Nordic Council commission in the spring of 1976. While pointing out that the results could only be seen as estimates, the investigators nevertheless claimed that the three projects could be implemented. They argued that Nordic coordination in the planning and construction of a natural gas supply would much improve the competitiveness and the security of energy supply for private users in the Nordic countries, but that each country would have to take individual measures to prepare for the introduction of natural gas.[77]

The various natural gas projects discussed in parallel were seen as parts of a larger future pipeline system. Thus, even though supply risks would be high if the Swedish natural gas supply came only from the Soviet Union, this risk would soon decrease when the pipeline would connect to a Nordic grid, and continue down to the rest of Europe.[78] The Natural Gas Committee even noted that the characteristics of natural gas trade with pipeline delivery through long-term contracts with stable producers meant less of a risk of a supply cut than did oil.[79]

Another part of the international connections consisted of an LNG group tasked with investigating the possibilities of LNG import to Sweden. They maintained contacts of varying levels of intensity with Libya, Nigeria (through Phillips Petroleum), Algeria and Iran. Claes Lindgren and representatives from Vattenfall, Östgas, and the Ministry of Industry were assigned by the Minister of Industry to travel to Iran and discuss possibilities of importing Iranian LNG in early 1976.[80] The Algerian discussions were the most advanced ones, and I will return to those in the next chapter.

## From 50% to 51%

The intense activity within the natural gas sector at the end of the 1960s and early 1970s resulted in a plethora of actors and institutions in an area that earlier did not exist in Sweden. However, having too many actors can be counterproductive. For example, a representative from Ruhrgas expressed confusion at the multitude of natural gas actors in Sweden during negotiations

[76] Nordic Council commission 'Preliminary investigation of the possibilities to establish a Nordic transmission grid for natural gas based on transport to Jylland or Møre', NU 1976:1, Naturgasdelegationen, SE/RA/322983/4/5; Jensen to Gornitzka, 2 September 1975 Naturgasdelegationen, SE/RA/322983/4/5; Persson to Jensen 29 September 1975, Naturgasdelegationen, SE/RA/322983/4/5.
[77] NU:1976:1, *Præliminær udredning af mulighederne for etablering af et nordisk transmissionsnet for naturgas baseret på ilandføring i Jylland eller Møre*, p. 57 ff.
[78] See e.g. Memorandum 'PM angående Östgasprojekt 2.5 gm$^3$', Naturgasdelegationen, 19 June 1975, SE/RA/322983/1/1/3.
[79] Minutes from constitution meeting for the Swedish Coordination Committee on Natural Gas, 2 May 1973, Naturgasdelegationen, SE/RA/322983/1/1/6.
[80] Memorandum 'PM rörande överläggningar i Iran om naturgasleveranser', Sjöström (the Swedish Ministry of Industry), Naturgasdelegationen, SE/RA/322983/5/6/2.

regarding the Frigg natural gas field.[81] The Natural Gas Committee was aware of this problem and started lobbying for the creation of a state natural gas company. The state Commission of inquiry had already raised the issue, and discussions in the Natural Gas Committee, Sydgas AB, Östgas AB and the Gas Association showed there was a consensus among the actors that an effort on a national level would be necessary to carry out such a natural gas project. The argument for state involvement was based on the need for laws and regulations making natural gas a fuel that would be competitive on the market, and for capital investment loan guaranties.[82] The Natural Gas Committee established that two basic conditions had to be fulfilled for the natural gas issue to be pursued in Sweden: economic support from the state and/or public sector and a more permanent organisational form.[83]

The 1973 Social Democratic energy bill had postponed the issue of a national gas company to an unspecified future date. By 1976, however, the time seemed ripe, and a bill on energy policy introduced by the Social Democratic government contained a proposal for such a company. Minister Johansson agreed with the Natural Gas Committee that in order for commercial interests to be interested in a natural gas project, state support was needed.[84] He also presented a proposal for a state limited company owned by Vattenfall and a subsidiary of the Gas Association. Following the suggestion of the Committee, Vattenfall and the Gas Association had already entered into a consortium agreement in early 1976, which would require approval by the Riksdag.[85] The tasks of the new company included investigating the conditions for gas projects and preparing proposals for submission to the government and Riksdag regarding the purchase, sale, transport and storage of natural gas.

In 1976, when Swedegas AB, as the new company was called, was created, it took over a majority of the shares in Sydgas AB, and incorporated Östgas AB. The cost of the company was covered by financial support from Vattenfall and the Gas Association in proportion to their ownership, in the event company profits would not be sufficient. Vattenfall owned 51% and the Gas Association 49% of the company.[86] In Östgas, Vattenfall had owned 50%, and in OPAB only 25%. The extra 1% may not seem much, but it made a difference with regard to the responsibility assumed by the state as the majority owner. Tony Hagström from the Ministry of Industry became chairman of the board, thus ensuring a strong presence from the Ministry. The board also had a strong representation

[81] Minutes from negotiations with Ruhrgas in Hamburg about Frigg, 14 May 1973, Naturgasdelegationen, SE/RA/322983/2/2/11.
[82] Grafström and Ekberg to the Ministry of Industry, 28 May 1975, Naturgasdelegationen, SE/RA/322983/2/2/4.
[83] Memorandum 'Naturgasfrågan – organisation', 8 September 1975, Naturgasdelegationen, SE/RA/322983/1/1/3.
[84] Govt. Bill 1975/76:124,'Om den statliga verksamheten på oljeområdet, m.m.', p. 28.
[85] Govt. Bill 1975/76:124, pp. 2, 28.
[86] Govt. Bill 1975/76:124, p. 29.

from the power sector, with representatives from Sydkraft, Vattenfall and Stockholms Energiverk. All the employees of Swedegas were taken from the Gas Association, with Claes Lindgren as CEO.

This format for a natural gas company was not accepted by everyone. In their response to the bill, the Liberal Party emphasised that although they favoured the introduction of natural gas, due mainly to its environmental characteristics and the desire to spread supply risk, they were sceptical to the role of Vattenfall in the new company. The argument in the government bill was that Vattenfall was "a potential large consumer of natural gas, and is well suited to represent the interest of the state in the area". The Liberal Party did not share this opinion, asserting that the interests of Vattenfall lay primarily in the development of hydropower and nuclear power, and the company had not expressed any wishes to use gas for power production. They did not object to Vattenfall because they objected to state involvement in natural gas. Instead they saw the bill as a step forward and pointed out that the Riksdag should underscore the need for state action in order to finance the introduction of natural gas. In their opinion the government had hesitated regarding gas, and therefore opportunities had been lost.[87] The government, however, endorsed the role of Vattenfall in the new company, and concluded that their interest as a power producer would be broad enough to cover the whole register of energy sources.[88] One possible reason for Vattenfall to enter the gas business was that given the competition from Sydkraft, which actively worked to promote natural gas, Vattenfall did not want to be left behind.[89] In the final decision in the Riksdag three members, one from the Liberal Party and two from the Moderate Party registered their dissent, emphasizing that Vattenfall was not a suitable choice to represent the state in the gas sphere, and that more forceful actions had to be taken by the government to enable a rapid introduction of natural gas in Sweden.[90]

The creation of Swedegas can be seen as a part of a more holistic energy policy practiced by the Social Democratic government after the oil crisis of 1973-74. Jan Thyberg, who participated in the process of forming Swedegas and other companies of the same kind, also refers to a model for creating companies that existed before the oil crisis, with AB Atomenergi (1947) as a first example, where there was a commercial interest in a field, but state financing was needed in order to ensure future commercial gain.[91]

As mentioned in Chapter 3, strong Swedish post-war economic growth resulted in flourishing Swedish commercial and industrial sectors. The 1970s, on the

[87] Motion 1975/76:2356, p.7.
[88] NU 1975/76:44, p. 21.
[89] Torkel Ösgård, Interview, 30 May 2008.
[90] NU 1975/76:44, p. 30.
[91] Jan Thyberg, Interview, 15 December, 2008.

contrary, saw the beginning of a downturn, caused by factors such as the first oil crisis in 1973. At the same time, the fight for power among the Swedish political parties was intensifying, and resulted in a coalition of non-socialist parties gaining a parliamentary majority in the elections in the autumn of 1976 for the first time in 44 years.[92] As mentioned above, the challenge to nuclear power had started in the early 1970s, and the nuclear debate was intense before the elections, which took place around the same time as Swedegas was created. The development of a natural gas sphere occurred during this discussion, and the actors involved in natural gas were also involved in the general debate. For many of them, natural gas importation was seen as a possible solution to some of the problems occurring within the energy sphere at this time. However, despite the creation of Swedegas and the other state-coordinated efforts to study natural gas, nuclear power and the oil crisis were the energy issues that were most debated politically, and natural gas did not yet become central in this debate. Natural gas was not considered in relation to nuclear power, but as a replacement for oil.

## Concluding Remarks

Thus, during the late 1960s and early 1970s both a build-up of knowledge about the natural gas market, and the creation of organisations to accommodate a future introduction of natural gas in Sweden took place. Though early interest flourished within the industry (as seen in Chapter 3) as well as within the Gas Association and the Academy of Engineering Sciences, soon arenas for cooperation surrounding natural gas emerged as state initiatives, such as the state commission on pipeline transport of oil and gas and the Natural Gas Committee. These meeting places were crucial for the development of a Swedish natural gas sector, and made it possible for individuals from different organisations and companies to learn about natural gas and develop coalitions. The connections and overlaps between the different arenas become clear when considering who occupied the various positions. Negotiations with the Soviet Union were handled by Östgas and the Ministry of Industry. The CEO of Östgas AB, Lennart Johansson from the Gas Association, was also one of the main members of the Natural Gas Committee, and Erik Grafström, who represented Vattenfall in Östgas AB was also a member of the committee for Soviet import and the Natural Gas Committee. Overlap was unavoidable, as illustrated by these examples, with several actors from the business community holding key positions in different institutions. Another example is Claes Lindgren, the head of both the Natural Gas Committee and the Gas Association, and a member of the committee for Soviet import as well as the earlier state commission.

[92] Stig Hadenius, *Svensk politik under 1900-talet: Konflikt och samförstånd,* 4th edn (Stockholm: Tiden/Athena, 1996). p. 161.

The messy structure of the early natural gas sphere in Sweden shows that there were many interested parties, but no one seemed to be willing to take the financial responsibility on what was considered to be an uncertain market. In the early 1970s, the government helped create state-owned companies such as Östgas AB in order to support a possible deal with the Soviet Union, but no state institutions assumed majority ownership, and the Gas Committee, was, at least in theory, strictly limited to investigating and planning. The later decision to create Swedegas showed a more firm commitment, but by then the Soviet option was already out of the picture, and other import options were considered too risky. In the case of natural gas, the process also seems to have suffered from the slowness endemic to the corporate state. As we saw in Chapter 3, the Soviet Union complained that Sweden was taking too long with its decision, waiting for the study commission to finish its work. This was not unique to Sweden. The Soviets complained about the Finns and their lengthy commissions, as well, and Phillips Petroleum expressed irritation over the fact that all the commission work in both Norway and Denmark was delaying the development of the North Sea resources in the early 1970s.[93]

The development process in the Sweden influenced the transnational dealings to a large degree. This can also be said about the other countries involved in discussions regarding a natural gas grid in the Northern European area, the Soviet Union (as seen in the last chapter), Denmark and Norway. Actors had to engage in the double endeavour of building up a national natural gas sphere, and presenting a unified front outward towards possible sellers and/or buyers. This made it more difficult to agree about a common course of action.

The biggest risks seen by most of the actors were those defined by Miller and Lessard as market risks. The price gap problem showed that the Swedish market was problematic for the new fuel, which was also the main reason stated by the Government for not importing gas. The magnitude of the price gap problem, however, depended on the factors brought into the calculation. It could be argued that if socio-economic and environmental aspects were taken into account, the price gap problem could be overlooked. Even though natural gas importation would not lessen Swedish dependency on imported fuels, it was still considered a way to diversify Swedish energy supply and allocate risks differently in the context of the oil crisis.[94] It is clear, however, that natural gas was not the centre of the energy debate at this time. Oil was still the priority, and natural gas was mainly advocated in the context of the oil problem. Another important energy issue was nuclear power, but natural gas was not discussed in the context of nuclear issues during this period.

[93] UROG minutes 4 June, 1971, SE/RA/322576 A I; UROG Minutes , 11 December 1970, SE/RA/322576 A I.
[94] Motion 1975/76:2356, p. 6; Motion 1974:332, p. 5.

In summary, it is clear that many actors in Sweden saw an opportunity in the natural gas business. On the other hand, a gas pipeline deal is risky, and it could be argued that Swedish conditions were not ideal for such an undertaking. Even though natural gas was becoming increasingly popular on the continent, the Swedish market looked different. Further, the chaotic business of building up a new infrastructure that had to connect to several sellers while fitting into the existing Swedish energy system was not an easily navigated process. A myriad of fictional pipelines were being collectively imagined according to the varying conditions that applied to each actor in each country, and in each negotiation between the actors. It would take until the end of the 1970s before any of these negotiations resulted in a natural gas contract. We will follow that process in the next chapter.

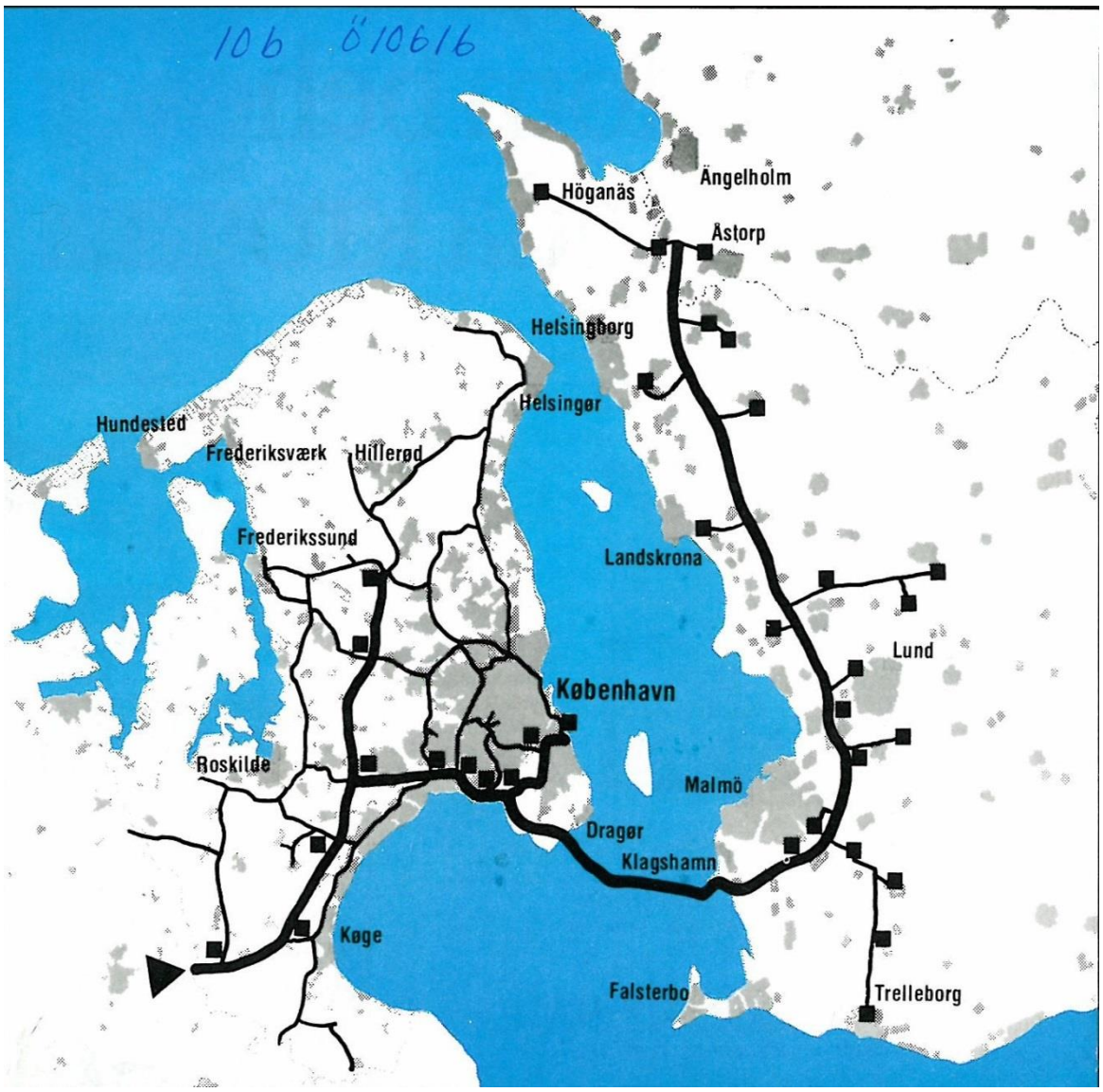

Fig. 7: The original Sydgas grid. Map from the cover of *Gasnytt*, 3(1983)

# Chapter 5: Negotiating With Neighbours: The Sydgas Deal

In 1976, Sweden had a national natural gas company, as well as a store of knowledge in the natural gas area and international contacts with possible gas suppliers. Swedegas started by considering two projects already discussed in the Natural Gas Committte: LNG supplies from Algeria, and pipeline supplies from Germany. The Swedish market was considered a problem, however, and despite the lofty ambitions and optimism of Swedegas CEO Claes Lindgren, the projects had a hard time finding supporters.[1] Despite this, in 1979, negotiations with Danish actors took a new turn, and a natural gas contract between Sweden and Denmark was signed in March 1980. What caused this turn of events?

## Continuing Negotiations

In the late 1970s, several of the natural gas projects that had evolved in discussions since the 1960s were still being considered. Two projects were of special interest: The Västgas project and the Sydgas project. The Västgas project concerned LNG from Algeria that was to be landed at an LNG-terminal in Landskrona in Southern Sweden.[2] After gaining independence in 1962, the Algerian government made large investments in gas export infrastructure throughout the 1970s, and in 1978 Algeria was exporting 10 bcm/year of LNG to Europe and the United States.[3] In 1974, Sweden signed a general agreement with Algeria on economic, industrial, scientific and technological cooperation, which included energy issues as well as exchanges in the fields of chemistry and petro chemistry.[4] Initial contact with the Algerian gas company, Sonatrach, had already been made by the Natural Gas Committee at the World Congress on LNG held in Algiers that same year.[5] The Committee's LNG group, mentioned in the last chapter, considered Algeria the most promising LNG import candidate. A first meeting between Sonatrach and members of the group was held in January 1975, and negotiations continued up until April 1976.[6] At that time, the contact was broken due to differences in positions regarding responsibility for sea transport. The countries parted ways amicably, and with promises to continue the discussions when Sweden was ready to enter into a deal.[7] Later, these discussions were resumed and Swedegas and Sonatrach signed a general agreement in October 1978 for deliveries of 1.7 bcm/year starting in 1985.[8]

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[1] Sven Bergquist, *De heta åren: En rapport från insidan* (Stockholm: Timbro, 1985), pp. 291–292.
[2] Govt. Bill 1978/79:115, 'Om riktlinjer för energipolitiken', p. 151-152
[3] Victor, Jaffe and Hayes, pp. 52–53.
[4] Agreement 'Avtal om ekonomiskt, industriellt, vetenskapligt och tekniskt samarbete mellan Sverige och Algeriet', 15 November 1974, Naturgasdelegationen, SE/RA/322983/5/6/2.
[5] Persson to Gornitzka, 6 May, 1976, Naturgasdelegationen, SE/RA/322983/5/6/2; Minutes och correspondance reg. Sonatrach, Naturgasdelegationen, SE/RA/322983/5/6/2.
[6] Minutes och correspondance reg. Sonatrach, Naturgasdelegationen, SE/RA/322983/5/6/2.
[7] Tarakli (Sonatrach) to the Swedish Gas Association, 31 January 1976, Naturgasdelegationen, SE/RA/322983/5/6/2; Gornitzka to Lindgren 5 March 1976, Naturgasdelegationen, SE/RA/322983/5/6/2; L. Johansson to Gornitzka, 28 April, 1976, Naturgasdelegationen, SE/RA/322983/5/6/2.
[8] Govt. Bill 1978/79:115, pp. 151-152.

One important component of the Västgas deal was LNG tankers manufactured by Kockums, Sweden's largest naval yard.[9] The 1970s had been a hard time for many industries, and in Sweden, the naval industry had suffered a number of reverses. In the first part of the 20th century, Sweden had a prosperous shipyard industry, but during the 1960s signs of incipient problems were showing, as a result of increased competition from Japan. Swedish shipbuilding companies specialized on tankers, and the reduced need for oil transports after the oil crisis also took its toll, as did structural problems in the industry. Even though the climax of the crisis took place in the mid-1970s, a restructuring of the whole naval industry started in 1977 with the institution of a state shipbuilding company, and this restructuring continued over the years to come. Several of the large shipbuilding companies went bankrupt or were nationalised.[10] Kockums was one of the few companies still engaging in business, and the possibility of a large project, such as constructing LNG-tankers, was a tempting prospect. From an employment point of view it was also a good idea. Kockums had previously tried to launch LNG imports from Qatar, and even gained the support of the then Prime Minister Thorbjörn Fälldin, but that project was ultimately not considered economically viable.[11]

Another deal that looked promising was a Sydgas AB agreement with Ruhrgas concerning natural gas deliveries to Sweden that Rurhgas would, in turn, buy from the Norwegian Ekofisk-field. In addition to the planned deliveries of 1.2 bcm/year by Ruhrgas, it also included a co-owned natural gas pipeline from Emden, where the natural gas from Ekofisk came to shore, to the German-Danish border.[12] A company called NORDGAT, jointly owned by Swedegas and Ruhrgas, was formed in order to construct this pipeline. The gas was to be transported through Germany and Denmark across Öresund to Malmö, into a network in Sweden stretching from Malmö to Halmstad, possibly with a spur to Bromölla.[13] Ruhrgas and Swedegas concluded a general agreement in September 1978 including the condition that the deal would not be complete without the approval of the Swedish Riksdag before 30 June 1979.[14] Another condition for the Sydgas deal was the concluding of an agreement with Denmark regarding transit through the future Danish natural gas network.[15] This meant that Swedish actors to a certain degree were dependent on the construction of a Danish natural gas network, and this issue was not yet finally

[9] Govt. Bill 1978/79:115, p. 152.
[10] Lars O. Olsson, 'Offshore som livboj: Varvskrisen och försöken till omorientering, 1974-1985', in *Den konstruerade världen: Tekniska system i historiskt perspektiv*, ed. by Pär Blomkvist and Arne Kaijser (Stockholm: Brutus Östling Bokförlag Symposium, 1998), p. 209 ff.
[11] Bergquist, pp. 293–295.
[12] Govt. Bill 1978/79:115, p 150.
[13] Johansson, *Swedegas AB 1976-1986,* p. 15.
[14] Govt. Bill 1978/79:115; 'Avtal med Ruhrgas undertecknat', *Gasnytt* 3/78, pp. 4, 12-13, 15
[15] Govt. Bill 1978/79:115, p 150.

decided in Denmark. I will return to the issue of the Danish natural gas grid later in the chapter.

## Swedish Rejection

As mentioned in the previous chapter, the nuclear issue was high on the agenda in Sweden during the 1970s. The Riksdag elections in 1976 were preceded by an ever more intense debate on nuclear power, which in the end decided the election. The Social Democratic Party could not form a government for the first time in 44 years, while the leader of the Centre Party Thorbjörn Fälldin, having promised to phase out nuclear power, became prime Minister over a coalition of non-socialist parties that included the Liberal Party and the Moderate Party. The nuclear debate was not over, however, as the other parties in the coalition did not share Fälldin's opinion in this matter. This led to a conflict causing Fälldin and the Centre Party to leave the coalition in October 1978, while the Liberal Party formed a minority government with Ola Ullsten as Prime Minister. This event also deprived the government of its main proponent of natural gas.[16] This situation changed again in the elections in 1979, when Fälldin was reinstated as Prime Minister in a similar coalition government.

Before that, however, Ullsten's government presented an energy bill, rejecting both the Danish-German and the Algerian projects. The bill cited several reasons for the rejection. First of all, Sweden was not considered to be an appropriate country for the introduction of natural gas for three reasons: excessively long transports from sources, large initial investments, and a non-favourable market structure. The market base was especially insecure regarding the Algerian project.[17] Moreover, the deal with the Danes and the Germans was considered problematic due to its short time frame, 13 years. Further, there was a willingness to find suppliers that were located "closer nearby".[18] Even though the gas bought through Ruhrgas was Norwegian, it was considered a risk to buy it through a third party, in this case Ruhrgas. An introduction of natural gas based on the two projects at hand would mean too much of an economic risk, and the societal and environmental benefits were not considered of a great enough importance to justify state support. Besides financial reasons, security of supply was an important factor. Natural gas was considered unreliable, since there were no alternative routes or suppliers, and because, ultimately, several factors concerning the gas trade, such as control of supply, would be outside of Swedish control. In conclusion, it was considered unlikely that an introduction of natural gas would be of interest in the immediate future. The bill had been sent out for consideration, and only two among the actors consulted supported

[16] Lewin, p. 336.
[17] Govt. Bill 1978/79:115, pp. 154 -156
[18] A "nearby" supply, in this case, was interpreted by a member of the Swedish negotiation delegation to mean "primarily only Norwegian or Danish", Memorandum 'PM inför förhandlingsdelegationens sammanträde', 14 August 1979, Swedegas archive.

the project: the Swedish Environmental Protection Agency and the county administrative board in Kristianstad, one of the towns that would have been affected by the pipeline.[19]

The rejection of the two projects was a hard blow for Swedegas since the bill not only urged all activity connected to the projects to be phased out, but the interested parties in Swedegas were also urged to open a discussion regarding the future of the company in light of the expiry of the existing consortium agreement at the end of 1979.[20] This caused a local government comissioner in Malmö to ask in the Social Democratic newspaper *Arbetet* "Will Sweden, surrounded by natural gas importing and export neighbours, become a vacuum in this intense pipeline- and ship transportation of natural gas?"[21] Swedegas seemed to be heading towards an insecure future. Two developments, however, would prove to be crucial for Swedish natural gas introduction: the Three-Mile island accident and the introduction of natural gas in Denmark.

On 28 March 1979, an accident took place at the Three Mile Island nuclear power plant in Pennsylvania, in the United States. Over the following couple of days, the world's attention centred on the plant while engineers, investigators and others tried to make sense of the reasons for the accident, as well as estimate its potential consequences. The repercussions of this incident went far beyond radioactive contamination of the environment. It gave an extra push forward to the already highly active anti-nuclear movement, and put the nuclear issue high up on the political agenda in many countries. Sweden was no exception. One of the most important consequences of the Three Mile Island accident in Swedish politics was the decision to let a referendum decide the future of nuclear power in Sweden. Before this, the discussion regarding nuclear had mainly focused on how many nuclear reactors to build. Now, for the first time, the debate concerned a complete phase-out of nuclear power, and the referendum was set for one year later, in March 1980. Thus, this was to be a year marked by the nuclear issue in Sweden, as well as by another oil crisis and parliamentary elections in September 1979.

When the two natural gas projects were rejected in the energy bill, the accident had not yet taken place, and there was no referendum on the way. After the accident and the decision to have a referendum, the game changed. Since there was a moratorium on hydropower development and a willingness to decrease oil dependence, and since energy consumption was expected to rise, a perceived future gap in energy supply needed to be filled. Nuclear power had been seen by many as the solution to this problem, but now the future of nuclear was uncertain. Instead, natural gas became one possible energy solution. Further,

[19] Govt. Bill 1978/79:115, pp. 151, 154-156.
[20] Govt. Bill 1978/79:115, p. 156.
[21] 'Naturgas – nu!', Hans Rode, *Arbetet*, 27 February 1979.

only one day after the Three-Mile Island accident, the Danish Folketing took the final decision to introduce natural gas in Denmark, thereby giving Sweden the possibility to access a closer natural gas source, as called for in the energy bill.

Throughout the spring 1979, the energy bill was discussed among the political parties before the final decision to adopt it in June. During this discussion it became clear that a majority of the political parties still did not consider the two natural gas projects in question as viable options, but in view of the new developments in Denmark, all parties supported continued discussions with Danish actors with the aim of a more fruitful deal. The Liberal Party, which had hinted that Swedegas should be dismantled, was persuaded to change its position on this issue, and the company was allowed to continue its activity.[22] The Centre Party was the foremost champion for natural gas in this discussion, and argued that although natural gas might be slightly more expensive than oil, the higher price was worth paying for a better environment. Furthermore, the economic risk inherent in the two projects would be lower than government estimates, due to the increasing oil price, as well as a proposed tax on oil products.[23] The Centre Party representative, Olof Johansson, threatened to hunt the government with a "blowtorch fuelled by gas" unless it did all it could in order to support a connection to the European natural gas grid through Denmark.[24] The other political parties were more cautious in their arguments, but all agreed that natural gas could have a place in the Swedish energy system, on condition of nearby sources (preferably Nordic ones, such as Denmark) and a financially viable contract.[25] Thus, although the two natural gas projects from the energy bill were rejected in June, new discussions with Denmark were already on the horizon.

## The Danish Gas Project

By the end of the 1960s, Denmark was almost completely dependent on foreign energy sources, primarily on oil from the Middle East, but also on coal. The vulnerability of this supply situation was made clear during the Six-Day war in 1967, as well as during the oil crises of 1973/74 and 1979, and this became the root of a reorganisation of the entire Danish energy policy. Between 1973 and 1979, the different Danish governments (with Venstre, the Danish Liberal Party, in majority from 1973 to 1975, a Social Democratic majority from 1975 to 1978, and Venstre and the Social Democrats in coalition from 1978 to 1979) tried to develop a new energy policy, and the discoveries of natural gas in the Danish sector of the North Sea in the beginning of the 1970s introduced a new option for diversifying the energy supply. In 1972, Dansk Naturgas A/S (DNG) was founded to handle a possible future gas deal. It was set up as a limited liability

[22] Riksdag minutes nr 168, 6 June 1979, pp. 50, 55.
[23] Motion 1978/79: 2406, pp. 63-74; Riksdag minutes nr 168, 6 June 1979, p. 50
[24] Riksdag minutes nr 168, 6 June 1979, p. 50.
[25] Riksdag minutes nr 168, 6 June 1979, pp. 60, 89, 94, 109-110; Motion 1978/79: 2413, p. 20.

company, with the Danish state as sole shareholder. Later, the company was ordered to deal in oil as well, and the name changed accordingly to Dansk Olie og Naturgas A/S, (DONG).[26] All through the 1970s, the discussion regarding the restructuring of the Danish energy system continued, mainly focusing on nuclear power and natural gas. Although nuclear power was supported by a parliamentary majority, public opinion on nuclear power was turning more negative, and the possibilities of extracting commercially viable quantities of gas from the North Sea made natural gas an increasingly interesting option.

It was important to get to a governmental decision regarding the Danish gas before the end of 1978 otherwise DUC, which extracted the gas, could sell it elsewhere.[27] Politically, the issue was not an easy one and the Danish government, consisting of a coalition between Venstre and the Social Democrats, was divided regarding whether the natural gas should be used in Denmark, or sold abroad. [28] The Social Democrats argued that natural gas was the only fast solution to Denmark's energy problem. Nuclear power could not be in use before 1985 when the lack of oil would have become a problem.[29] Venstre, however, argued that Denmark should sell all their gas abroad, and use nuclear power as their base of energy instead.[30] Other members of the Folketing, the Socialist People's Party, the Left Socialist Party and the Communists, suggested that the government should be forced to ensure that the natural gas remained in Denmark.[31]

While the Danish energy debate was raging in 1978, negotiations started between DUC and DONG, concerning deliveries of natural gas.[32] DONG was at this time still quite a small company with only a few employees, with CEO Gerherd Jensen, being the key figure. He lobbied hard for the introduction of natural gas in Denmark, and was not afraid to make radical statements, regarding, for example, how Denmark's future would look unless the country could get away from its one-sided dependence on oil, as in this description:

> The larger part of Danish industry has been shut down. The standard of living is lower than in the 1930s. People have access to hot water only one day per week. The indoor temperature in hundreds of thousands of homes is below 17° C. Democracy has been replaced by dictatorship.[33]

[26] Mogens Rüdiger, 'The Natural Gas Controversy: The Introduction of Natural Gas in Denmark, 1972-1984', *Centaurus*, 41 (1999), 93–111, pp. 93, 97–99.
[27] Mogens Rüdiger, *DONG og energien* (Copenhagen: Handelshojskolens Forlag, 1998), p. 63.
[28] Hagen (the Swedish Embassy in Copenhagen) to Crawford (the Swedish Foreign Ministry), 16 November 1978, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[29] Memorandum 'PM om dansk energipolitik', Svensson (the Swedish Embassy in Copenhagen) to Rabaeus (the Swedish Foreign Ministry), SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[30] Hagen to Crawford, 16 November 1978, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[31] Hagen to the Swedish Foreign Ministry, 19 October 1978, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[32] Rüdiger, *DONG og energien*, p. 78.
[33] Svensson to Rabaeus, 21 March 1978, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.

In the fall of 1978, DONG partook in the negotiations between Swedegas and Ruhrgas, and Jensen pushed for a Danish transit solution.[34] Later, DONG and Rurhgas came to an agreement regarding deliveries of natural gas to Denmark during the first phase of the gas project.[35] These natural gas provisions could be transited through NORDGAT.[36] Although a connection to Sweden and Germany was not central to the Danish discussion, it was seen as a possibility, and the prospect that Sweden would pay for a part of the Danish pipeline was discussed.[37] Different places to land Danish gas in Sweden had already been discussed during the Nordic Council investigations in 1975-1976.[38] In the end of 1978, however, it was rumoured at the Nordic Council meeting in October that the Swedish government was going to make a negative decision with regard to the natural gas projects, and DONG then hesitated to continue negotiations with Sweden.[39] Claes Lindgren called Jensen to convince him that the rumours were not true, but to no avail.[40]

The DUC/DONG agreement became one of the basic pillars for the approval of the law establishing of a natural gas system in Denmark on 29 March 1979.[41] Negotiations between DUC and DONG were hard, and had to be concluded through mediating help from the Danish Minister of Commerce, Arne Christiansen (Venstre) in February 1979. The gas price was fixed at a higher rate than DONG wanted, and DONG also accepted a take or pay clause, meaning that they had to pay for the delivery even if they were unable to sell all of the gas. This was (and still is) quite common in natural gas contracts in order to secure a certain profit for the seller. This meant DONG was tied up to a price level that had to be considered when selling the gas to a third party. This price level, according to Danish historian Mogens Rüdiger, was "on the expensive end of the European scale."[42]

## Negotiating Danish Gas

Throughout the spring of 1979, Sydkraft was in touch with the Danish Ministry of Finance and DONG, which were both enthusiastic about selling gas to

[34] Jensen to Swedegas, 25 August 1978, Swedegas archive.
[35] Mogens Rüdiger, *Energi og regulering: Energipolitisk regulering og DONG A/S 1972-2004* (Köpenhamn: Handelshojskolan, 2007), pp. 75, 77.
[36] Press release from DONG, 23 March 1979, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[37] Hagen to Rabaeus, 3 April 1978, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[38] Jensen to Gornitzka, 2 September 1975, Naturgasdelegationen, SE/RA/322983/4/5; Persson to Jensen 29 September 1975, Naturgasdelegationen, SE/RA/322983/4/5.
[39] Minutes from meeting between Sydgas and DONG 6 November 1978, E.ON archive.
[40] Notes from telephone call between Gerhard Jensen and Claes Lindgren, 7 November 1978, E.ON archive.
[41] Rüdiger, *Energi og regulering,* p. 77.
[42] Rüdiger, 'The Natural Gas Controversy', pp. 100–101.

Sweden.[43] In May, Danish Prime Minister Anker Jørgensen visited Stockholm and confirmed opportunities for gas export to Sweden. Following this, a decision was made to re-start natural gas negotiations between Denmark and Sweden.[44] Arvid Persson remembers getting a phone call around that time from Lars Hjorth, who asked him to be present at a June meeting with DONG in Copenhagen. [45]

Two representatives from the Swedish Ministry of Industry, one from Sydgas AB, two from DONG, and three from the Danish Ministry of Commerce, attended this meeting, with the intention of informing each other of the present situation in each country, regarding the natural gas issue, as well as outlining possible expectations of natural gas cooperation. The Swedish representatives emphasised that there was a political and commercial interest in natural gas in Sweden, despite the recent decision of the Riksdag concerning the two earlier gas projects. The Danes pointed out they could not ensure future exports before the North Sea resources were properly evaluated; until then they were not interested in selling, and were even reluctant to give an option for later supplies. Instead, they were interested in transiting gas to Sweden, either from Germany with the help of Ruhrgas, or through a sea pipeline from a Norwegian gas field connected to the Danish one. The Swedish side emphasised that their biggest interest was buying Danish gas, and that without an agreement on cooperation with the Danish, they had no interest in a continued deal with Ruhrgas. Thus both parties assumed involvement with Ruhrgas, and in a way, this discussion can be seen as a direct continuation of the earlier ones with Rurhgas, the only difference being that Sweden now wanted Danish natural gas directly from Denmark, instead of Norwegian transited gas. The caution of the Danish group depended on the current project in Denmark and the need to prioritize their home market. Nevertheless, the two parties agreed there was an interest in a continuing cooperation, and also that due to the construction plans of the Danish pipeline-system, negotiations would have to be concluded before the end of the year so that the deal could be approved by the respective governments during the spring session. This was needed so the Danish gas grid could be dimensioned for transits to Sweden.[46]

[43] Memo from the marketing department of Sydkraft, 18 April and 22 May 1979, E.ON archive; Orander and Persson(Sydgas) to DONG, 29 May 1979, E.ON archive.
[44] Hagen to Tham and Hjorth (the Ministry of Industry), 15 May 1979, SE/RA/221/2210.03.3/H/H 53/19, dossier 5; Tennander (the Swedish Embasssy in Copenhagen) to Tham and Hjorth, 17 May 1979, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[45] Arvid Persson, interview, 31 March, 2008.
[46] Minutes from Danish-Swedish negotiations regarding natural gas cooperation, 12 June, 1979, 1561 Energistyrelsen 7001-7101; Arvid Perssons minutes from Danish-Swedish negotiations regarding natural gas cooperation 12 June 1979, E.ON archive. Jan Thyberg and Lars Hjorth from the Swedish Ministry of Industry and Arvid Persson from Sydgas Hagen Jorgensen, N.A Gaadegard and Ib Larsen from the Danish Ministry of Commerce and Gerhard Jensen and Anchor Meldgaard from DONG attended.

The day after this first meeting, the Danish Minister of Trade and Commerce Arne Christiansen commented on the project in an opening address at the Naturgas 79 conference.[47] He stated that even though he was positive with regard to the negotiation process, no gas would be sold to Sweden unless there was absolute certainty that the Danish need would be covered first. He wanted to assure his listeners that any negotiations with a foreign party would not endanger the indigenous natural gas supply. This echoed the position of the Danish negotiators. It is clear that the national politics in Denmark made it difficult for the Danes to make any more promises than they did.

No representatives from Swedegas were present at first, but beginning in August 1979, Swedegas joined and took over the lead of the commercial negotiations with DONG. The main participants from Swedegas were Ove Rainer (new chairman of the board of Swedegas), Claes Lindgren and Torkel Ösgård. Vattenfall, as the majority owner of Swedegas, was represented by Gunnar Gornitzka. Arvid Person, Gunnar Gornitzka and Claes Lingren had all negotiated gas with DONG earlier during the 1970s in their work on the Natural Gas Committee.[48]

Parallel with negotiations with Denmark, Swedegas re-negotiated the earlier Ruhrgas deal to get gas deliveries for transit through Denmark. Claes Lindgren tried to extend the timeframe of the project to meet an important Swedish objection to the Ruhrgas project as having too short a timeframe, but Ruhrgas neither wanted to change this, nor keep the agreement open to the end of the year, due to an increased use of gas at home. Instead, they wished to continue cooperating on NORDGAT. Denmark was also interested in entering NORDGAT, and in the end they took over most of the Swedish shares in the project, and Sweden became an observer, with the right to be present in the negotiations with Rurhgas.[49]

DONG also negotiated individually with Ruhrgas, in order to receive extra quantities to their project during an initial period before their own deliveries would start. This gas was a loan, which Denmark would return later on. When the Swedes persisted in wanting Danish gas, they were offered an opportunity to buy this "returned" gas from Ruhrgas, instead.[50] The Swedes persisted in wanting to buy gas from Denmark, however small the quantity, and insisted on an estimate of the costs for dimensioning the Danish land pipeline to accommodate Swedish deliveries. Sweden claimed to be ready to invest the money needed in order to assure Denmark that it would not incur additional

[47] Speech notes from Arne Christiansen, 13 June, 1979, 2 0035 Energiministeriet 14231.
[48] See Chapter 4. Ove Rainer had earlier been the chair of a large commission of inquiry regarding energy, and was at this time also the leader of the Swedish Postal Office.
[49] Minutes from negotiations with Ruhrgas in Essen 18-19 June 1979, Swedegas archive.
[50] Minutes from Danish-Swedish negotiations regarding natural gas cooperation, 24 August 1979, E.ON Archive.

expenses. This was, of course, a risk, but one they were willing to take, and which "would have to be weighed against other parts of the deal."[51] DONG then offered the Swedes an option for gas that Denmark would not use from the deliveries they had contracted with Ruhrgas from 1982-1985, in addition to the previously-mentioned "returned" gas.[52] Thus, in late October 1979, Sweden still had no promises of nearby Danish gas.

## Conflicts and Closures

In the autumn of 1979, Swedish elections saw Thorbjörn Fälldin reinstated as Prime Minister, again placing the natural gas-friendly Centre Party in the government in coalition with the Liberal Party and the Moderate Party. Meanwhile, a natural gas deal seemed to be slowly developing. Four agreements were negotiated in parallel, one between the Swedish and Danish governments, promising to support the future natural gas project, two commercial contracts between Swedegas and DONG regarding transfer and possible gas purchase, and one agreement between Swedegas and Sydgas AB, regarding the regional distribution of gas within Sweden. Actors from different spheres were present at some point in all levels of negotiation. As we saw, Arvid Persson was present from the very beginning with the ministry officials, and representatives from the ministries were often present during the "commercial" negotiations. Details of the contract were discussed between DONG and Swedegas, although always in contact with the ministries. In the same vein, negotiations regarding the government agreement were held in the presence of members of DONG and Swedegas. Despite numerous attempts, however, the Swedish delegation could not get the Danes to agree to deliveries of Danish natural gas, or even to grant an option to buy conditioned on sufficient quantities being found. Discussions regarded mostly the possibility of Swedegas getting deliveries from Ruhrgas, as well as the dimensioning of the Danish pipeline to accommodate Swedish deliveries.[53]

The Swedish negotiators had stated their willingness to invest in the pipeline, but not all members of the negotiation committee agreed with this. Swedish investment in the Danish network from the beginning was one of the main interests for the Danes, but Vattenfall's representatives were sceptical to this idea. Gunnar Gornitzka was of the opinion that a more thorough and realistic assessment of the possibility of natural gas import should be undertaken before

[51] Minutes from Danish-Swedish negotiations regarding natural gas cooperation 10 October 1979, E.ON archive.
[52] Minutes from Danish-Swedish negotiations regarding natural gas cooperation 10 October 1979, E.ON archive.
[53] Lindgren to the Swedish negotiation committe, 24 October 1979, Ministry of Industry material; Minutes from meeting with DONG 23 October 1979, Ministry of Industry material.

these decisions were made.[54] When it was suggested that NORDGAT be re-activated, and pre-investments be made in the planned Danish gas pipeline to "mark the serious Swedish interest in a more concrete way", Gornitzka wrote a report outlining the on-going negotiations and contextualizing them.[55] He argued that the Sydgas negotiations under the current circumstances were not more favourable than the earlier deals that were rejected by the Riksdag. He concluded that since the criteria of the government declaration concerning the older deals had not changed, there was no reason to believe that this new Sydgas project would be accepted by the government, when the previous projects had not been. Therefore, he saw no reason to invest in a Danish pipeline.[56] Gornitzka, however, does not seem to have garnered any support for this position. Why was the majority of the Swedish delegation so anxious to reach a deal?

One possible reason was the change of government in 1979, making it possible for the Centre Party to push for natural gas. In addition to this, energy issues, and especially nuclear power, were on top of the agenda, in view of the planned referendum on the matter in the spring of 1980. The energy political climate prevailing before the nuclear referendum was so infected that the Minister of Energy had to be someone considered neutral. Carl Axel Petri, a lawyer who had no previous experience in energy was chosen for the post. He was a liberal, but neutral in the sense that he did not belong to any political party. His appointment shows something about the tense situation surrounding energy questions at the time.[57]

In November, the conditions of the deal became more favourable for the Swedes, when the Danes finally agreed to ensure the supply for a small grid during a couple of years, on the condition that Sweden would first take the gas that DONG would be returning to Ruhrgas.[58] Thus, it was not until after five months of negotiations that the Danish side agreed to sell gas to Sweden at all. In the final contract the Danish agreed to supply 0.55 bcm of gas the first year, followed by 3.6 bcm the second year, and 0.9 bcm the third year. In 1988-1989 they would not deliver any gas at all (after that, the supply would stabilise

[54] Hagen to Tham and Hjorth, 15 May 1979, SE/RA/221/2210.03.3/H/H 53/19, dossier 5; Gornitzka to the Swedish negotiation committe, 5 November, E.ON archive.
[55] Gornitzka to the Swedish negotiation committe, 5 November, E.ON archive.
[56] Memorandum 'Analys av svenska gasimportmöjligheter', Gornitzka to the Swedish negotiation committe, 5 November, E.ON archive. I have not found the minutes of the meeting directly succeeding this letter, but the discussion was not mentioned later on.
[57] Carl Axel Petri, Interview, 29 May 2008. Petri describes one situation during his time as Energy Minister when he read in the press one morning that he was going to be relieved of his duties. Later, it turned out that nobody wanted his position, and he was asked to stay anyway. It seems that the Energy Minister post was not very attractive.
[58] Minutes from Danish-Swedish negotiations regarding natural gas cooperation, 19 November 1979, 1561 Energistyrelsen 7001-7101.

around 2 bcm/year).[59] This gap in supply would be filled by deliveries from Ruhrgas.[60]

This continuing ambivalence regarding the amount of deliveries the Danes could offer was connected to the fact that the Danish natural gas project entailed considerable conflict and discussion on a governmental and local level since the indigenous gas resources would be important for Danish energy security. In the light of this it may seem strange that DONG was interested in exporting gas to Sweden at all, especially at this early stage.[61] Nevertheless, there were several benefits to the project for the Danes. The expansion of the gas grid to Sweden meant not being at the far end of the gas grid, which was a risk in case of supply shortage. Denmark would also benefit from having several outlets for the gas, which was especially important due to the take or pay clause included in the contract between DONG and DUC.[62] Exporting gas also meant less pressure on DONG to sell all gas on the Danish market, and the risk of losing money to DUC decreased. This was also of value since DONG was continually criticised for its poor financial situation. Through the deal with Sweden (and another deal with Germany) DONG could meet this criticism and show a steady income stabilizing its finances.[63] For DONG, it was important to get the natural gas grid all the way to Copenhagen and to increase the market, something pointed out already during the negotiations where Lars Hjorth claimed that a transit deal with Sweden would mean a profit for DONG of 1 billion SEK.[64] The Swedes paying for part of the Danish grid would further help DONG cut construction costs.[65]

As the end of the year approached, negotiations intensified. Poul Nielson of the Social Democrats (who had won a majority in the Danish elections in October 1979), then newly appointed minister of energy in Denmark, underscored that it was of utmost importance for Sweden to come to a decision regarding its participation in a Danish pipeline before 1 December since that was when the pipeline dimension would be decided.[66] The more intense negotiations also meant escalating conflicts. According to the diary of Carl Axel Petri, negotiations stranded once on 16 December and again on 8 February 1980 when

[59] Contract 'Naturgaslevereringsaftale imellem Dansk Olie og Naturgas A/S og Swedegas AB', p. 8, Swedegas archive.
[60] In the end, this option was never used, since Denmark agreed to deliver a full supply to Sweden before the start of deliveries in 1985.
[61] Swedish sources have claimed that the Danes at this point did not have any great interest in selling natural gas to Sweden. They were supposedly too busy with their domestic affairs. Instead, they consider the project mainly a Swedish initiative. See Moberg, *Naturgas i Sverige*, p.83, Arvid Persson, interview, 31 March 2008, Jan Thyberg 15 December 2008. 2008-03-31.
[62] Poul Nielson, Interview, 1 April 2008; Rüdiger, 'The Natural Gas Controversy', p. 102.
[63] Mogen Rüdiger, e-mail, 2 April 2008.
[64] Minutes from the Swedish negotiation committee meeting, 14 August 1979, Swedegas archive.
[65] Rüdiger, 'The Natural Gas Controversy', p. 102.
[66] Hagen to Tham and Hjorth,7 November 1979, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.

the contracts were checked. In February, Ove Rainer had to fly down to Copenhagen to settle the argument.[67]

The most problematic issue in the negotiations was price. On 9 January, the parties agreed on a transport contract in which the transit cost was included for all gas deliveries, both Danish ones from the North Sea and non-Danish ones from Ruhrgas through the Danish grid. Only a few days later, the Danes claimed that the transport contract only pertained to non-Danish gas. This meant that transit costs for the Danish gas would be added to the gas price. On top of that, the Swedes considered the gas price at the current rate to be too expensive.[68] The second point of conflict was the small size of the deliveries. Carl Axel Petri expressed doubt they could get either Swedish Riksdag approval or support from the Swedish municipalities unless they had assurances of larger deliveries.[69]

The Swedes also had to decide whether they wanted to invest in the Danish pipeline or not. Torkel Ösgård did a risk assessment and calculated that if Swedegas invested in the Danish gas grid and never used the transiting, they would lose SEK 175 million (DKK 220 million). If the transit were used only for the currently planned Sydgas grid, they would lose SEK 125 million. If they ended up using all the transit rights, that is, if the Swedish gas grid expanded beyond the currently planned grid, no money would be lost. Regardless of whether Sweden only used the right for the current Sydgas grid, however, Ösgård considered that the benefit was likely to be many times greater than the risk, in the end.[70]

Three issues remained to be solved before the final negotiations in March: the gas price, the limited size of transport and delivery amounts, and DONG's right to damages if the DKK 220 million for investments in the Danish grid were not paid before 15 July 1980. The last point was considered unacceptable since the Swedish government could not let Swedegas agree to something that would demand financial support from the Riksdag, as the Riksdag might not later approve of the deal.[71] The price issue proved to be the most difficult one. Carl Axel Petri commented in his diary that the final negotiations were hard, and in the end Poul Nielson and Petri discussed the final *ören* (pennies) of the price

[67] Diary of Carl Axel Petri; Torkel Ösgård, Interview, 30 May 2008. Ösgård recalls there was a question concerning how much interest the Swedes would receive on the depreciation charges pertaining to the pipeline. He wanted 100%, but the Danes had started lower. It ended up being 80%, See 'Gas transportation contract between Dansk olie og Naturgas and Swedegas AB', 2 0035 Energiministeriet 14231.
[68] Memorandum, Thyberg, 18 January 10979, Ministry of Industry material.
[69] Minutes from meeting regarding Swedish-Danish natural gas cooperation between the Danish and the Swedish Ministers of Energy, 21 January 1980, Ministry of Industry material.
[70] Memorandum 'Ekonomiska konsekvenser av Sveriges deltagande i Danmarks gastransportnät', Ösgård, 4 February 1980, Swedegas archive.
[71] Memorandum 'Olösta frågor i förhandlingarna DONG-Swedegas', 11 February 1980, Ministry of Industry material.

privately.[72] Petri has said that he felt the pressure from his peers in the government to "just get the deal through", and Nielson knew this. Thus, Petri did not have a lot of room for manoeuvring, which he found frustrating.[73] The Danes had the deal with DUC in the shadows, and therefore had a limit they knew they could not go under. On the other hand, Nielson has admitted in an interview that they got a better price than expected.[74] The Swedish state representatives were still content to have reached a deal, and Petri wrote in his diary the day after the signing that there were some complaints from Sydgas AB, but that the press and his colleagues were happy about it.[75] The deal was signed, and the Swedes did get what they wanted in the end: the promise of nearby, Danish gas deliveries. The deal was approved by both parliaments in June 1980.[76] At the same time, the Swedish Riksdag approved the transfer of all stocks in Swedegas AB from Vattenfall and the Gas Association to Svenska Petroleum AB. The official reason for this reorganisation was to coordinate the Swedish policy for oil and natural gas purchase.[77] This was going to be the first in a line of ownership changes over time.

Negotiations had been fast; only one year passed from the initial meeting to the ratifications of the contract, compared with the lengthy earlier negotiations with the Soviet Union. This suggests that there was a strong will from one or both parties to finalize the negotiations. The political will to engage in a natural gas deal at this time might also have been accompanied by a view of the other party in the negotiation as trustworthy. In my interviews with actors who participated in the negotiations I asked why the government agreed to the Sydgas deal even though Denmark could not deliver enough natural gas to cover the Swedish market during the first years, several of them expressed confidence that the Danes would come through in the end.[78] Swedegas also thought that "the

[72] Thyberg to the Swedish Foreign Ministry, 12 February 1979, SE/RA/221/2210.03.3/H/H 53/19, dossier 6; Carl Axel Petris diary.
[73] Carl Axel Petri, Interview, 29 May 2008. There are different opinions as to why the last part of the negotiations was handled this way. According to Petri this was often done as a final part of a negotiation. Nielson has stated that it was a matter of showing political responsibility for the deal. The final price negotiations between Finland and the Soviet Union in 1971 were also held in private. Poul Nielson, Interview, 1 April 2008.
[74] Poul Nielson, Interview, 1 April 2008.
[75]Lars Hjorth, Interview, 11 December 2008; Jan Thyberg, Interview, 15 december 2008; Carl Axel Petri, Interview, 29 May 2008; Carl Axel Petri's diary.
[76] Folketingstidene (Danish parliament records), F.t beslutn vedr naturgassamarbejde, till beslutningsforslag B86, 1978/79, p. 413-414; Riksdagens minutes 1978/79 Nr 168, p. 3 ff.
[77] Govt. Bill 1979/80:170 'Om vissa energifrågor', p. 63-64. Urban Kärrmark has claimed that this change in ownership was due to the dissatisfaction of Vattenfall with the Sydgas deal. The disagreement surfacing in the autumn of 1979 would support this, but I have not found any explicit sources for this.
[78] Jan Thyberg, Interview, 15 December 2008; Carl Axel Petri, Interview, 29 May 2008; Lars Hjorth, Interview, 11 December 2008; Torkel Ösgård, Interview, 30 May 2008; Lennart Fredenberg, Interview, 31 March 2008.

conditions were promising" regarding future Danish supplies, despite the fact that they had not been given any formal guarantees.[79]

Poul Nielson remarked that there were good conditions for cooperation and negotiation with Sweden, since the countries share a common tradition of public management.[80] Arvid Persson and Lennart Fredenberg (from Sydgas AB, who was later responsible for the construction of the pipeline on the Swedish side) have also underscored the good relations and cooperation between the two states.[81] This is a view that appears in all of my interviews. There is a slight difference, however, in that the Swedes perceived the Danes as hard negotiators. Lars Hjorth explained that "Danes are not as afraid of conflicts as Swedes are."[82] Some of the Swedish informants perceive the Danish as being more experienced at negotiating gas deals. Jan Thyberg mentioned that Gerard Jensen had worked at Shell, and was a very good negotiator, compared to the Swedegas representatives who was finalising a deal for the first time. In Thyberg's opinion, the Swedish delegation consisted of amateurs (including himself), and he thinks they should have hired a consulting bureau.[83] Nielson, on the other hand, pointed out that both parties were new to these kinds of deals. According to him, he had a better negotiating position  not because he was more experienced, but because he had the whole strategy of introducing natural gas in Denmark, as well as the pressure of the take or pay clause to consider. The Swedish policy on natural gas was not as clear as the Danish one, which meant that the Swedish government was unsure of how to act in relation to the gas.[84] According to Michael Schultz who participated in the negotiations for DONG they "considered the project in southern Sweden in a way like a Danish province."[85] It was a new market to build up similar to the Danish one. Nordic cooperation seems to have been important to the negotiators, and the Sydgas project was seen as the beginning of something bigger.

## A "Nordic" Project?

The final introduction to the gas agreement was formulated

[79] Memorandum 'Sydgasprojetket: Kortfattat sammandrag av samt vissa kommentarer till viktigare bestämelser i det komplex av avtal som Swedegas AB och Sydgas AB föreslås ingå för införsel till och distribution av naturgas i Skåne', Orander, attachment to bord meeting minutes 9 June 1981, Swedegas archive.
[80] Poul Nielson, Interview, 1 April 2008.
[81] Arvid Persson, Interview, 31 March 2008; Lennart Fredenberg, Interview, 31 March 2008.
[82] Lars Hjorth, Interview, 11 December 2008.
[83] Jan Thyberg, Interview, 15 December 2008.
[84] Poul Nielson, Interview, 1 April 2008.
[85] Michael Schultz, Interview, 11 November 2008.

> [T]he government of Denmark and the government of Sweden have as an initiation of Nordic cooperation in the field of natural gas entered the following agreement.[86]

During a discussion with regard to wording of the government contract, the Swedish side insisted on the change from "*promotion* of Nordic cooperation" to "*initiation* of Nordic cooperation", to underline the common wish that the Sydgas project would involve other countries as well, later.[87] The beginnings of Nordic cooperation in the natural gas field have been outlined in earlier chapters, and it is clear that the thought of a connection to other Scandinavian countries, especially Norway, was part of a future vision of a Swedish gas grid expansion. As early as 1978, when DONG and DUC were negotiating, Danish actors were interested both in the possibility of Rurhgas transferring Norwegian gas to Sweden, and in direct cooperation with Norway on natural gas. The issue was also discussed at the Nordic Ministers' meeting in 1977. Before this meeting, former Danish Minister of Nordic affairs Ivar Nørgaard (Social Democrat) pointed out that Denmark would not be self-sufficient in gas in the future, and in the long run they would need Norwegian gas. Therefore, it was important that Sweden and Denmark showed a common interest in Norwegian gas during the meeting, otherwise Norway could "take the chance" to get out of the Nordic natural gas cooperation.[88] The wording implies that Norway had not been very interested in participating earlier.

During 1977 and 1978 the development of natural gas projects in the Nordic area were to a large extent intertwined. Parallel with their own bilateral negotiations, Denmark and Sweden both also negotiated with Norwegian actors, individually.[89] Thus, there were interests to be defended on all sides. The Danish negotiators wanted the Norwegian gas to be landed on the continent, not in Great Britain, and preferably through the Danish system.[90] They asked Swedegas for a statement that the Swedish company would work to ensure that future Norwegian gas deliveries be transferred through the Danish North Sea system, and not through Emden.[91] In the autumn of 1979, Swedegas discussed natural gas deliveries from the Statfjord field with Statoil, (and reported this to the DONG negotiation partners). The first point on the agenda when the Swedish and Danish energy ministers met to finalise the Sydgas contract was a report from a meeting between the Danish and Norwegian Prime Ministers a

[86] Govt. Contract 'Aftale mellem danmarks regering og Sveriges regering om naturgassamarbejde', 1561 Energistyrelsen 7001-7101.
[87] Minutes from Danish-Swedish negotiations regarding natural gas cooperation, 3 January 1980, 1561 Energistyrelsen 7001-7101.
[88] Nicklasson to Rabaeus and Danelius ,14 November 1977, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[89] Hagen to the Foreign Ministry, 28 September 1979, SE/RA/221/2210.03.3/H/H 53/19, dossier 5.
[90] Minutes from Danish-Swedish negotiations regarding natural gas cooperation, 10 October 1979, E.ON archive.
[91] Jensen to Lindgren, 25 August 1979, Ministry of Industry material.

few days earlier concerning possible solutions to the problem of getting Norwegian gas to shore.[92] A staff member at the Swedish embassy in Copenhagen pointed out that Norwegian gas delivery had become interesting again due to the Danish-Swedish agreement, and to the domestic Danish energy policy.[93] The Danish daily *Politiken* later claimed that a declaration of interest the Danish Prime Minister received from the Norwegian government regarding the possibility to build a "Nordic" pipeline to the coast, transiting Norwegian gas through Denmark, was one of the reasons as to why the agreement could be made with Sweden.[94]

## Concluding Remarks

The Sydgas deal was in many ways an exception. At the time when the pipeline was negotiated, the unstable energy situation can be seen as a window of opportunity open for a short time. When the situation stabilized only a few years later, political interest in natural gas slowly waned, and the larger planned extension of the Sydgas pipeline never came to fruition. The deal, however, can also be seen as the result of a more long-term effort. Regional energy actors Sydkraft/Sydgas had earlier been in touch with Danish actors, and thus the network used by the national governmental actors was already established. Nevertheless, the transnational contacts had been established for several years, and without a governmental initiative, there had so far not been any results from the negotiations. In this case, Political intervention was necessary for the natural gas deal to happen. This is partly a reflection on the state of the market at the time. The smaller regional/municipal companies did not seem to have the economic wherewithal to invest the kind of money needed. Involving the state as a guarantor mitigated a large part of the risk of engaging in this kind of project independently. Risk was thus managed through redistribution in the form of state ownership, showing a willingness to take the financial responsibility for the project, in contrast to the situation earlier in the 1970s.

The fact that there was at first a liberal minority government and later a coalition government during the negotiations meant that the political parties had to compromise. Thus, even those who were not explicitly in favour of natural gas seem to have accepted it as a way of solving the present energy situation. The Centre Party, which was the main proponent of natural gas together with the Communist Party, which was not in the government when talks were reopened in the spring 1979, which means there must have been an consensus in favour of negotiations even in the Liberal and Moderate Parties.

[92] Minutes from Danish-Swedish Minister of Energy meeting regarding natural gas cooperation 11 Febraury 1980, 2 0035 Energiministeriet 14231; Minutes from meeting between Swedegas delegation and Statoil representatives 16 November 1979, Ministry of Industry material.
[93] Kellberg (the Swedish Embassy in Copenhagen) to the Swedish Foreign Ministry, 15 February 1980, SE/RA/221/2210.03.3/H/H 53/19, dossier 6.
[94] Lindgren to the Swedish negotiation committee 12 November 1979; Kellberg to the Swedish Foreign Ministry, 15 February 1980, SE/RA/221/2210.03.3/H/H 53/19, dossier 6.

Representatives from the Ministry of Industry, Swedegas, Sydgas, and Vattenfall were all present during negotiations, and of these, only Vattenfall raised any serious issues against the deal. It can be considered paradoxical that natural gas was introduced in Sweden through a strong state effort, but in the almost complete absence of public discussion. The energy discussion was focused elsewhere.

The whole Danish natural gas project can be interpreted in the context of the heavy dependence on foreign energy sources. The choice between natural gas and nuclear power as a way out of that dependence was made easier after the Three-Mile Island incident, although the discussions had been intense. The Danish actors also had an economic motive to engage in a deal with Sweden. They could use the Swedish market to level out economic risks on their domestic market. The important issue in the Danish debate was still the domestic natural gas project.[95]

The actors also chose to incorporate themselves into a Nordic context; the Danish-Swedish pipeline was important because it was seen as the beginning of something bigger. It was also a part of an ongoing discussion including Norway, Germany and Finland regarding a Nordic pipeline connection, and negotiations were always set in relation to this context. The role of Ruhrgas should also not be neglected. The possibility of deliveries from them made the Sydgas contract possible. In fact, for a long time, Ruhrgas was the main seller of gas to Sweden.

It can be argued, that the situation around the Sydgas project was as uncertain, or even more uncertain, than in the previous period when no deals were made. The main risks considered, at least looking to what most of the negotiation conflicts were about, were financial, with the price issue a case in point. The market situation for gas had not visibly improved since the mid-1970s and, furthermore, Sweden was battling a heavy budget deficit. Still, the government carried out an expansive financial policy.[96] On the Danish side, a whole new project was set into motion, and DONG was not sure to be able to deliver anything at all for a long time. The complex situation with Swedegas, DONG and Ruhrgas negotiating with and around each other, was not that far from the chaotic discussions during the early 1970s. On the other hand the negotiations went quickly, and were conducted by a small group of actors who did not change markedly. No commissions or committees were involved. From that point of view, this negotiation was not as messily complex as the earlier one with the Soviet Union.

[95] Folketingstidene, parliamentary question nr. 694, 2 March 1983, parliamentary question nr. 631, 16 February 1983, parliamentary question nr. 382, 27 February 1980. When the Swedish deal was mentioned at all, it was, as far as I have seen, used as a way to debate the domestic project by asking official questions regarding, for example, whether Swedish customers will be paying the same price as Danish customers.
[96] Bergström, pp. 159, 162.

The difference this time was that the natural gas project was put in a context of a larger energy crisis. The nuclear issue was clearly a factor, given that the Sydgas contract was negotiated between the Three-mile-Island accident and the Swedish referendum on nuclear power, but oil prices and the moratorium on hydropower were also considered problematic, and in light of the anticipated increase in energy consumption, not entering a deal could be riskier for the government than doing so. Natural gas was related to this context and the actors who saw natural gas as a part of a solution managed to argue successfully for their view. Thus, a strong actor, in this case the Swedish government, had strong incentive to start a project, other actors had enough interest to want to be a part of it, and no strong actors argued against it. Later, it would be argued that the Sydgas deal was a financially bad deal, with too high a price for the gas, especially since the oil price was also at its peak at the time.[97] Signing the contract while battling a growing budget deficit, even though important actors like Vattenfall had spoken out against it, was, however, still a deliberate choice made by the Swedish actors, showing that economic calculations depend very much on the context in which they are made. In this case, the price for this solution, although admittedly high, was seen as justified. The actors did not count on a decrease in either the oil price or consumption. In fact, these were expected to increase, despite the goal of reduced energy use put forward during the 1970s. In view of the chaotic side of energy politics and the messy complexity of such an undertaking, agreeing on a major pipeline project in a time of great energy troubles can be interpreted as an achievement.

A leader published in Gasnytt 2, 1980, pointed out that the natural gas issue in Sweden had now entered a whole new stage. Originally having a negotiating and investigative role, Swedegas and the Gas Association now had to prepare the industry and the public for a transition to natural gas. Thus, there was a great need for increased coordination in order to handle the new demands.[98] After all, the contract signing was only the beginning. The next chapter will concern the developments that followed.

[97] See Chapter 6.
[98] 'Nya uppgifter', Ljungberg, Mats, *Gasnytt,* 2, 1980,

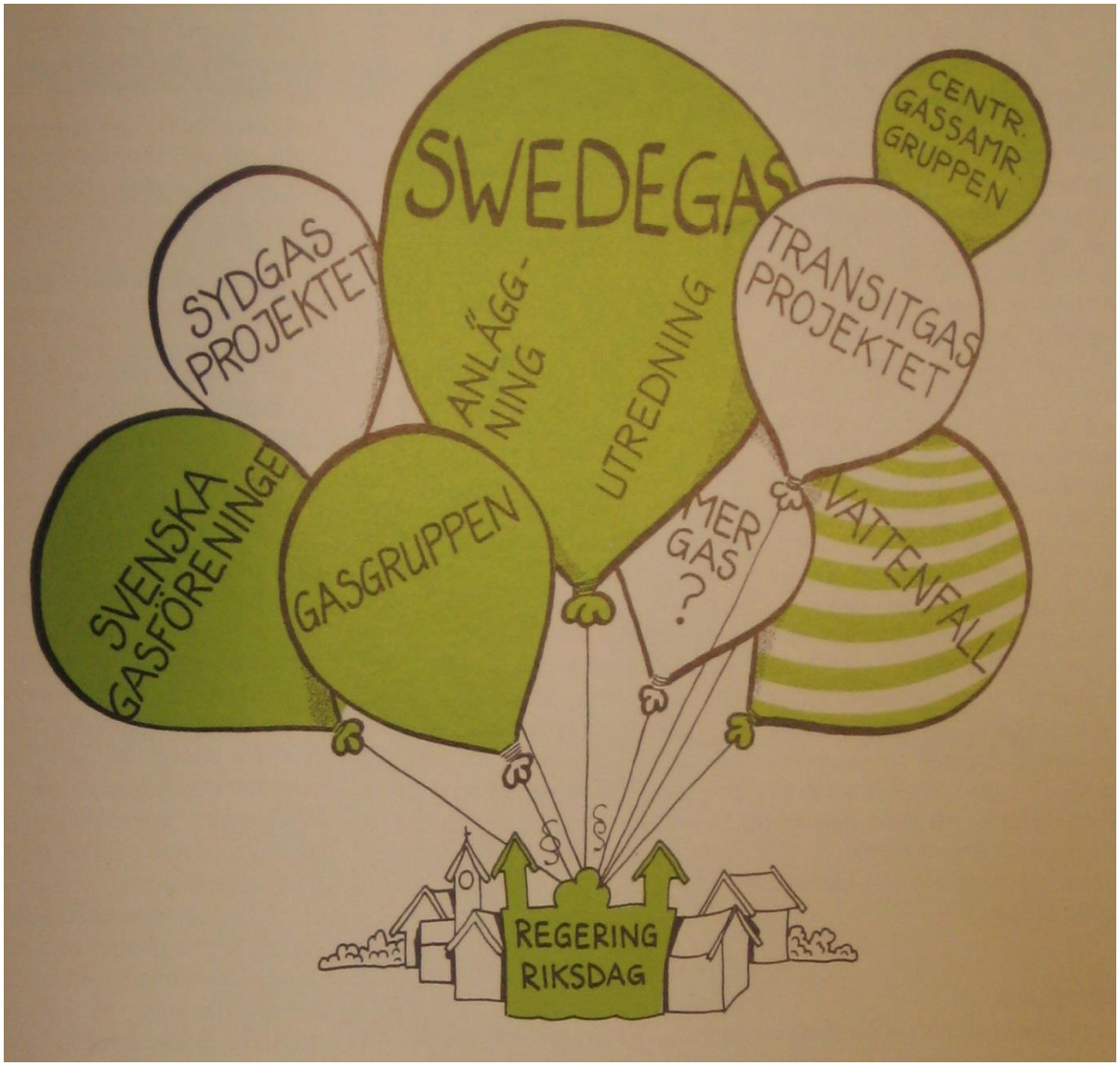

Fig. 8: The organisation of the Swedish natural gas business as 'a bunch of Balloons', image from *VVS*, 7/8, 1982.

# Chapter 6: Construction and Crisis: Sydgas in practice

Thus the first gas contract involving Swedish actors was finally in place. The circumstances, however, were far from perfect. While the contract may have been lauded by Petri's colleagues, as well as by the press, there were also critical voices. The agreed amount of Danish gas deliveries was not enough to cover the project, and negotiations were under way for supplementing this with gas from Ruhrgas through a planned pipeline from Germany to Denmark (the Deudan pipeline), as well as for a pipeline from the Norwegian Ekofisk field directly to the Danish Tyra field, but these plans were still quite far from completion. The Swedish gas business had taken a large step forward, but where should it go from here? How would the natural gas vision work in reality? This chapter outlines developments in the new natural gas grid as well as the role of natural gas in the energy debate in Sweden during the early 1980s.

## Constructing Sydgas

Several important issues had to be addressed in relation to the construction of Sydgas. One was work organisation, and negotiations between Sydgas AB and Swedegas in this matter continued over 1981. The ownership of Swedegas and Sydgas AB was crucial in this regard. The issue was renegotiated during the spring of 1980, and on 1 June Swedegas was taken over by Svenska Petroleum, which led to Lars Hjorth becoming chairman of the board of directors. Claes Lindgren stayed on as CEO. This was going to be the first of several ownership changes that Swedegas AB went through during the 1980s and 1990s. At the same time, Sydkraft AB bought back all shares in Sydgas AB making it a regional company without state involvement. Meanwhile, the distribution of work, money, roles and responsibility within the Danish-Swedish pipeline project was under way. Swedegas had the overarching responsibility of natural gas introduction and building competence within the sector. They were also the state instrument responsible for the import contracts, as well as for financing and owning the trunk line.[1] Swedegas would own the trunk line and Sydgas AB, the distribution networks, but Sydgas AB would handle the construction and project planning of the whole pipeline. Arvid Persson from Sydgas reported directly to the Swedegas board regarding the ongoing project.[2] The final economic risk for the Sydgas project was assumed by the state while Sydgas AB took the practical responsibility for the introduction of natural gas in Sweden through pipeline construction and the local distribution of gas, and the state, in turn, promised to step in and cover the costs if the project reached a certain deficit level, and to guarantee that the project would not lead to a loss for the

[1] Memorandum 'PM beträffande projektarbetet med stamledningen för Sydgasprojektet', 10 November 1981, Swedegas archive; 'Naturgas-vem gör vad?', Carlsson, Owe (Swedegas), *VVS*, 7/8, 1982, p.49.
[2] Memorandum 'Rapport om projektläget', Persson, 2 February 1981, Swedegas archive.

local actors at the end of the contracted period. This became known as the "safety net".[3]

Now that a contract had been signed, natural gas became an interesting possibility as a fuel for Swedish industry, and also created a market for equipment needed for construction and maintenance of the grid. Several industry actors formed a gas group, including the electrotechnology company ASEA, the chemical producer KemaNobel, the construction company Skanska, the state naval company, Swedish shipyards and the car manufacturer, Volvo. The chair of the group, Ove Sundberg, from KemaNobel, also was a member of Swedegas's board.[4] Smaller, regional groups, such as NiNo (Natural Gas in the North) and the Hjälmaren-Mälaren group started working towards a natural gas introduction in their respective regions. In the autumn of 1981, the first college courses in gas technology started at the Lund Technical University.[5] Owe Carlsson, the CEO of Swedegas after Claes Lindgren, described all the different actors within the Swedish natural gas sector as "a bunch of balloons", with the government holding all the strings.[6] A broad interest in natural gas thus brought many different actors together.

Although Sydgas AB and Swedegas worked together on the construction of the pipeline, there were times when their respective goals were not necessarily compatible. One of the first issues that Sydgas AB had to work with was the concessions, both for the distribution grids and the trunk line, on Swedegas' behalf. This was done together with the Swedish State Industrial Board and the Danish State Energy Board. In order to ask for concessions, a pipe dimension had to be decided. The size of the trunk line was crucial, since it would determine future natural gas conditions in Sweden. In order to manage the Danish delivery peaks, Sydgas AB deemed it sufficient to have a pressure level of 40 bar and a pipe diameter of 500 mm for the sea pipeline and the first part of the land pipeline, and 350 mm on the second part of the land pipeline. This was what they proposed, as well as what they would be financially accountable for.[7] Swedegas had other visions, and considered that it would be a mistake to under-dimension the pipe. As Claes Lindgren wrote in a PM regarding the pipe dimensions:

[3] Memorandum 'Tankar inför en eventuell omförhandling gällande departementsöverenskommelsen mellan Staten och Sydgasintressenterna angående Sydgasprojektet', Carlsson, 19 January 1983, Swedegas archive; Memorandum 'Sydgas. Avtalet Staten-Sydgasintressenterna; nät-håv', Lundin, 19 November 1982, E.ON archive.
[4] 'Nya affärsmöjligheter öppnas för svensk industri', Rolf Lindskog (the Gas Group), *VVS. Tidskrift för energi – och vvs-teknik*, 7/8, 1982, pp. 85-86.
[5] 'Utbildning för naturgas – en fråga om säkerhet', Leif Ögård(Sydgas), *VVS,* 7/8, 1982, p. 82.
[6] 'Naturgas-vem gör vad?', Owe Carlsson (Swedegas), *VVS*, 7/8, 1982, p. 49.
[7] Memorandum 'PM betr. dimensionering av Swedegas' stamledningar i Sydgasregionen', Lindgren and L. Johansson, 7 April 1981, Swedegas archive.

> "The current pipeline project is a first link in a future gas trunk line system in Sweden, connecting to the central European gas grid through Denmark, with possibility for further gas deliveries from Norway and the Soviet Union through Finland."[8]

With this vision in mind, the pipeline needed to be dimensioned for a much larger gas flow than planned for in the present project. While 40 bar and 500 mm was enough to accommodate the 0.44 bcm/year for the Sydgas project, a pressure of 80 par and a pipe diameter of 600 mm was needed to transport up to 2 bcm/year, the possible future gas supply foreseen by Swedegas. According to foreign experience, Lindgren continued, it was almost always a mistake to under dimension a natural gas grid. The expense of building a new parallel system if the first pipeline proved too small was much greater, compared with the smaller added cost of building a larger pipeline to start with. The goal of Swedegas was thus something greater than just the small Sydgas pipeline being constructed. Swedegas had a broader vision of the future of natural gas in Sweden, and also seemed ready to take on the role of system builder for the nation and carry the greater cost of dimensioning the pipeline for further expansion. Thus, in accordance with a vision of a future Sweden on natural gas, the pipeline was given a pressure of 80 bar and a diameter of 600 mm. The extra dimensioning (at a cost of approximately SEK 40 million) was to be financed by Swedegas.[9] Whereas Sydgas AB was responsible for creating the grid, Swedegas was to make sure that the construction would be as well suited as possible for a more ambitious Swedish interest. When it came to purchasing pipe, Swedegas also had a larger interest in mind. Several different companies were approached regarding purchasing pipe, but the goal was to order a large part of the pipeline from Gränges, a Swedish pipe manufacturer. Taking into consideration the employment effect, the delivery capacity of Gränges, and the cost of the rest of the delivery, Sydgas AB estimated that one-third of the pipe could be ordered from Gränges. The Swedegas board, for their part, was of the opinion that Swedish suppliers should deliver at least half of the pipe. The Swedish steel pipe supplier, Alvenius, was also considered, but their offer was not considered competitive by Swedegas.[10]

Another major issue was to ensure a large enough gas supply to cover the whole project, and the easiest means to accomplish this was to get more gas from Denmark. The Danish project was in its early phases, and had problems of over-

[8] Memorandum 'PM betr. dimensionering av Swedegas' stamledningar i Sydgasregionen', Lindgren and L. Johansson, 7 April 1981, Swedegas archive, pp. 3-4.
[9] Memorandum 'PM betr. dimensionering av Swedegas' stamledningar i Sydgasregionen' Lindgren and L.Johansson, 7 April 1981, Swedegas archive; Swedegas board of directors minutes, 9 June 1981. The later extension of the pipeline to Gothenburg was given the dimension 500 mm (400 mm from Gothenburg to Stenungsund), see http://www.swedegas.se/gasnatet/gasnatet
[10] Overhead picture 'Stålrörsupphandling', Persson, 25 January 1983, Swedegas archive; Swedegas board of directors minutes, 11 March 1983, Swedegas archive.

dimensioning. One way to handle the problem was to sell larger amounts to Sweden. Swedegas and DONG negotiated the issue over the spring of 1982, and in July, 1982 an agreement was reached that provided for another 0.9 bcm from 1985-1989 to fill out the earlier gaps during the market development phase (meaning 1.405 bcm total, distributed over five years, with an increasing amount each year), and another 0.2 bcm per year from 1990-2002, with an option to buy an additional 0.04 bcm/year. This meant that the gap between the estimated amount of gas needed for the Sydgas project from 1990 and onwards (0.44 bcm/year) and the amount agreed on in the first contract (0.2 bcm) was bridged.[11] The signing of the Danish agreement removed one of the biggest causes of worry from the horizon.

In Denmark, this increased export to Sweden was criticised. DONG determined that the future gas exports to Sweden could not be sold on the Danish home market, and that was also a condition for the export.[12] The Danish Energy Board did not agree with this, instead considering that it was fully possible to sell the gas on the Danish market.[13] The Danish Industrial Council also complained that the gas was sold to Swedish industries for a cheaper price than to Danish industries, a contention that was denied by Danish minister of Energy, Knut Enggaard.[14]

## Energy Policy in the Early 1980s

In the early 1980s, Sweden was struggling with an economic crisis due mainly to a large budget deficit from the late 1970s. To handle the problems facing the Swedish industry, a massive restructuring had been set in motion, exemplified by the case of the Swedish naval yards (see Chapter 5) and many countries borrowed in order to deal with their budget deficits.[15] The non-socialist coalition government, having won the election in 1979, had little success in its attempts to counter the problematic situation in much of the Swedish heavy industry, as well as the rising unemployment. Another problem was that the three parties in power (the Moderate Party, the Liberal Party and the Centre Party) had problems cooperating, and in early May 1981 the Moderate Party left the government over a tax issue when the other two parties reached an agreement with the Social Democrats. Thus, a third government under Thorbjörn Fälldin

[11] 'Tillæg til levereringsaftale af 3 marts 1980 mellom Dansk Olie & Naturgas A/S og Swedegas AB', 8 July 1982, 2 0035 Energiministeriet 14231.
[12] Demuth (DONG) to the Danish Ministry of Energy, 17 August 1982, 2 0035 Energiministeriet 14231.
[13] Holmblad and Beck (the Danish Energy Board) to the Danish Ministry of Energy, 27 August 1982, 2 0035 Energiministeriet 14231.
[14] Press release from the Danish Ministry of Energy, 24 September 1982, 2 0035 Energiministeriet 14231.
[15] Schön, pp. 440–442.

was formed, with the Centre Party and the Liberal Party ruling as a minority government for one and a half year before the elections in September 1982.[16]

Energy issues continued to be at the top of the agenda. The results of the nuclear referendum was that nuclear power should be phased out, but only "at a pace that allowed for employment and welfare to be upheld", and in April 1980, this result was embodied in a decision of the Riksdag to change the Swedish energy system. A complete phase-out was scheduled for 2010.[17] Although there seemingly was a consensus to carry out the results of the referendum, these results were very broadly interpreted by different political actors. Historian Anna-Sofie Kall has shown how the different political parties were able to use the broadly formulated decision, some to argue for replacing nuclear with renewable energy sources, and others for a continued use of nuclear power. Thus despite a consensus that the results of the referendum should be followed, opinion was divided regarding how this should be done. One of the main issues was how a phase-out of nuclear power could be possibly combined with a decreased dependence on oil. Some parties saw this as an impossible task, whereas others saw it as an opportunity to push for renewable energy sources, as we will see later.[18]

In January 1981, a government bill outlining the energy policy up until 1990 was presented. The bill was written in cooperation between the then three governing parties, but was adopted by the Riksdag in late May 1981, at a time when the Moderate Party had already left the government. The energy bill thus had to please many actors. The bill also shows a clear tension between the attempts to lessen oil dependence and phase out nuclear power, and at the same time try to "dimension the energy system to provide opportunity for rapid industrial growth, in order to balance the Swedish economy".[19] Regarding natural gas, Petri suggested that a loan of SEK 22 million should be extended to Swedegas for continued investigation and negotiation.[20] In the bill, earlier failures to introduce gas were described to have been mainly due to financial reasons, such as large initial investments and long transports, combined with low prices in Sweden for competing fuels. The current situation was considered radically different with more nearby sources in the North Sea and an increased price, making the infrastructure investment a smaller part of the total cost. The possible challenges to natural gas use were competition from other energy types (mainly coal and district heating) and falling oil prices. The advantages were that it was environmentally friendly, efficient, and several nearby sources would

[16] See e.g. Hadenius.
[17] Govt. Bill 1979/80:170. Since referendums in Sweden are only advisory, a riksdag decision has to be taken.
[18] Kall, pp. 70 ff, 81 ff.
[19] Govt. Bill 1980/81:90,'Om riktlinjer för energipolitiken', pp.1-2.
[20] Govt. Bill 1980/81:90, p. 160.

make it easy to ensure supply security.[21] Due to the market situation, natural gas was seen as an alternative to light fuel oil in industries and housing, but not to heavy fuel in district heating.[22] Another issue that impacted on the natural gas business was that emergency storage for oil had became more expensive, leading to an advantage for natural gas. Thus, the bill expressed a cautious optimism with regard to the future of natural gas in Sweden, and predicted that in 1990, natural gas would account for 4-9 TWh (approximately 0.4-0.9 bcm) of Swedish energy input.[23]

Despite the earlier moratorium on hydropower expansion, the bill proposed further hydropower development. This expansion was not large enough to be controversial, but it showed a willingness to expand electricity sources that were not nuclear power.[24] This was in line with another long term trend that can be seen in this government bill, namely the expected increase of electricity use in the Swedish energy system. Nuclear expansion had resulted in an increased supply of electricity on the market, and in addition to this, new market opportunities opened up for electricity after the oil crises. When oil became more expensive, electricity moved in on the heating market, and thus managed to expand, in contrast to the stagnation of energy consumption in general. In five years, electricity use increased from 22 TWh to 65 TWh per year, while the earlier energy bill estimated increased power production of 43 %.[25] A proposal was made for more favourable conditions for installing direct electrical heat. This was supposed to be a short-term solution to replace oil in heating, whereas on the long-term other heating sources were expected to take over, such as district heating using solid fuels such as peat and coal.[26] This meant that electricity became an even bigger competitor to natural gas than before, especially since it was moving into the traditional oil sectors, thus filling one of possible functions of natural gas in the Swedish energy system. The bill was adopted by the Riksdag at the end of May 1981. Overall, despite the awaited introduction of natural gas, the fuel was not given very much attention in the energy debates at that time.

[21] Govt. Bill 1980/81:90, pp. 161-162.
[22] Govt. Bill 1980/81:90, p. 31.
[23] Govt. Bill 1980/81:90, Attachment 1, Ministry of Industry, p. 110. The over all energy input was estimated to 459 Twh 1990.
[24] Govt. Bill 1980/81:90, p. 3.
[25] Högselius and Kaijser. pp. 52-53. In practice, this expansion would to a large degree be covered by nuclear power. Evert Vedung and Magnus Brandel have pointed out the irony in that the Centre Party, which was against nuclear power, presided over what would be the largest expansion of nuclear power in the history of Sweden. Vedung and Brandel. p. 246.
[26] Govt. Bill 1980/81:90, pp. 221-223. Over the 1980s, district heating systems developed at a large scale, going from 78 systems to almost 150 in 1990. The systems also managed to change over from 90 % oil fuelled in the 1970s to only 10 % oil-fuelled in 1990. Already in the early 1980s, Sweden had the world's highest district heating maximum output capacity per capita, and in 1990 almost 2/3 of Swedish apartment houses were heated by district heating. See Summerton, p. 18.

In the autumn of 1982, the Social Democrats won a parliamentary majority in the elections, and formed a government. The Moderate Party also increased its election base, while the Liberal Party and the Centre Party both lost votes. The elections also saw the Green Party participating for the first time. Even though they did not make it into the Riksdag that year, they still pinpointed an important issue and the beginning of a coming trend. Many voters felt let down by the Centre Party after the nuclear debate, and the new party could gather those who were environmentally aware under its banner instead.

## The Sydgas Crisis

The new government was hardly in place before it had to handle upcoming problems within the Sydgas project. In the fall of 1982, Swedegas had reached the goal of contracting gas deliveries from Denmark to cover the Sydgas project, and things looked promising. At the September board meeting of Swedegas, the usual discussion was held regarding added deliveries from Denmark, as well as pipe purchase.[27] By October, this had changed after the board members had read a memo from Sydgas AB presenting new economic estimates for the Sydgas project. According to these estimates, the project financial picture had changed completely, and instead of a surplus, the project was now expected to produce a loss of up to SEK 820 million over the contracted period from 1985 to 2005.[28] When presenting the memo, Owe Carlson, the new Swedegas CEO, after Claes Lindgren's retirement, concluded that the change was a consequence of increased construction costs and increased charges for Sydgas AB to Swedegas.[29] This was a large blow to the project, and it raised the issue of economic responsibility. According to the agreement between Sydgas AB and the state, the Swedish state had committed to limit the economic risks for the actors so that the project as a whole over 1985-2005 would not show a loss. In the end, the board proposed that Sydgas AB make new estimates, as they considered the assumptions underlying the earlier ones to be wrong. For example, an ongoing revision of the energy tax was not accounted for, and this would impact the financial situation of the project.[30]

At the next board meeting in December, Sydgas AB had prepared new estimates for the project. The result was better this time, due to some reallocations of taxes over time and increased prices for the customers. The project economy still needed to be improved and a renegotiation of the state agreement with the

[27] Swedegas board of directors minutes, 9 September 1982.
[28] Memorandum 'Ekonomisk analys av Sydgasprojektet', Persson, 12 January 1983, Swedegas archive.
[29] Swedegas board of directors minutes, 28 October 1982, Swedegas archive. Sydgas paid Swedegas for the handling of the commercial deal, and a percentage of gas profits. PM 'Tankar inför en eventuell omförhandling gällande departementsöverenskommelsen mellan Staten och Sydgasintressenterna angående Sydgasprojektet', Carlsson, 19 January 1983, Swedegas archive.
[30] Swedegas board of directors minutes 28 October 1982, Swedegas archive.

Sydgas actors was set up.[31] One of the main problems, in the eyes of Swedegas, was that the state agreement with its "safety net" meant Sydgas AB did not have enough economic incentives to make the project profitable.[32] The Ministry of Industry, now headed by new Social Democratic Minister of Energy, Birgitta Dahl, wanted to make a strong effort to save Sydgas and support the municipalities. This meant asking the Danish parties for a renegotiation of the gas price, and contacting Sydkraft and the participating municipalities to "activate" them. This may imply that Swedegas and the Ministry did not think that the southern actors were doing enough to make sure that the project had solid finances.[33] The discussion regarding what could be done to improve the financial situation of the project and how the financial responsibilities should be allocated within the project continued into early 1983.[34]

In February 1983, a letter from the board of Svenska Petroleum was received by the Ministry of Industry. It was written by Lars Hjorth, then chairman of the Swedegas board and CEO of Svenska Petroleum. In it, he suggested abandoning the whole Sydgas project and breaking the contract with Denmark. According to Hjorth, himself, he was spurred to write the letter not only by the financial estimates, but also by an earlier meeting with Dahl where the minister had expressed concern regarding the problematic financial situation. It was also a problematic situation for the Social Democratic government. Although that party had not been part of the government that approved the project, it found itself faced with handling the consequences of the decision. Hjorth, himself, had been a crucial part of the Swedish delegation during negotiations for the Sydgas contract (see Chapter 5) but under the new circumstances, he changed his position. After getting the report from Sydgas AB, Svenska Petroleum, as owners of Swedegas made their own estimates for the project, which were presented in the letter. [35]

Svenska Petroleum came to conclusions similar to those of Sydgas AB, but added falling oil prices making it more difficult to compete with oil, made natural gas a less profitable option for customers to convert to. After the price shocks of 1973 and 1979, oil production had risen, while consumption had dropped due to the high prices.[36] Prices peaked in 1980, and dropped over the early 1980s. Furthermore, Svenska Petroleum brought up the changing Swedish

[31] Swedegas board of directors minutes, 15 December 1982, Swedegas archive.
[32] Memorandum 'Tankar inför en eventuell omförhandling gällande departementsöverenskommelsen mellan Staten och Sydgasintressenterna angående Sydgasprojektet', Carlsson, 19 January 1983, Swedegas archive.
[33] Carlsson's notes from the meeting with Dahlsten at the Swedish Ministry of Industry, 23 December 1982, Swedegas archive.
[34] Memorandum 'Tankar inför en eventuell omförhandling gällande departementsöverenskommelsen mellan Staten och Sydgasintressenterna angående Sydgasprojektet', Carlsson, 19 January 1983, Swedegas archive.
[35] Hjorth to Dahl, 13 February 1983, 2 0035 Energiministeriet 14231; Lars Hjorth, Interview 11 December 2008.
[36] "How the Oil Glut is Changing Business", Robert D. Hershey Jr, *New York Times*, 21 June 1981.

energy market. The effects of conservation measures, as well as the tougher competition from electricity and district heating mentioned earlier, meant that the market for natural gas had shrunk.[37] Svenska Petroleum also raised the problem of incentive, pointing out that the "safety net" principle meant that local actors were never in any danger of bankruptcy.[38] The board of Svenska Petroleum felt that the deal should be terminated, or if that was not done, then it needed a radical reorganisation, especially regarding the "safety net" principle.[39]

The letter from Svenska Petroleum to the Ministry of Industry also reached the Energy Board in Denmark and DONG. This prompted Søren Guldborg (then CEO of DONG, and successor to Gerhard Jensen) to write a memo to the Danish government regarding the possibility that the Swedes could terminate the contract. He concluded that there were no legal possibilities for them to do so. The only way the contract could be terminated was by the Danes if the Swedes did not pay for deliveries for a period of 90 days. Other than that, even the Force Majeure clauses could only lead to a suspension of the contract. Guldborg also pointed out that not only had Sweden asked for more gas deliveries from Denmark in the autumn, but an agreement regarding the construction of the pipeline by the Danes (which Swedegas was going to assist in financing) had been signed on 1 February 1983, less than two weeks earlier. He found the whole thing remarkable.[40]

It is easy to imagine that at least some of the board members in Swedegas found the letter, too, remarkable, particularly considering the agreement in February, mentioned by Guldborg, as well as the fact that construction and pipe purchase had been topics discussed at board meetings all the way up until February, without any discussion of a termination of the contract. Ulf Norhammar from the Gas Association commented in a journal article that it was a difficult time to introduce a new energy form into Sweden, considering the recession and the shrinking of the Swedish energy market. The speculations regarding Sydgas did not make industries more interested in investing. He pointed out that although project preparations continued, the statement from Svenska Petroleum had a bad influence on the people working on Sydgas.[41] Both the municipalities

[37] Moberg, *Naturgas i Sverige*, p. 43,
[38] Carlsson's notes from the meeting with Dahlsten at the Swedish Ministry of Industry, 23 December 1982, Swedegas archive; PM 'Tankar inför en eventuell omförhandling gällande departementsöverenskommelsen mellan Staten och Sydgasintressenterna angående Sydgasprojektet', Carlsson, 19 January, 1983, Swedegas archive.
[39] Memorandum 'SP's rekommendationer till industridepartementet', 25 February 1983. Swedegas archive.
[40] Memorandum 'Notat vedr. de juridiske muligheder for at hæve de mellem D.O.N.G og Swedegas AB ingåede aftaler om salg og transport af gas', Guldborg (DONG), 2 0035 Energiministeriet 14231.
[41] 'Gas-Sverige?', *Byggindstrin*, 14 (1983).

involved in the project and Sydgas AB criticised Hjorth in the press, saying they did not share Svenska Petroleum's view of the project.[42]

Three days after having received Hjorth's letter, Dahl held a press conference in Malmö where she emphasized that Sydgas AB's agreement with the state had to be renegotiated, and that the southern municipalities had to take the economic consequences of the Sydgas project. She also stressed that the Danish-Swedish natural gas pipeline was needed in a future energy system without nuclear power. In her opinion, no excuse could be given to hinder the nuclear phase-out, and all available energy sources had to be used.[43] Following this, Dahl contacted Knut Engaard, the Danish Minister of Energy asking him to give DONG a mandate to begin negotiations with Swedegas regarding the gas price. She emphasized that Sweden had started to deal with the problem through internal negotiations, but that talks with DONG were also an important part of the process.[44] Engaard answered, as could have been expected, that since the terms from six months earlier had been agreed upon only after serious consideration from the Danes, and Denmark was extremely happy with them, he found it worrisome that the Swedes already wanted to renegotiate. Furthermore, he considered the agreement to be binding. However, if the Swedish parties want to meet, then he would naturally be willing to make sure that would be arranged.[45] Representatives from Swedegas and DONG met in March to discuss the pricing issue. As expected, the Danish delegation refused any change in prices, although, they did discuss the possibilities of Sweden selling the gas on to other customers through Danish pipes.[46]

At a Swedegas board meeting in March, Lars Hjorth presented Svenska Petroleum's evaluation of the project, which had been sent to the Ministry of Industry. A discussion about Sydgas followed, but a possible termination of the contract was not mentioned in the minutes. One member of the board pointed out that according to the existing calculations, the different parties of Sydgas could not through their own actions change the economy for the better.[47] The problem was external issues, which had consequences for the Swedish situation. The board of directors had also been given other bad news. In January 1983, Swedegas had asked for a state loan to cover the costs of operations. However, in view of the Sydgas problems, the Social Democratic government decided to only give financial support to the work on the Sydgas project until the commission deciding its future had completed its investigation. Depending on the findings of that commission, further financing could be allocated later.

[42] 'SP vill stoppa Sydgas', *Sydsvenska Dagbladet* , 13 February 1983; 'Brevet slog ner som en bomb', *Dagens Nyheter*, 13 February 1983.
[43] Danish Embassy in Stockholm to the Danish Ministry of Energy, 17 February 1983, 2 0035 Energiministeriet 14231.
[44] Dahl to Engaard, 18 February 1983, 2 0035 Energiministeriet 14231.
[45] Engaard to Dahl, not dated, 2 0035 Energiministeriet 14231.
[46] Swedgas board of directors minutes, 11 March 1983, Swedegas archive.
[47] Swedgas board of directors minutes, 11 March, 1983, Swedegas archive

Instead of the SEK 152 million that Swedegas had requested, the company received SEK 74 million.[48] Even this was sharply criticized by members of the Moderate Party, who found it remarkable that a loan was given at all, when the Sydgas project was considered unprofitable even by Svenska Petroleum, the owner of Swedegas.[49]

It is worth noting that this discussion occurred before the construction of the pipeline by the Swedes had even started, so the construction of the project would not suffer if the project were to be abandoned. However, there were other issues to consider. The Danes demanded that the Swedish party hold the Danish party harmless for lost expenses the latter incurred. There was also the question of trustworthiness. If the Swedish government terminated the contract, this could mean difficulties in future business and political relations with the Danes. DONG and the Danish natural gas project had their own problem at this time.[50] The falling oil prices affected them, as well, and DONG's finances were not in very good shape, as mentioned earlier. The Danish government had also been replaced in 1982, which meant certain new policies for DONG.[51] DONG had gotten a better price for its gas from Sweden than they had any possibility of getting from anywhere else at that point.[52] As mentioned earlier, selling gas to Sweden was a way to handle the finances of the domestic Danish project. When news of the Swedish problems became known, Danish daily Politiken wrote that Sweden had put a bomb underneath the Danish natural gas project.[53] Regardless of whether the Swedish deal was that important to the Danes or not, it was still addressed as a part of the ongoing Danish debate on natural gas.

At the urging of the Ministry of Industry, a Sydgas commission was created to investigate the reliability of the estimates, as well as the measures to be taken in order to control the damage as effectively as possible. It presented its findings in late 1983, and recommended reconstruction through a contract between the state and Sydgas AB. The goal was to promote the development of Sydgas in an economically sound way, and to share the responsibility between the govenment and the local actors. This meant that the safety net was removed, but instead, the Ministry of Industry became a 50% shareholder in Sydgas AB. The other owners were Sydkraft AB 24.5%, Malmö kommun 13.5% and Helsingborg and Lund municipalities 6% each. Furthermore, the state ensured certain favourable conditions for the project, such as a lower tax on gas than on oil, less of a

[48] Govt. Bill 1982/83:125, 'Med förslag om tilläggsbudget III till statsbudgeten för budgetåret 1982/83', pp. 27-29.
[49] Motion 1982/83:2334, pp. 8-9.
[50] 'Naturgas kan slå ut kärnkraft och kol', Ny teknik, 36, 1984.
[51] Rüdiger, 'The Natural Gas Controversy, pp. 107–108.
[52] Memorandum 'Notis vedr. eventuelle ændringer I det svenske køb af naturgas I henhold til D.O.N.G A/S – Swedegas AB aftalen med henblick på orientering på regeringsmødet den 15 februar 1983', 14 February 1983, 2 0035 Energiministeriet 14231.
[53] Politiken cited in Hollin (the Swedish Embassy in Copenhagen) to the Swedish Foreign Ministry, 14 February 1983, SE/RA/221/2210.03.3/H/H 53/19, dossier 7.

demand for emergency supply storage, grants to users investing in the low pressure grid, and a "promise" that the Swedish oil prices including taxes in real numbers would increase by at least 2 % per year.[54] This meant the state would start negotiations for compensation with Sydgas AB if the increase in oil prices would be lower than the presumed 2 % per year.[55] The safety net was still possible to reinforce in case of extreme circumstances.[56] In the end, the deal with the Danish actors was kept as before, and the Swedes instead counted on being able to renegotiate that contract at a later date.

The people I interviewed expressed different opinions on whether the choice of terminating the contracts was ever really an option. Birgitta Dahl claims that there had been a discussion about terminating the contract, but that her priority was to bring order to a contract that, in her opinion, had been negotiated in an irresponsible way. She wanted to place the responsibility mainly with the local actors, and, most of all, specify the responsibilities of each party.[57] Arvid Persson also confirms that the Minister of Energy was ready to continue the project.[58] Lennart Fredenberg, the technical director at Sydgas AB in charge of the construction of the pipeline has stated that when he was buying material for the pipeline he ordered it subject to the condition that the deal could be broken off if the contract were terminated. This would indicate the actors were afraid that this eventuality might occur.[59] The technical committee kept on working with the project all through the crisis, but the issue of a possible termination of the project was discussed.[60] Whether or not the option of terminating the contract was real, doing so would have meant a great risk and one that, in the end, the Swedish actors were not willing to take.

Another key aspect of the restructuring was that ownership of Swedegas was given back to Vattenfall.[61] Vattenfall's interest in natural gas had been rekindled, and at that point, it was engaged in a project aimed to transit natural gas from northern Norway through Sweden (see Chapter 7). Vattenfall also claimed to have a long-term interest in natural gas in connection with the future phase-out of nuclear power.[62] The government considered Vattenfall well suited to handle Swedegas, especially in light of future possibilities for electricity production using natural gas.[63] Despite this, there was a clear wariness regarding natural

[54] Govt. Bill. 1983/84:47 'Om vissa naturgasfrågor'; Memorandum 'Sydgasprojektet. Uppgörelsen mellan staten och intressenterna samt den bakomliggande ekonomiska analysen', 31 August 1983, E.ON archive; Sydgas annual report 1983.
[55] Moberg, *Naturgas i Sverige* , p. 50
[56] Persson, p. 32.
[57] Birgitta Dahl, Interview, 16 April 2008
[58] Persson, p. 31.
[59] Lennart Fredenberg, Interview, 31 March 2008.
[60] Lundin (Sydgas) to Persson, 23 February 1983, E.ON archive.
[61] Riksdag communication 1983/84:125.
[62] Govt. Bill 1983/84:47, pp. 14-15.
[63] Govt. Bill 1983/84:47, p.15; NU 1983/84:10, p. 8.

gas on the part of the government. It saw the restructuring as the best way of dealing with a bad situation created by the former government through the signing of a bad contract.[64] The Liberal Party then argued that the financial estimates done in 1980 had shown a future profit for the project.[65]

In the debate regarding the new ownership, the Communist Party argued against Vattenfall's new role. They wanted Swedegas to become a separate entity and questioned Vattenfall's interest in natural gas, claiming that the company had worked against the introduction of natural gas in Sweden by dumping electricity prices, and that no relevant arguments for this change in ownership had been put forward.[66] The Centre Party partly shared the scepticism towards Vattenfall's interest in natural gas, but despite this, supported the ownership change due to the economic security Vattenfall could offer.[67] The Moderate Party suggested that if it were financially possible to stop the Sydgas project it should be stopped, but later withdrew this proposal and instead emphasised that the Riksdag had to be continuously informed of all the subsidies and costs that the project would entail.[68] In the end they, as well as the Liberal Party, supported Vattenfall's ownership.

The Centre Party continued to endorse natural gas mainly arguing for its environmental qualities, and pushed for the further extension of Sydgas.[69] The Communist Party also frequently defended natural gas, in general, and the Östgas Project (see Chapter 7) in particular in the early 1980s. In a motion from January 1983, they expressed their astonishment over the fact that such a nearby, environmentally friendly and safe fuel was not used in Sweden and presented West German import from the Soviet Union as an example Sweden should follow. Further advantages of importation, in their view, would be industrial stimulation, as well as profits for the northern regions of Uppland (the pipeline was planned to land in Gävle).[70] Later they added employment openings, possibilities for increased exports to the Soviet Union, and "national economic" reasons as possible advantages.[71]

In 1981, a commission had been created to investigate the future of the Swedish energy system with the phase-out of nuclear power and the replacement of oil in mind. This commission published its final report in June 1984. It considered natural gas to be an environmentally friendly fuel, but did not find it to be a valid option for Sweden, except for the project already in place. The main

[64] Riksdagen minutes nr 55, 22 December 1983, pp. 105-106.
[65] Riksdagen minutes nr 55, 22 December 1983, p .107.
[66] Riksdagen minutes nr 55, 22 December 1983, pp. 104-105. Compare to the 1970s when the Moderate Party and the Liberal Party opposed Vattenfall ownership.
[67] Riksdagen minutes nr 55, 22 December 1983, p. 104; NU 1983/84: 10, p. 12, reservation 4.
[68] Riksdagen minutes nr 55, 22 December 1983, p. 103, 106; Motion 1983/84:179.
[69] Motion 1983/84:321; Motion 1983/84:2362; Motion 1983/84:2480; Motion 1984/85:2878.
[70] Motion 1982/83:652.
[71] Motion 1983/84:323.

concern was the shrinking Swedish energy market, which was going through a major restructuring. By the time a large scale introduction of natural gas would be possible, this restructuring would have already taken place.[72] Further, the commission considered the Swedish market too small to be able to support such an infrastructure investment. That would only be possible if there was a possibility to transit gas from Norway.[73] The commission did see, however, a future possibility in view of the "next restructuring" of the Swedish energy system, the one that would be necessary when the nuclear power phase-out started. Natural gas could then be an option for power generation.[74] It did not see gas as a viable option for district heating.[75]

The Sydgas pipeline was inaugurated in June 1985 in the presence of Birgitta Dahl. According to *Affärsvärlden,* the project ended up being less costly than expected, and started operating earlier than the date decided, which was judged to be "a well needed success for a project that had looked as if it would end in a fiasco."[76]

## Taxes and Tensions

One place where the view of natural gas in relation to other fuels can be studied is in the political discussions regarding energy taxes. When taxes were raised on coal, natural gas, and LPG (Liquid Petroleum Gas) in 1984, the Social Democratic government advocated setting them at three-fourths of the oil price, which, in the case of natural gas, was the highest level possible in compliance with the promises previously made to Sydgas AB. The proposal was voted through, but opposed by the Centre and Communist Parties, which argued for a lower tax on natural gas. In the end the tax was set at SEK 308/1000 cm.[77] The tax on LPG was set at a lower level, but with the intent of slowly raising this tax to the same level as natural gas. In late 1985 when the Social Democrats suggested the next of the LPG tax increase to the same level as natural gas, they were opposed by all other parties.[78]

There were different reasons for this opposition. The Centre Party argued that the tax on natural gas should instead be lowered, since fuels should be taxed in accordance to their environmental friendliness. They argued for a natural gas tax of about half of the tax on oil. The Centre Party wanted to stimulate the natural gas sector, and saw no risk in becoming dependent on gas. On the other hand, LPG was considered an indigenous fuel and should therefore be subject to

[72] SOU 1984:61, *Istället för Kärnkraft*.
[73] SOU 1984:61, p. 136.
[74] SOU 1984:61, p. 138.
[75] SOU 1984:61, p. 137.
[76] 'Nu strömmar naturgasen: Optimism om utbyggnad', *Affärsvärlden*, 29/31(1985), pp. 28-29.
[77] *Från riksdag & departement,* 40 (1984).
[78] Riksdagen minutes nr 50, 12 December 1985.

a lower tax than the imported natural gas.[79] The Communist Party went even further and argued for a tax on both natural gas and LPG of one fourth of the oil tax, also mainly due to the environmental properties of gas.[80] The Liberal Party wanted to keep the tax on natural gas, but lower the tax on LPG claiming that a higher tax on LPG would hit the industry in places like the Bergslagen area, where natural gas would not become available. They wanted a wanted a slow, controlled development of natural gas so Sweden would not get caught in another system like oil, and he warned for the possible issues of supply security, mainly because of problems with emergency storage.[81]

The discussion continued in March 1986, when the Minister of Finance, Kjell-Olof Feldt proposed a new energy tax representing an increase for fuels previously discussed, to wit, oil, coal, natural gas and LPG. The LPG raise was the most radical one, from SEK 125 to SEK 550 per tonne, while gas would be raised from SEK 308 to SEK 460 per bcm. The argument for the increase was that since taxes on oil products were going up, other fuels should also be raised in order to follow the earlier agreed upon goals for the Swedish energy policy, which provided that that the tax on coal should be about half of the oil tax, and natural gas and LPG three-fourths of the same. In the current situation the Minister deemed that coal should also be set at three-fourths of the oil tax, since coal was no longer in need of subsidies, and since the energy use was decreasing, less coal than expected would be needed in the energy system.[82] In this discussion the Liberal Party argued against a lowered tax on natural gas, in reference to the introduction going on in Sweden. The Centre Party and the Communist Party both agreed with this.[83]

Thus, in the tax debate between 1984 and 1986, natural gas was pitted mainly against oil, coal and LPG, and these were also the fuels that competed on the same market. At that time, natural gas was still mainly viewed as a fuel to be used by industries, and to some extent for heating. In the previous bill regarding the change of ownership of Swedegas, natural gas was only spoken about as a replacement for oil.[84] There was a slow shift in the view of the future role of natural gas during the 1980s, from mainly oil replacement to the possibility of future electricity replacement- and production. Although a function as replacement for nuclear power was hinted at in the discussions, this was not yet the main role for natural gas. Oil was mentioned as the major competitor of

[79] Riksdagen minutes nr 50, 12 December 1985, pp. 53-54. LPG is considered an indigenous fuel here, which could be discussed. It can be produced at Swedish refineries, but from imported oil products.
[80] Riksdagen minutes nr 50, 12 December 1985, p. 58.
[81] Riksdagen minutes nr 50, 12 December 1985, pp. 55, 60.
[82] Govt. Bill 1985/86:140, 'Om vissa inkomstförstärkningar på statsbudgeten, m.m.', pp. 9-10
[83] Riksdagen minutes nr. 116, 15 April 1986, p. 94 ff. One member of the Social Democratic party, Bo Forslund, also argued against Feldt in this issue. Riksdagen minutes nr. 164, 5 June 1986, pp. 178-180.
[84] Govt. Bill 1983/84:47.

natural gas, and as we have seen in the discussions up until now gas was almost always seen as a replacement for oil. Another competing fuel was coal. Coal gained a lot of interest in the early 1980s but seems to have lost popularity later on. Erik Moberg has pointed out this trend in a comparison between the two major energy bills in 1980/81 and 1984/85. In his opinion, the biggest change in attitude between the two was with regard to coal. While both bills considered natural gas as an advantageous fuel with certain future possibilities, coal went from being described as relatively positive to being characterized in a markedly negative way.[85] This is in line with an observed turn towards fossil fuels in the early 1980s, right after the nuclear referendum, and a subsequent turn away from them towards a more ecological discourse in the mid 1980s, to which I will return.[86]

At this time, several actors expressed a sense of insecurity regarding the energy both in Sweden and in other countries. The energy efficiency measures put in place during the 1970s were starting to pay off, and the Swedish energy market was shrinking both due to that and to the fact that other sources, such as electricity, were expanding.[87] For example, two nuclear reactors were being put into operation in 1985, adding more electricity to the market.[88] In the OECD countries the use of energy in relation to GNP decreased by 20% between 1976 and 1983.[89] This led the Swedish energy board to comment that an expansion of the gas grid should not happen too quickly due to the surplus of coal and oil, as well as the use of nuclear and hydropower, which would result in an overcapacity of power production. Meanwhile, overall energy use was stagnating in Sweden. Thus, the Energy Board suggested that Sweden wait to expand the gas grid until the situation was more stable.[90]

## The Next Chapter in the Ownership Serial

Two years after the project crisis, a preliminary agreement was struck between Swedegas and DONG regarding options for gas supply to a continuing grid along the Swedish West Coast up to Gothenburg. Vattenfall endorsed the project, considering it to be profitable, at least under certain conditions.[91] In Swedish business weekly, *Affärsvärlden*, Vattenfall's representatives underscored the importance of developing the domestic system that would be

[85] Moberg, *Svensk energipolitik,*. p. 122; Hultman p 52-54, 59, 79.
[86] See Chapter 8.
[87] 'Det närmaste halvåret avgör naturgasens framtid i Sverige: Full gas – eller bara Sydgas?', *Energiaktuellt*, 29 March 1984; 'Nu strömmar naturgasen: Optimism om utbyggnad', *Affärsvärlden*, 29/31, 1985, p. 28-29; '1985-Naturgasens år i Sverige', Norhammar (the Swedish Gas Association), *Miljö i Sverige*, 2, 1985, pp. 19-21, 24-26; 84/85:120, 'Om riktlinjer för energipolitiken', p. 193.
[88] Högselius and Kaijser, p. 54.
[89] Govt. Bill 1987/88:90 'Om energipolitik inför 1990-talet', pp. 14-15.
[90] Govt. Bill 1985/86:91, 'Om vissa naturgasfrågor, p.5; 'Nu strömmar naturgasen: Optimism om utbyggnad', *Affärsvärlden*, 29/31, 1985, pp. 28-29.
[91] NU 1984/85:30, pp.110- 111.

prepared for a later expansion, and make natural gas a realistic alternative for the changes in the energy market that would follow the nuclear phase out.[92] When Vattenfall asked for funds to finance the expansion, the proposal was referred out for comment, and a large majority of the municipalities responding were positive to a natural gas introduction.[93] In the event of a further expansion, one State Secretary at the Ministry of Industry commented that there would be no state support "á la Sydgas" for the new projects, and that Sydgas was an expensive project that would not be repeated in its current form.[94] Birgitta Dahl held the door open for more natural gas in the Energy Bill of 1985, but also emphasized that the development had to be based on commercial grounds, and that since the use of oil had decreased in Sweden, the space for natural gas had also decreased.[95] It was clear the government wanted to ensure that it would not get involved in another Sydgas debacle.

Vattenfall asked for permission to sell some of its shares in Swedegas to Shell Gas and Statoil in early 1986. The new owners would each take over 20% of the shares, increasing the reserve and share capital of Swedegas by SEK 400 million.[96] According to Vattenfall, the reason for inviting Shell and Statoil to become shareholders was to create an opening for their activity within Swedegas. The goal was to develop Swedegas so that in the end it would not be directly dependent on its owners, but would function commercially. Vattenfall also wanted to solidify the capital of Swedegas, and get rid of old contingent loans. DONG was also given an opportunity to enter the company, and in the end Vattenfall kept 60% of the shares, while Shell and Statoil each took over 15% of the shares, and DONG acquired 10%.[97]

Dahl pointed out that the most relevant issue concerning the planned expansion was whether an increased use of natural gas was compatible with the energy policy aims established by the Riksdag. From a security of supply perspective, she considered natural gas to be a safe source of energy, since there were many sources available, but the diversity aspect should not be exaggerated. Since Sweden already imported oil from Norway, a natural gas import from that same area would not count as a diversification. She considered the environmental aspects of natural gas to be its absolutely biggest selling point, with the lack of sulphur an especially important factor, but emphasized that in order for natural gas to be a real alternative for the phase-out, decisions had to be made now. She had a major concern as to whether the proposed projects would be commercially viable, but found the financial estimates for the project to be acceptable. As a result, she considered the new projects to be in line with the

[92] 'Nu strömmar naturgasen: Optimism om utbyggnad', *Affärsvärlden*, 29/31 (1985), pp. 28-29.
[93] Govt. Bill 1985/86:91, p. 5.
[94] 'Naturgas för 12 miljarder i pipeline under Östersund', *Veckans affärer*, 27, 9 August 1984.
[95] Govt. Bill 1984/85:120, 'Om riktlinjer för energipolitiken', p. 193 ff.
[96] Govt. Bill 1985/86:91, p. 6.
[97] Swedegas director's report 1987, Swedegas archive.

energy policy goals. As Swedegas should be run efficiently and on commercial grounds, she viewed favourably bringing the experience of the new owners as well as their connections with the Western European gas market into the company, and therefore endorsed Vattenfall's request, on condition that any new trunk line would be built with extra capacity for future expansion, and that all activity was in line with the energy policy aims.[98]

The opposition largely agreed on this issue. While representatives from the Centre Party and the Communist Party argued for a quicker expansion of the natural gas grid, the Moderate Party was of the opinion that more of Vattenfall's shares should be sold, and accused Swedegas of being practically on the verge of liquidation, calling the natural gas market dead due to the low oil prices. Only one representative from the Liberal Party pointed out the possibility of conflicts of interest since buyers and sellers would be on both sides of the table. The Sydgas project was also criticised by the Moderate Party and the Liberal Party for being an economical failure, whereupon a representative from the Social Democratic Party pointed out that the reason for Sydgas' financial situation was the bad price negotiated by the earlier non-socialist coalition government.[99] The political discussions contained several examples of criticism of the Sydgas project, as seen above. While the project had been a technical success, it was argued that the finances of the Sydgas project, both long-term and short-term would be unsatisfactory, despite the measures taken to change the trend. The oil price was one main reason, but there was also an "unfortunate" market mix. More gas than anticipated had to be sold to customers whose alternative fuel was heavy fuel oil, which meant these customers were not willing to pay more for gas. The complicated organisation of the Sydgas project as well as conflicts between Swedegas and Sydgas AB about the price of the Danish gas were also mentioned as problems.[100]

In the autumn of 1987, new negotiations started between the state and the other owners of Sydgas, resulting in the withdrawal of the Ministry of Industry from Sydgas AB and the selling of its 50% interest to regional actors. The goal was to change the structure of the project to make it more adaptable to the market. This meant that the government considered its promises to Sydgas regarding taxes and support fulfilled, and the state responsibilities according to the 1983 agreement expired. Parallel with negotiations between the Ministry of Industry and the other owners, negotiations took place between Swedegas and Sydgas regarding a new commercial deal.[101]

[98] Govt. Bill 1985/86: 91, pp. 9-10.
[99] Riksdagens minutes nr. 124, 23 April 1986, pp. 49, 55, 74, 92-93.
[100] Govt. Bill 1987/88:72, 'Om avyttring av statens aktier i Sydgas AB', pp. 4-5.
[101] Govt. Bill 1987/88:72, p. 5.

## Concluding Remarks

When the Sydgas negotiation was over, the time came for planning and execution, and the actors had to rally in order make the deal into something real. This was not a simple thing, firstly since the Swedish actors had no experience of such an endeavour. Secondly, the energy political situation in and out of Sweden changed quickly after the contract was signed, and this had implications on the deal. The uncertainties previously discussed in theoretical terms, now had to be dealt with in a practical way.

The Sydgas crisis highlighted conflicts surrounding the Danish-Swedish pipeline that had not come out into the open before. The actor coalition that had agreed on the deal had changed, with Svenska Petroleum as new owners of Swedegas and a new government, and the short period of agreement during the negotiations was now over. The discussion about Sydgas's finances thus revealed out tensions both between the earlier government and the new one, between Swedegas and Svenska Petroleum, between Swedish and Danish actors, and between Sydkraft/Sydgas AB and Swedegas. These tensions were palpable, but they were also part of an intricate and messy political game, and the expressed opinions of the actors had to be considered in this context. One example was the question of whether the Danish deal was really at risk of being terminated or not. I believe there were likely to be actors that would have wanted the deal terminated. A majority of the actors, however, did not think it worth the economic risk to withdraw, especially not in the context of continued relations with Denmark.

The conflict of interest also showed that different actors interpreted risks and opportunities differently in the Sydgas project. The different calculations made by Sydgas, Swedegas and Svenska Petroleum show largely the same results, but the actors interpret the risk factor and the way the problem should be handled differently depending on their own contexts and priorities, as in the previous case of the calculations with regard to the price gap. The rearrangement of the Sydgas deal in Sweden shows how the state, after having taken a great responsibility for the deal when it was signed, changed tactics, and instead tried other ways of managing risk. Both the non-socialist government in the early 1908s and the Social Democrats declared that the natural gas had to be commercially viable, and this mantra became more pronounced after the Sydgas crisis.

Although the state continued its involvement in Swedegas through Vattenfall and as shareholders in Sydgas AB, the rhetoric became sharper in the context of the Sydgas problems, as well as in the context of the falling oil prices. The market had changed, and the actors had to consider how to fit natural gas in. Part of the problem was also to insert natural gas into a Swedish energy system where it had few places to go. During the early 1980s, natural gas fit into a

context of oil replacement, and it then competed with coal, oil and LPG. In this context, its most competitive edge was its environmental qualities. The goal was to replace oil, but when the oil prices declioned, natural gas was no longer a good competition. Electricity would have to be replaced if the nuclear phase out was to take place, but in the meantime electricity had taken over large market shares in heating, for example, and that was also difficult for natural gas to compete with, being a new system. This, as well as the Sydgas crisis itself, highlights the fact that the Sydgas deal was struck in an exceptional time. A few years earlier or a few years later, the same deal would likely not have been agreed upon. The opinion regarding whether the Sydgas deal was a good way to handle the energy issue or not had changed.

Another consequence of the Danish deal and the state involvement in Swedegas was that natural gas now was a part of the Swedish energy system, and therefore was integrated in the energy policy discussion. Thus, the different political parties, and especially those in government, had to have formulated goals related to natural gas. During the first half of the 1980s, the opinions regarding natural gas did not seem to differ very much between the parties, and in some sense, the different parties themselves did not seem sure about their opinion. This can be seen in the changing opinions with regard to the tax discussion. Those who put natural gas in the context of sulphur emissions wanted a lower tax on natural gas, and this put it in an advantageous situation in relation to oil and coal. In the context of imported fuel, it could be argued that the tax should be higher than that on LPG. The criticism expressed on the natural gas issue was more directed at the Sydgas deal itself. The biggest worries were the market situation and the financial risk. This risk was handled by new ownership changes. No one seems to have opposed the continued extension of the Sydgas pipeline, for example.

New coalitions were formed on different levels during this time. Industry actors organised in different groupings, and the ownership changes in Sydgas and Swedegas brought in more municipal and private actors, as well as foreign commercial companies. These actors, as well as Vattenfall, launched new projects in the 1980s, and the next chapter follows these projects.


Fig. 9: Cover of Vattenfall's PGT report, March 1983, Swedegas archive.

# Chapter 7: Revisiting and Revitalizing: Searching for New Supply

While the political discussion regarding the changes in the Swedish energy system went on in the wake of the referendum, Swedegas and other gas actors planned for the coming age of gas. Parallel with launching the initial stages of the Danish-Swedish pipeline construction, new supply routes were investigated, and old ones were revisited. Chronologically, this chapter covers the 1980s, and thus the projects described here were launched against the background of the political discussion in Sweden outlined in Chapter 6.

## Revisiting Östgas

The five years since the last bouts of negotiations had seen the coming of age of the Soviet Union as a natural gas exporter. In Siberia, large gas fields were now producing, and the country had gone from net importer to net exporter of natural gas.[1] In 1980, following the developments in Siberia, the Soviets were planning a giant trunk line from Siberia to western Russia, the goal being to extend it toward Western Europe. In connection with this project, Soyuzgazeksport, the Soviet Foreign Trade Organisation focused on natural gas, was renegotiating gas contracts with their Western customers.[2] As part of these negotiations, the Swedish government was once again approached with offers of natural gas, this time a quantity of 3 bcm/year, starting in 1985. The Swedish Minister of Industry, Nils Åsling, asserted that Sweden was very interested in the offer.[3]

This was confirmed in a government bill establishing outlines for energy policy, in which Carl Axel Petri suggested that a loan should be given to Swedegas for continued investigation and negotiation. As seen in the last chapter, this bill was proposed before the Sydgas crisis, and Petri saw great opportunities in increased natural gas import.[4] It can also be assumed that the successful Sydgas contract with Denmark was an important factor. Since one supplier was already connected, connecting a second one was a logical next step. Importing from the Soviet Union would increase the supply security for Sweden, but, as earlier during the 1970s, there was also the balance of trade to consider. The Swedish Foreign Ministry had previously complained about the unbalanced trade between the two countries, and during Brezhnev's summer visit it was decided

[1] Jonathan P. Stern, *Soviet Oil and Gas Exports to the West*, p. 31.
[2] Stern, pp. 31–32.; 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 4.
[3] Notes from meeting between Archipov and Åsling, 23 September 1980, Ministerstvo vneshnei torgovli SSSR, fond 413, op. 32, tom 1, 1011; 'Sovjetrapporten', Swedegas,29 September 1981, Swedegas archive, p. 4. The offer was given in June 1980, when Juri Brezhnev from the Minvneshtorg visited Stockholm.
[4] Govt. Bill 1980/81:90, p. 160-161. See Chapter 6.

that the trade between Sweden and the Soviet Union needed to be "activated".[5] Yet in the end of 1980 the contracted trade between the two countries was less than half of what it had been the year before. The Soviet trade representatives in Sweden also saw the natural gas project as a possible way to solve part of this problem.[6]

Both the oil issue and the issue of the balance of trade were continually discussed parallel to the gas negotiations. In September 1980, when Nils Åsling visited Kremlin to discuss the gas proposal, the Soviet Union was threatening to reduce their export of oil and oil products to Sweden. Åsling tried to convince the Minvneshtorg not to decrease the oil export to Sweden, saying that the Swedes viewed oil trade as the foundation of the partnership between the two countries. In this discussion, even though Åsling expressed Sweden's great interest in the natural gas deal, it is clear that the issue of highest interest was oil. The Minvneshtorg argued that the Soviet Union had a greater delivery responsibility to Finland and the socialist countries, and these had to be prioritized. Åsling was advised to concentrate on the gas project, and the possibility to participate in the construction of the Soviet pipeline.[7] One month later, during a visit by Deputy Minister of Foreign Trade Osipov to Stockholm, it was decided that a delegation from Swedegas would travel to Moscow in December in order to meet with the gas ministry and the Soyuzgazeksport. At the same time, the director of the Swedish Trade Council, would meet leaders of Minvneshtorg to discuss the possible deliveries of materials and pipe destined for the construction of a trunk pipeline from the Tyumen area.[8] During the autumn, an exchange of information regarding needed material took place.[9]

This reluctance to promise oil deliveries to Sweden was in all likelihood connected to the Soviet oil crisis in the end of the 1970s. Oil had been the main Soviet export commodity of the previous three decades, but during the 1970s, it became clear that the Soviet oil reserves had been overestimated. Since no new giant oil fields were discovered during the mid-1970s, the country was facing a more rapid oil resource depletion than previously anticipated. In this situation, natural gas was viewed by many Soviet actors as a replacement for oil in foreign trade.[10] The risk of losing oil trade with the Soviet Union was a serious matter

[5] Summary of the visit of Ekefelt (the Swedish Foreign Ministry) to Soviet Foreign Minister Brezhnev, March 1980. Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011.
[6] Minutes from meeting with the board for Soviet representatives in Sweden within the field of economy, science and technology, 21 November 1980, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011.
[7] Notes from meeting between Archipov and Åsling, 23 September 1980, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011.
[8] Notes from visit by Kronholm (the Swedish Embassy in Moscow) to Piskulov (Minvneshtorg), 8 December 1980, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011.
[9] See e.g. notes from visit by Kronholm (the Swedish Embassy in Moscow) to Piskulov (Minvneshtorg), 8 December 1980, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011.
[10] Högselius, p. 296.

for the Swedish government and Swedish industry. The Soviet Union, on the other hand, was more interested in expanding natural gas exports, and was only interested in a Swedish deal if equipment was exchanged for future gas deliveries. They also stressed the importance of long-term credits, and contracts.[11] Engaging in natural gas trade with Sweden seems to have meant minimal risk for the Soviet actors. Most risks connected to the infrastructure project were allocated elsewhere, since pipelines to the Siberian gas fields would be constructed anyway with the help of other Western European actors, and the pipeline to Finland already existed.[12] A positive side of the project was that it contributed to overall good relations with Sweden. Trade representatives from the Soviet Union working in Sweden considered it important to keep a good trade relationship, both in view of the traditional economic relations between the two countries, and with respect to "Sweden's political position in Northern Europe".[13]

After over a decade of more or less détente, tensions between the United States and the Soviet Union increased in 1980. The main reason for this was the Soviet invasion of Afghanistan in December 1979, which led to a United States-led boycott of the summer Olympics in Moscow. The increasing dependence of Western European countries on Soviet gas and oil was already worrying the United States, and this worry was certainly exacerbated when the Soviet Union started contracting more gas for export. Most Western European countries, among them Sweden, did not share the immediate distress regarding increasing use of Soviet gas in Western Europe.[14] Most likely, they considered the high oil prices more worrisome.

Tensions between the United States and the Soviet Union were discussed during meetings between Swedish and Soviet representatives at the time. Lars Hjorth, then CEO of Svenska Petroleum (which was just about to take over the majority ownership of Swedegas), told a Soviet trade representative that his company worried about the fluctuating Rotterdam market, where they had run into problems. Svenska Petroleum instead saw the Soviet market as more stable. This factor, combined with an interest of avoiding more dependency on the OPEC countries, made Svenska Petroleum want to buy more oil from the Soviet Union. Hjorth wanted to see a closer relationship between the United States and

[11] Notes from meeting between Ponomarev and Myrlöv, 16 December1980, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011.
[12] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 51.
[13] Minutes from meeting with the board for Soviet representatives in Sweden within the field of economy, science and technology, 21 November 1980, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011. It is unclear what they meant by this. It may indicate that the political atmosphere regarding natural gas trade was tenser at this time than it had been ten years ago. This could be due to heightened cold war tensions.
[14] See Jentleson, e.g. p. 21, Högselius, pp. 184–185.

the Soviet Union, but admitted that the situation did not look good.[15] A political advisor working at AB Johnson further observed that Sweden and the rest of Europe could not manage without oil deliveries from the Soviet Union, the way that the United States could.[16]

When Ronald Reagan became President, tensions mounted with regard to the Soviet Union. In the end of 1981 the United Sates issued a trade embargo, in response to the imposition of martial law in Poland, for which they held the Soviet Union responsible.[17] The embargo applied all US exports of energy equipment and technology to the Soviet Union. When their allies in Western Europe neither joined the embargo, nor interrupted their negotiations regarding the 40 bcm pipeline, the embargo was extended to certain parts of the European market. In the end, however, this strategy did not prove successful, and the 40 bcm pipeline was constructed in cooperation with Western natural gas customers. [18] While the United States saw a risk in the increased dependence of Western European countries on Soviet gas, the Western countries saw the risk of being dependent on OPEC as more serious. This was true for Sweden, as well, which clearly wanted to distance itself from OPEC dependence.

During this time, Swedegas AB investigated the possibilities of gas importation from the Soviet Union. The possible future gas project was presented in a draft report called the Soviet report, written mainly by Torkel Ösgård, in September 1981. This report shows how Swedegas imagined a furthering of the Swedish natural gas system at this time. The Swedish government had declared that all new natural gas projects should be economically viable, long-term, and have a diversified supply, and this was repeated throughout the 1980s in the political natural gas discussion, regardless of government.[19] One major concern was the possibility that natural gas would penetrate the Swedish market, since it competed with all other fuels. Nevertheless, Swedegas considered there to be a place for new fuels, due to the government decisions regarding nuclear phase-out as well as the earlier moratorium on the development of hydropower. They saw coal as a major competitor to natural gas, and predicted a "coal renaissance".[20] This prediction coincides with the political interest in coal during the first half of the 1980s (see Chapter 6). The market for Soviet gas foreseen by Swedegas was first and foremost large industries, with possibilities

[15] Notes from meeting between Hjorth and Orechovskii (the Soviet Embassy in Stockholm), 2 July 1980, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011.
[16] Notes from meeting between Novikov (the Soviet Embassy in Stockholm) and a political advisor at AB Johnson (unnamed), Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 1011. Although the practical actions of both Svenska Petroleum and Johnson confirm that they are serious in their attitude here, it is worth noting that they are speaking in a Soviet negotiation context.
[17] For a discussion regarding the martial law in Poland, see e.g. Witold Patoka, *Poland Under Pressure 1980-81: Crisis Management in State-Society Conflict* (Umeå: Umeå University, 2001).
[18] Jentleson. pp. 19-20.
[19] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 47.
[20] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, pp.20, 22-23.

to invest in a restructuring of their fuel supply. Smaller industries, with slimmer margins for investments could not be counted on to be early adopters.[21] In order to deal with both the market risk and the security of supply, Swedegas' proposed strategy was a slow build-up of the Swedish market starting from the small, Danish supply of about 1-1.5 bcm. Parallel to this, they wanted to initiate deliveries from the Soviet Union through Finland, and slowly build up a market in eastern Sweden. The goal was then to connect the two markets. This connection would lead both to increased supply security and a better price-negotiating position.[22]

According to Swedegas, while Soviet import was a way of diversifying supply, it also risked rendering the market less flexible, thus hindering other connections later on, for example from Norway. This was not necessarily a problem, since Norwegian gas was seen only as a long-term option. In October 1981, the Norwegian government decided to allow the construction of Statpipe, the first pipeline connecting Norwegian gas fields to Norwegian shores.[23] Swedegas considered this to be such a large project that Norway would have no possibility of joining another large pipeline project in the foreseeable future. Thus, the Soviet option was more likely in the short-term. Norway would instead be an option for the second half of the 1990s. If Soviet gas were to exist on the Swedish market, this would give Sweden a better position to negotiate prices with the Norwegians. Prices could be lower from Norway, since there would be no transit fees, but on the other hand the Soviet price would probably be easier to negotiate, since the Soviet Union needed Western currency. A clear disadvantage for future Norwegian gas was that the infrastructure would already be in place from Finland, whereas one would have to be constructed from Norway.[24] On the other hand, when the report was being written, the first steps towards such an infrastructure from Norway had just been taken by Vattenfall. I will return to this later in this chapter.

In order to gain more knowledge regarding the European natural gas business, Swedegas cooperated with Finnish Neste OY on a detailed survey of all the gas transit projects on the continent, including current negotiations for more Soviet gas supplies. Swedegas saw these negotiations as precedents in certain respects. For example, France was given a slightly lower price than the other countries due to their transit costs through West Germany. This made Swedegas hope that they might be able to argue for a lower price regarding the transit through Finland.[25] In Finland, the discussion regarding a possible further expansion of the domestic gas grid was connected to the possibility of Sweden transiting

[21] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 29.
[22] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 47.
[23] Arneson. p. 137.
[24] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, pp.46-49, 55.
[25] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, pp. 53, 55.

Soviet gas through Finland.[26] Following the continental style, Swedegas wanted joint ownership of the Finnish pipeline. However, Neste objected to this, referring to Finland's "exposed political situation". Letting Sweden become a joint owner of the pipeline would enable the Soviet Union to demand joint ownership in other projects. They were willing, however, to give Swedegas all the rights and obligations of ownership.[27]

From a supply perspective, the Soviet Union was deemed safe, since the gas quantities sent to Sweden would be such a small part of Soviet production, and the production was spread over more fields. Swedegas made a comparison with the dependence on Soviet gas on the continent, where an acceptable rate of deliveries from the Soviet Union was considered 30 % of the overall supply. For Sweden, this would mean 1 bcm out of the 3.6 bcm estimated amount of gas required for the Swedish market.[28] Ove Rainer, then chairman of the Swedegas board, pointed out that experiences from other countries so far showed that the Soviet Union never "turned off the tap" for political reasons. In Norway, there had been disruptions because of political conflicts on the platforms. In the Soviet Union however, according to Rainer, "no one goes on strike".[29]

The supply risk connected to Soviet importation was more of a technical nature. The Soviet report claimed that Soviet supply had fluctuated with respect to other Western companies, sometimes as much as by a decreasing of 30 %, but that these cuts had been announced in advance, and had been the same for all buyers. The overall opinion was that technical reasons lay behind these disruptions. Thus, there was a technical risk, and in other countries in Europe this was handled through a combination of supply from other sources, stored gas and interruptible contracts.[30] Overall, Swedegas saw many advantages of Soviet importation, such as being able to supply the Swedish market on a rather short-term basis, to get supply secured from a supplier other than Denmark, and all the possibilities that came with cooperation with Finland, where risk could be shared. Furthermore, Sweden could also become a transit country to Finland from the North Sea. Still, they admitted that the "uncertainties in a long-term perspective are, of course, considerable."[31]

[26] Finnish parliamentary minutes, 28 April 1981, F1 Ss 187, pp.5-6.
[27] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 57.
[28] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, pp.18, 47
[29] 'Naturgasens roll för blygsam i den svenska energipolitiken', Ove Rainer, *VVS*, 7/8 (1982), p. 97.
[30] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 11. An interruptible contract lets a customer pay less for the gas, in exchange for being the first to be cut off in case of a supply emergency.
[31] 'Sovjetrapporten', Swedegas, 29 September 1981, Swedegas archive, p. 48.

## The End of Östgas

A gap in communications between Swedish and Soviet representatives occurred in 1982, and the draft report was never presented to the government. The reason why the draft report was never presented to the government was that the Soviets had been too busy negotiating with their buyers on the continent, and wanted the Swedish talks to be postponed until those negotiations were settled. This would take at least six months, according to their calculations.[32]

The next time the Soviet gas issue was raised was in early 1983 when Antonia Ax:on Johnson of Johnson AB visited the Minvneshtorg, and her delegation was repeatedly questioned about natural gas. Both deputy ministers at the Minvneshtorg wanted to know what Sweden's view on natural gas importation was. Were they really willing to import? The ministers pointed out that importation would be a great opportunity for the Swedish industry, and that in view of the limited oil resources in the world, natural gas was a viable option.[33] Johnson AB answered that the issue could only be addressed by the Swedish government, and that the discussion in Sweden at the moment concerned natural gas importation from close resources, such as Norway, Holland and Denmark.[34] Further, there was the issue of Swedish industries being situated far apart, thus making an infrastructure more expensive. He promised to speak to the Minister of Industry, Thage G. Petersson, and keep the Minvneshtorg posted about the results.[35] These kinds of direct questions about Swedish interest do not appear to have been asked during earlier negotiations. Perhaps the repeated failures of the 1970s had made the Soviet representatives wary of Swedish intensions.[36]

Relations to the Soviet Union took a hit in April 1983 when a commission on the submarine-affair was published, where the conclusion was reached that there had been several breaches into Swedish territory.[37] This meant that the official

[32] PM 1982-01-28, Memorandum 'Naturgas från Sovjetunionen', Thyberg, 28 January 1982, SE/RA/221/2210.03.3/H/H 53/28,dossier 33.
[33] Notes from meeting between Johnson (AB Johnson) and Komarov (Minvneshtorg), 20 January 1983, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 3018; Notes from meeting between a delegation from AB Johnson and Manshulo, 21 January 1983, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 3018.
[34] It is unclear which projects Ennerfeldt from AB Johnson is referring to here, or if he was misinterpreted by the Soviets. As far as I know, Holland was not considered an option for Swedish natural gas importation.
[35] Notes from meeting between a delegation from AB Johnson and Manshulo, 21 January 1983, Ministerstvo Vneshnei Torgovli SSSR, fond 413, op. 32, tom 1, 3018.
[36] Ironically, this is also the last document I have found in the Minvneshtorg archives where Swedish and Soviet representatives discuss the natural gas issue. Later during the 1980s there would be further natural gas discussions between the two countries in connection to the mid-Swedish project, but these are not documented in the archive.
[37] SOU 1983:13, *Att möta ubåtshotet. Ubåtskränkningarna och svensk säkerhetspolitik*. On 27 October 1981, a Soviet submarine struck land outside Karlskrona, causing a diplomatic crisis with the Soviet Union. This submarine incident does not seem to have been the reason for the gap in the negotiations.

connection with the Soviet Union were limited, although Sweden still imported oil. In the meantime, Swedegas turned their efforts to other projects, notably the Project Gas Transit concerning Norwegian gas deliveries from northern Norway, which I will return to later in this chapter.

The expected final report from Swedegas regarding the Soviet project was finished and presented to the Swedegas board in June 1984, before a final presentation before the government. This report was revised from the earlier Soviet report and the revision mirrored changes in attitude regarding natural gas that had taken place between 1981 and 1984. One change regarded the view of how natural gas should be used in the Swedish energy system. The 1984 final report emphasized both heating and industrial uses, and heating was given a more central place in the market survey. In addition, electricity generation was more significantly present than in the 1981 report. The report considered natural gas to be an important replacement for both oil and electricity, within the industry and in co-generation plants, while the 1981 report clearly stated that use in power plants was not an option.[38] This mirrors the change in the political debate discussed in Chapter 6.

Another big departure from the 1981 report regarded financing. The draft report stated that in the first step of introduction, natural gas would not be commercially viable, due to the large infrastructural investments needed, and Swedegas was not going to be able to support these costs without financial help.[39] In the June 1984 report, Swedegas expected a financial surplus on roughly the same level as the Sydgas project. They calculated a deficit in the early stages of the project, but there was no mention of any need for financial help. Instead the deficit would be handled by the companies responsible for construction and distribution. Swedegas pointed out, however, that there was much insecurity that could influence the final result. One thing that was specifically mentioned was the sensitivity with regard to a heightened competition with electricity up until 1995.[40]

The June 1984 report still radiated a certain optimism regarding the place of natural gas in the Swedish energy system. After the report was presented to the Swedegas board, however, the board decided to again rewrite certain parts before the presentation to the government. In the new version of the report, the future of the Östgas project was described in a markedly less optimistic way. For example, after the second revision, the development of district heating, conversion to electric heating and solid fuels and the lessened use of oil were seen as restricting the possible space for natural gas on the Swedish market. Furthermore, according to the new version, the investments of about SEK 7.5-8

[38] 'Östgasrapporten', Swedegas, June 1984, Swedegas archive, pp. 13-15
[39] SOU 1984:61 'Istället för kärnkraft', p. 79-80.
[40] 'Östgasrapporten', Swedegas, June 1984, Swedegas archive, pp 1, 47- 48.

billion would lead to many years of deficit for the companies involved, and regardless of where the capital would come from, the need for direct involvement by the state was again deemed necessary. Although certain estimates of the price and market pointed towards a profitable result over the whole life of the project, the uncertainties regarding the market made the project seem very risky and "unproportionally demanding of financial capital." Thus, the new strategy proposed by Swedegas was a slow build-up from the south, with the goal of reaching mid- and eastern Sweden at a later stage.[41]

Thus, the judgement from Swedegas concerning the Soviet project changed not only between 1981 and 1984, but also from June 1984 to September 1984. What caused this change? Hans Frisk, director of marketing at Swedegas, explained that there were several reasons to say no to natural gas through Finland in 1984. A pipeline was very expensive, and the price appeared to be too high. Denmark, Holland and Norway, on their hand, lowered their prices. Therefore Sweden could get gas from Denmark more cheaply than from the Soviet Union. He considered the price issue to be crucial, but also pointed out the higher share of electricity in the Swedish energy system shrinking the market.[42]

I see the changing views of the Östgas project as connected to the Sydgas debate. The problems facing the Sydgas project made Swedegas rethink both state involvement in natural gas, and the level of financial risk deemed possible to take. In the energy bill presented in February 1985, Birgitta Dahl discussed the Soviet project and stressed that an essential prerequisite for a natural gas introduction in the future (during the "next restructuring") would be that it be commercially viable. The construction of a new infrastructure must be made without support from the state. Despite this, she deemed it important to keep the possibility open for a future introduction of natural gas. The question as to the degree of state involvement (or non-involvement) in a natural gas project had been debated earlier, but this was the first time that state involvement was completely ruled out by a Social Democratic government. Dahl saw no reason to continue the Östgas project.[43] The Moderate Party agreed, citing security of supply as the main argument.[44] The Communist Party opposed this position, arguing that the gas project would mean better export opportunities to the Soviet Union, as well as more job opportunities for Swedish companies.[45] The Centre Party did not oppose to the decision, but emphasised the environmental properties of natural gas and argued that if natural gas was ever found in Sweden, it should be used domestically instead of imported energy.[46]

[41] 'Östgasprojektet', 20 September 1984, Swedegas archive, pp. 7-8.
[42] 'Dörren ännu inte stängd för sovjetisk naturgas', *Norrskensflamman*, 18 April 1986.
[43] Govt. Bill 1984/85:120, pp. 191, 194.
[44] Motion 1984/85:2876.
[45] Motion 1983/84: 323; Motion 1984/85:2088.
[46] Motion 1984/85: 2878.

## Transiting Norwegian Gas

Parallel with the early Östgas negotiations, another big project was considered in the early 1980s: the Gas Transit Project (*Projekt gastransitering, PGT*). As we have seen, natural gas imports from Norway had been discussed as early as in the 1970s. Swedish companies and interests were also involved in vying for a part in the exploration of Norwegian gas and oil fields. For example, in December 1979, Volvo was invited to participate in the development of the areas north of the 62° N latitude, while Svenska Petroleum did not get any concessions.[47] In early 1980, internal Norwegian discussions regarded possible pipelines to the Norwegian mainland. New fields were being discovered, and several countries (Great Britain, Germany, Holland, Denmark and Sweden) had shown an interest in buying more Norwegian gas.[48] As mentioned in Chapter 5, talks were held between Anker Jørgensen in Denmark and Odvar Nordli in Norway at the same time as the Sydgas negotiations.[49]

Swedish-Norwegian relations regarding gas were quite ambiguous. In early 1980, the Swedish ambassador in Oslo commented that Norway preferred to focus their gas trade to the continent where they could easily sell all their gas.[50] In the Swedish daily Svenska Dagbladet, the same month, the Norwegian Minister of Oil and Gas claimed that Sweden, or at least the Swedish government, was quite uninterested in Norwegian gas, and expressed his astonishment at the apparent Swedish incapability of acting in the energy issue.[51] This was confirmed by an article in Aftenposten in August the same year in which Pehr G. Gyllenhammar, the CEO of Volvo industrial group, presented his ideas for Norwegian-Swedish industrial cooperation in the gas sector, an initiative taken following a Norwegian proposal regarding Swedish gas import in return for Swedish industrial investments in Norway**.** The article claimed that both the Norwegian government and the Norwegian Parliament (*Stortinget*) had expressed a willingness to negotiate the gas issue with Swedish actors, but that Swedish politicians did not "seem to agree with themselves on the issue". Gyllenhammar nevertheless hoped that the Swedish government would see the importance of cooperation in this area.[52] He had previously expressed the opinion that Sweden should try to connect to the European natural gas net by all

[47] The Swedish Embassy in Oslo to the Swedish Foreign Ministry, December 1979, SE/RA/221/2210.03.3/H/H 53/26, dossier 27.
[48] Kellberg (the Swedish Embassy in Oslo) to the Swedish Foreign Ministry, 15 February 1980, SE/RA/221/2210.03.3/H/H 53/26, dossier 28; Memorandum 'Nordsjögasen', Anneling (the Swedish Embassy in Oslo), 30 January 1980, SE/RA/221/2210.03.3/H/H 53/26, dossier 28; Memorandum 'Ilandföring av olja och gas från Statfjordfältet m.m.', Kellberg, 8 April 1980, SE/RA/221/2210.03.3/H/H 53/26, dossier 28.
[49] See Chapter 5.
[50] Kellberg to the Swedish Foreign Ministry, 15 February 1980, SE/RA/221/2210.03.3/H/H 53/26, dossier 28.
[51] 'Norges oljeminister i SvD-intervju: Vår gas räcker till Sverige – Varför hör ni inte av er?', *Svenska Dagbladet Näringsliv*, 23 February 1980.
[52] 'Volvo-sjefen rede til nytt fremstøt i Norge: Gass i bytte med industri', *Aftenposten*, 29 February 1980.

means necessary , and had attempted to involve Volvo in a deal with Norwegian interests regarding oil development.[53] The article in Aftenposten was flanked by a notice regarding discussions between Statoil, Swedegas and DONG about a Nordic transport system for the North Sea gas.[54] In an article in Swedish weekly *Veckans affärer*, Ove Rainer said that Sweden was interested in a direct pipeline from Norway, and more gas than Norway could offer at that time.[55] Thus, despite the accusations of reluctance of both parties, discussions were underway.

As in the case of the Soviet Union, the balance of trade was important in the Swedish-Norwegian discussions. In the case of the Volvo deal, the gas was seen as a part of a larger pattern of industrial cooperation. However, the attitude towards this kind of cooperation was not unanimously positive. A Norwegian delegate pointed out during a later discussion regarding industrial cooperation that the Swedes really "made an effort to explain to the Norwegians that the Swedes are not once again just looking to export even more goods to Norway; this time they are seeking cooperation with Norwegian industry and reciprocity is the leading word."[56] This indicates an earlier discontent with Swedish-Norwegian balance of trade.

Although the Volvo project remained an unrealized idea, another project was launched with the goal to connect the offshore gas resources in northern Norway, outside Tromsø, to the continental market through a pipeline passing through Sweden to a connection either on the west coast or to the Sydgas pipeline. At this point in time, the findings above 62° N were not big enough to exploit commercially, but the prospecting gave hope for large resources. In that case, Statoil would have to transport the gas to prospective buyers, and one of the possibilities to do this was through Sweden.

The extraction conditions in the North were difficult, and most likely the area would face a slow development even if larger amounts of gas were found. On the other hand, the planning and organisation process would take very long and needed to start early.[57] Statoil therefore launched a large study of a Trans-Scandinavian pipeline, and cooperated with institutions and firms in the other Nordic countries where the pipeline might pass. Statoil itself studied the landing and transfer in Northern Norway, as well as two other possibilities for

[53] Pehr G. Gyllenhammar, 'En industripolitik för människan', Näringsliv & samhälle, 4 (1979), p. 5; Pehr G. Gyllenhammar, *Fortsättning följer (Stockholm: Albert Bonniers Förlag, 2000)*, p. 82.
[54] 'Nordisk møte om norsk gass', *Aftenposten*, 29 February 1980; See e.g. Kellberg to the Swedish Foreign Ministry, 25 August 1980, SE/RA/221/2210.03.3/H/H 53/26, dossier 29.
[55] 'Kallt krig om norsk gas: nej till pipeline in i Sverige', *Veckans affärer*, 7 August 1980.
[56] The Swedish Embassy in Oslo to the Swedish Foreign Ministry, 17 augusti 1983, SE/RA/221/2210.03.3/H/H 53/29, dossier 36.
[57] Report 'Vattenfalls förslag till sträckledning, Projekt gastransitering', Vattenfall, 1 March 1983, Swedegas technical archive, p. 11.

transport: through a sea pipeline outside the coast and by LNG tankers.[58] The study regarding pipeline transfer in Denmark and Western Germany was carried out by Danish consulting firms hired by Statoil, which also had a close cooperation with the Danish Energy Board.[59] In Sweden, Statoil cooperated with Vattenfall, which was given the mission of doing a pilot study of the Swedish part of the pipeline in cooperation with Swedegas AB.[60]

The project was greeted with cautious enthusiasm in Sweden. The Minister of Employment, Ingemar Eliasson, claimed it would be of great interest for Swedish industry and employment to complete a gas pipeline on Swedish territory. The government planned to be as prepared as possible during the test drilling, in order to be ready to launch the project as soon as there were any positive results. This could be the largest industrial project ever in the Nordic countries, and any delay in the project would not be due to lack of foresight from Swedish authorities.[61] It was also an opportunity to gain insight into the technology and organization of large and complex projects. The mission of Vattenfall should be seen against this background, and against the fact that natural gas would be a part of our future energy supply.[62] A Vattenfall representative pointed out all the uncertainties with the project, and that this was only one option for Norway, but still agreed that it could be a good thing for employment and to get more natural gas into the Swedish market.[63]

In order to gather information and know-how, a group was created at the Ministry of Industry to give advice to Vattenfall regarding the societal issues around the PGT prospecting. This group travelled to the United States and Canada to study the experiences of those countries of large pipeline projects.[64] A Gas Transit group was also formed at Vattenfall that included representatives from Vattenfall, Swedegas and Svenska Petroleum Exploration. Vattenfall led the project and handled technical planning and overarching issues, while Swedegas made market analyses and studied the distribution system.[65]

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[58] Memorandum ' Projekt Gas-Transitering – plan för arbetet', Hultin and Lindbo (Vattenfall), 28 January 1982, Swedegas technical archive; 'Projekt Gas-transitering', *Svensk lantmäteritidskrift,* 3 (1982), pp. 176-181.
[59] Notes from meeting concerning a transscandinavian natural gas pipeline, 15 July 1982, 2 0035 Energiministeriet 0176/1; Notes from meeting between representatives of Statoil, the Norwegian Ministry of Oil and Energy and Danish Energy authorities, 5 May 1982, 2 0035 Energiministeriet 0176/1.
[60] Govt. Bill 1984/85:120, p. 191. The study was ordered 1 September 1981.
[61] 'Naturgas till Västeuropa bäst genom Sverige', Ingemar Eliasson, *Svenska Dagbladet*, 19 July 1982.
[62] 'Stora gasledningsprojekt får stor industripolitisk effekt', Göran Aldskogius (Ministry of Industry), *VVS*, 7/8,(1982), pp. 93-95.
[63] 'Transitgasprojektet ger Sverige 4 miljarder $m^3$ för 200 miljoner', Tord Lindbo (Vattenfall), *VVS*, 7/8 (1982), p. 65.
[64] 'Stora gasledningsprojekt – erfarenheter från USA och Kanada', *Svensk lantmäteritidskrift,* 3 (1982), pp. 182-187.
[65] Memorandum 'Projekt Gas-Transitering – plan för arbetet', Hultin and Lindbo, 28 January 1982, Swedegas technical archive.

Although Vattenfall had stepped out as shareholders in Swedegas, they were deemed to have the economical and practical resoucres to handle such a large project study.[66]

The Danish Energy Board and Ministry of Energy were also interested in the project, although not as net importers of natural gas, but only to coordinate their grid with the rest of the Nordic countries. They tried to push Statoil to contact DONG, since Statoil had gone directly to the Ministry of Energy with their investigation, passing DONG.[67] The Danish Energy Board pointed out to Statoil that they wanted Danish stakeholders to be involved in the study in the same way as Vattenfall was in Sweden, and Statoil agreed to meet with DONG.[68] DONG was surprised by this behaviour, and told Statoil representatives as much.[69]

The construction of the gas transit pipeline was completely dependent on findings in the northern Norwegian area. One factor that would favour large-scale development in the north was a desire of the Norwegian government to prioritise this development. However, the large-scale development of the Troll field and other fields outside Haltenbanken were going on at full speed, making them the top priority at the moment.[70] Therefore the possibility of using the gas transit route to transport gas from Haltenbanken, as well, was added to the study.[71] Transport from that area was an important question and the discussion about which route was the best one continued in Norway while different routes were investigated.

The Swedish route had some supporters at the Norwegian Oil- and Energy Ministry, but not all Norwegian actors thought the route through Sweden was a good idea.[72] Norsk Hydro joined the game, presenting the results of its own

[66] Gunnar Agfors, Interview, 24 april 2012.
[67] Notes from meeting between representatives of Statoil, the Norwegian Ministry of Oil and Energy and Danish Energy authorities, 5 May 1982, 2 0035 Energiministeriet 0176/1.
[68] Memorandum 'Notits om danske interessers repræsentation i udredningsarbejdet for en naturgasledning fra Nordnorge til kontinentet', 11 June 1982, 2 0035 Energiministeriet 0176/1; Notes from phone call between Hjorth Hansen (the Danish Energy Board) and Haug Hanssen (Statoil), 30 June 1982, 2 0035 Energiministeriet 0176/1.
[69] Memorandum 'Notits om danske interessers repræsentation i udredningsarbejdet for en naturgasledning fra Nordnorge til kontinentet', 11 June 1982, 2 0035 Energiministeriet 0176/1. This study established that neither laws nor organizational problems should be a hindrance. It pointed out possibilities for cooperation within the already established Danish-Swedish administrative committee reviewing the laws and regulations regarding the Sydgas pipeline. This could be expanded to include Norwegian and Finnish representatives. According to the study, the most uncertain parameter in Nordic gas cooperation was the economic conditions and investments within each country, Notes regarding gas cooperation, 2 June 1982, 2 0035 Energiministeriet 0176/1.
[70] Arneson, pp. 143–145.
[71] Norrby (Vattenfall) to the Ministry of Industry, 15 March 1982, Swedegas technical archive; Eliasson and Thyberg to Vattenfall, 1 April 1982, Swedegas technical archive.
[72] 'Gasstransport fra Nord-Norge til kontinentet', *Norwegian Oil Review,* 2 (1983), p. 2; Kellberg to the Swedish Foreign Ministry, 17 March 1983, SE/RA/221/2210.03.3/H/H 53/29, dossier 36.

study, which concluded that even though a pipeline through Sweden would be slightly less expensive to construct, other factors could still make the Norwegian route a better option for Norway.[73] According the study, a pipeline through Norway would only be about 2 % more expensive than the Gas Transit Project.[74] Members of the Norwegian Industrial Association also questioned whether a pipeline through Sweden would be a better alternative than one through Norway. In their opinion, a pipeline through Norway would be of benefit to the Norwegian society, and despite the risk of higher costs, the end result would still be more profitable in terms of creating new workplaces and stimulating domestic industry.[75]

In the spring of 1983 the plans for development up north were delayed, since the deposits found were not yet large enough to warrant a pipeline, and it would take a couple of more years for Statoil to know more about the possible supply. Cooperative efforts between Statoil and Vattenfall also fell through. A Statoil representative commented that the work done in the final Gas Transit report published in March by Vattenfall was not really coordinated with Statoil, and that all contractual relations between Vattenfall and Statoil would cease in July of the same year.[76] In Vattenfall's final report the authors concluded that since no major deposits had yet been found, the project was more a preparatory work aimed at the prospect of the future development of the Northern gas fields.[77] After 1983, the Gas Transit Project disappeared from the agenda. This may be connected to the Norwegian attitudes regarding the project, as well as to delayed prospecting and the turbulence surrounding the Sydgas project at the same time. Later, Statoil's information director said in an interview that a gas pipeline from the Tromsø area would not become a reality during the 20th century, and that the most realistic future possibility would likely be LNG transport, which would enable deliveries to the American market.[78]

Some of my informants, as well as Erik Moberg, have claimed that Norwegian actors were not at all interested in the Gas Transit Project, and that the opposite was rather the case.[79] They were embarrassed by the Swedish enthusiasm that also infected local populations across the border in Norway, making the situation difficult for Norwegian gas actors who did not necessarily believe the Swedish route to be the best one. According to a State Secretary at the Swedish

[73] Press release from Norsk Hydro, 15 August 1983, SE/RA/221/2210.03.3/H/H 53/29, dossier 36.
[74] Notes from meeting between representatives of Norsk Hydro and the Danish Energy Board, 14 October 1982, 2 0035 Energiministeriet 0176/1.
[75] Bothén (the Swedish Embassy in Oslo) to the Swedish Foreign Ministry, 15 June 1983, SE/RA/221/2210.03.3/H/H 53/29, dossier 35.
[76] Notes from phone call between Ravndahl (Statoil) and Hjorth Hansen, 20 April 1983, 2 0035 Energiministeriet 0176/1.
[77] Report 'Vattenfalls förslag till sträckledning, Projekt gastransitering', Vattenfall,1 March 1983, Swedegas technical archive, p. 7.
[78] Bothén to the Swedish Foreign Ministry, 19 January 1983 (likely misdated, arrived at the Swedish Foreign Ministry 19 January 1984), SE/RA/221/2210.03.3/H/H 53/29, dossier 37.
[79] Moberg, *Naturgas i Sverige*, p. 109.

Ministry of Defence, his colleague at the Norwegian Ministry of Defence had asked him to try to calm the Swedish discussion regarding the Norwegian gas pipeline through Sweden, since it was considered to be embarrassing to Norway.[80] The director of Statoil, commented that "you Swedes are several years ahead our most optimistic plans."[81] This attitude is interesting, since Statoil was clearly cooperating with the Swedish government and Vattenfall, and even instigated the project. On the other hand, Statoil was also looking into other possibilities for transport, and over the years when the development was delayed, the transit project was not seen as a priority for them.

The Gas Transit Project may seem contradictory. Except for the obvious factors regarding the amount of gas found in the gas fields and other external issues, this was also the time when the Sydgas project was being renegotiated. The problems raised in the Sydgas project would also affect the Gas Transit Project. A lot of resources were invested by Vattenfall, while at the same time there was a clear acceptance of the fact that the project depended on many external factors.[82] Despite having left Swedegas, Vattenfall obviously still had interests in the gas area, being a major player in the Gas Transit Project, as well as launching another endeavour: Project Siljansringen.

## Siljansringen

Parallel with the Norwegian discussions, Vattenfall engaged with another natural gas project on the home-front, which, although it led to nothing in the end, would have an impact on both the public and political view of natural gas. In 1977, astrophysicist Thomas Gold presented a new theory regarding the origins of fossil fuels.[83] According to the classic theory, hydrocarbons are created through a biological process in the sedimentary layer that transforms organic debris into oil, coal and gas, over time. According to this theory Sweden does not possess deposits of hydrocarbons as Swedish bedrock generally does not have the conditions required for this process. Gold proposed instead that hydrocarbons were formed together with other substances of the deep earth through a geological process, and then seep up to the sedimentary layer through the porous rock. Thus, in places with non-porous rock, such as Sweden, the problem was not that hydrocarbons were not created there, but that they were unable seep up to the surface. In places with certain geological formations, however, the hydrocarbons could lie trapped under non-porous rock.[84] One place where this could apply was around Lake Siljan, in central Sweden, the site

[80] Memorandum 'Besök i Norge', Hirdman (the Swedish Ministry of Defence), 31 August 1982, SE/RA/221/2210.03.3/H/H 53/29, dossier 33.
[81] 'Gas-Sverige?', *Byggindstrin,* 14 (1983).
[82] Report 'Vattenfalls förslag till sträckledning, Projekt gastransitering', Vattefall, 1 March 1983, Swedegas technical archive, p. 13.
[83] 'Rethinking the Origin of Oil and Gas', Thomas Gold, *Wall Street Journal*, 8 June 1977.
[84] 'The deep, hot, biosphere', Thomas Gold, *Proceedings of the National Academy of Sciences of the United States of America*, 89 (1992), pp. 6045-6049.

of a meteorite crash. Vattenfall heard about this, and Thomas Gold was invited to speak there in the spring of 1982.[85] Vattenfall started a pilot study on the possibilities of finding deep gas underneath Lake Siljan, and drilled test holes in 1983 and 1984.[86] In the autumn of 1985, Vattenfall asked for permission from the Riksdag to create two companies: the limited partnership, Dala Djupgas Provborrningar and limited liability company, Dala Djupgas Productions. Company shares would be sold to finance the project. All in all, Vattenfall considered there to be a need for SEK 150 million, of which it would invest SEK 52 million. An American research institute financed by the gas industry in the United States, the Gas Research Institute was interested in the project and offered to join with an investment of SEK 22 million.[87] That autumn, the financing of the Siljan project was discussed in the Riksdag. All agreed that this was a high-risk project, but opinions diverged on how great a financial risk Vattenfall should be allowed to take.[88]

In January 1986, the Social Democratic government approved of the creation of a company for prospecting.[89] When the first deep drilling was started in Gravberg in July 1986, the shares in this company reached the price of SEK 55,000 per share, allegedly making each the most expensive share in the world.[90] In 1986, the hole in Gravberg was gradually drilled, and traces of methane and other hydrocarbons were found.[91] Towards the end of the year, however, and in early 1987, technical problems occurred, first the drill got stuck, and later it broke.[92] There was still a great deal of interest in the project, however, and in 1987, the drill hole in Gravberg was named "Well of the Year" in the Explorer, the journal of American geologists.[93] At the same time, the criticism against the drillings increased. Three Swedish geologists from the Geological Survey of Sweden (SGU) wrote a polemical article calling the Siljan project a bluff.[94] Gold's theories were controversial, and had met strong resistance among other geologists in the United States, as well. A group of 116 geologists signed a letter of protest against the Siljan project.[95]

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[85] 'Ensam kvar vid borrhålet: Platschefen vakar över resterna efter gasletandet vid Siljan', *Svenska Dagbladet Näringsliv*, 3 April 1994.
[86] NU 1983/84:30, p. 78.
[87] Govt. Bill 85/86:25 'Med förslag om tilläggsbudget 1 till statsbudgeten för budgetåret 1985/86', p. 67.
[88] Govt. Bill 85/86:25; Riksdag minutes nr. 54, 17 December 1985, pp. 174-180.
[89] Riksdag communication 86/87:75 ID, s. 98.
[90] 'Ensam kvar vid borrhålet: Platschefen vakar över resterna efter gasletandet vid Siljan', *Svenska Dagbladet Näringsliv*, 3 April 1994.
[91] 'Anathema om Siljansgasen: Beredda att ta över', *Ny Teknik,* 48 (1986), pp. 4-5.
[92] 'Senaste nytt: Borrstången gick av igen', *Ny Teknik,* 11 (1987), p. 20; 'Anathema om Siljansgasen: Beredda att ta över', *Ny Teknik,* 48 (1986), pp. 4-5.
[93] 'Thomas Gold, djupgasteorins fader: Nästa hål kan ge olja också', *Ny Teknik,* 11 (1987) pp. 16-17.
[94] 'Det finns inte ett enda bevis! Geologen kallar hela djupgasprojektet bluff', *Ny Teknik*, 11 (1987), p. 20.
[95] 'Djupgasforskare kritiska: Siljansringen fel borrplats', *Ny Teknik,* 3 (1991), pp. 18-19.

In September 1987 the drillings stopped due to financial trouble, leaving a hole about 6,300 m deep. Vattenfall still believed in the project and counted on continuing after the winter, but needed government approval to invest SEK 20 million more in the drilling. It suggested selling more of its shares in Dala Djupgas AB to raise capital.[96] The government rejected Vattenfall's request to invest more money. When Vattenfall instead requested permission to sell shares in Dala Djupgas to both Swedish and foreign investors, this was also rejected due to the uncertain regulatory situation for limited partnerships. In addition, an approval of the request would require a decision of the Riksdag. This decision was criticized by from the Social Democrats, as well as from the opposition.[97] In May 1988, the opposition and the smaller shareholders acted to save the project. A new issue of shares resulted in a SEK 40 million infusion of capital, and the two earlier companies merged, becoming Dala Djupgas AB. Drilling thus started again in 1988, only to stop again a year later due to technical problems.[98]

In August 1989, Thomas Gold urged continued drilling in the Swedish daily, Svenska Dagbladet, pointing out that many fields that have later proved to be large producers showed less gas that Gravberg at their first drill holes. He found it incomprehensible that Sweden would not take the chance to become self-sufficient.[99] Vattenfall, however, had had enough of the project, and decided to pull out. The private investors in Dala Djupgas continued the project, and in 1990 Powerhouse took over the shares of Vattenfall and tried to raise money from another issue. The issue proved to be a failure, but a year later in 1991 another issue succeeded, and drilling was again resumed, supported by Gold.[100] No gas was found, and the drilling stopped definitely in August 1992 at 6618 m.

## New Confidence

Although both the Gas Transit project and Östgas disappeared from the scene in the mid-1980s and Sydgas had quite serious financial problems, natural gas was the focus of an increasing interest in the last half of that decade. After Shell, Statoil and DONG entered Swedegas, (see Chapter 6), the delivery contract for gas supplies to the extended pipeline was negotiated and in December 1986 an agreement between Swedegas and Dangas was signed regarding deliveries of 200 million cm to Gothenburg and western Sweden, starting in 1988.[101] When those negotiations were completed in 1987, renegotiations of the base contract

[96] 'Gasjakten avbryts', *Ny Teknik*, 35 (1987),
[97] Riksdag minutes nr. 96, 8 April 1988, pp. 70-71; Parliamentary question 1987/88:457.
[98] 'Ensam kvar vid borrhålet: Platschefen vakar över resterna efter gasletandet vid Siljan', *Svenska Dagbladet Näringsliv*, 3 April 1994.
[99] 'Borra ett hål till!', Thomas Gold, *Svenska Dagbladet Näringsliv*, 21 August 1989.
[100] 'Stora möjligheter för Siljansprojektet: Sverige kan bli energipolitiskt oberoende', Thomas Gold, *Dagens Nyheter*, 30 September 1991.
[101] Govt. Bill 1987/88:90 p 60; Swedegas board of directors minutes, 24 November 1986, Swedegas archive.

for Sydgas started.[102] Swedegas had been waiting for an opportunity to renegotiate this contract ever since the deal had been struck in 1980. This re-negotiation resulted in a better price situation for gas in Sweden and thus made it a more profitable option on the market. The Swedish gas grid and the market were stabilising, and in one year from 1986 to 1987 Swedegas increased its personnel from 19 to 27.[103] While the political discussions surrounding natural gas and the future restructuring of the Swedish energy system became more intense, a new confidence spread in Swedegas. One reason for this confidence was that the nuclear debate had taken a new turn, and this opened up a possible market for natural gas.

On 26 April 1986, the Chernobyl accident took place. This impacted the nuclear debate and among other things, the idea of replacing part of nuclear power with natural gas power generation became more popular among many actors. In a report from the State Energy Board, one prediction showed natural gas producing up to 55 TWh, compared to about 60 TWh from nuclear power.[104] The Swedish daily, Svenska Dagbladet reported that the head of Vattenfall claimed natural gas could replace one-third of Swedish nuclear power. He wanted to build gas-fuelled power plants in connection to nuclear power plants, close to the infrastructure and trunk lines.[105] Swedegas' CEO Bengt Wallenberg agreed with this estimate and commented that the goal was to roll the grid upwards from the south, reaching Stockholm in 1993 or even sooner.[106]

Several industries also expressed an interest in natural gas. Veckans Affirmer, a weekly business journal, wrote that "natural gas is money" and listed Swedish companies and industries standing to gain on a natural gas introduction, such as ASEA, Saab, and Gränges-Hedlund.[107] Under the heading "Natural gas and district heating: The pipe leading into the future" the director of information at the Swedish District Heating Association claimed that the nuclear phase-out and the advent of natural gas were two energy policy events that would mark the end of the 1980s. District heating was transitioning away from oil, and for a while, in the early 1980s when Sweden was over-producing power, district heating companies installed electric powered heaters.[108] According to Hård and Olsson, this gave the large power producers in Sweden a strengthened position and restricted the development of other alternatives, such as cogeneration

[102] Swedegas board of directors minutes, 27 November 1987, Swedegas archive; Swedegas annual report 1988, Swedegas archive.
[103] Swedegas directors' report 1987, Swedegas archive.
[104] 'Det våras för den nordiska naturgasen', *Byggindustrin,* 40 (1986); Statens Eneriverk, *Naturgas i Mellansverige*, (Stockholm: Allmänna förlaget, 1987).
[105] 'Naturgas kan ersätta en tredjedel av kärnkraften', *Svenska Dagbladet*, 17 March 1987.
[106] 'Det brinner vid Jyllands kust: Dansk naturgas ska värma upp Sverige', *Byggnadsarbetaren,* 3 (1988), pp. 20-21; 'Naturgas kan ersätta en tredjedel av kärnkraften', *Svenska Dagbladet*, 17 March 1987.
[107] '7 miljarder i potten när naturgasen kommer', *Veckans Affärer*, 44 (1987).
[108] 'Naturgas och fjärrvärme: Röret som leder in till framtiden', Peter Fogelklou, *VVS & Energi*, 11 (1987) pp. 44-47.

plants. This attitude changed due not only to the nuclear phase-out issue, but also to vulnerabilities in the electricity system coming into view after a major black-out in December, 1983. Thus, in the second half of the 1980s, interest in local self-sufficiency as well as alternative ways of producing heat and power surged.[109] Natural gas was a possible alternative in this regard. These articles, along with many others, were written in a tone that suggested an extension of the natural gas grid to cover large parts of mid-Sweden was inevitable, and soon would be in place. In early 1988, a Riksdag decision was taken for a start of the phase-out of nuclear power already in 1995 (see further in Chapter 8), making it possible to imagine an even earlier expansion of natural gas. The future seemed bright.

It was during this period of optimism that the Naturgasnät Mellansverige project (the Mid-Swedish Natural Gas Grid) was launched in early 1988, marking a return to large projects. The mission of Naturgasnät Mellansverige was to investigate a future high pressure gas grid through the middle of Sweden. One goal was the possible start-up of a natural gas net in Mälardalen/Bergslagen regions as early as 1993/94.[110] Project Leader Kurt Seligberg told Kommunaktuellt magazine that Swedegas took "a holistic grip" on the natural gas issue, and that the company expected a "tug of war" for natural gas among municipalities, since the interest in gas had now ventured beyond mere oil replacement, and had become a part of the nuclear phase-out plans.[111]

Negotiations continued with Denmark and Norway and re-opened with the Soviet Union.[112] In order to transit gas from the Soviet Union, a new connection had to be built through Finland since the existing pipeline did not have enough pressure to handle extra deliveries to Sweden. The planning of a Finnish pipeline construction was going on at the same time. A large delegation from the Soviet Union visited the Ministry of Industry in the spring of 1988. OK petroleum and AB Johnson were also interested in the re-opened discussions with the Soviet Union, and the media even reported that these companies had made preliminary agreements with Soviet actors.[113] According to Kommunaktuellt, the Danish and Norwegian ownership in Swedegas was problematic in the eyes of the Soviets, whereas OKP/Johnson had an advantage since they were partly owned by Finnish Neste.[114] This was denied by Swedegas' CEO Bengt Wallenberg at a board meeting, when he stressed that Swedegas was

[109] Hård and Olsson, pp. 122–123.
[110] Report 'Naturgasnät Mellansverige', Seligberg (Swedegas), June 1989, Swedegas technical archive, preface, p. 6.
[111] 'I år ska gasledningen beslutas. Men vem ska få importera?', *Kommunaktuellt*, 10 March 1988.
[112] Högselius, p. 334.
[113] 'Samarbete Norrköping-Linköping: Rysk gas till Östergötland', *Norrköpings tidningar,* 31 May 1989; Also claimed by Arne Öien, Norwegian Minister of Energy, 'Sverigeexport styr norska gasplaner', *Ny Teknik*, 5 (1988), p. 10.
[114] 'I år ska gasledningen beslutas. Men vem ska få importera?', *Kommunaktuellt*, 10 March 1988.

the sole buyer, regardless of ownership structure. According to another board member, OK Petroleum would take advantage of the counter purchases instead.[115]

Further, Statoil and DONG, with Swedegas as a consulting actor, planned to connect their offshore platforms together to enable gas transit to the continent and Sweden. In the end, this could mean transports to Finland as well. The projects planned at this stage were pipelines from the Ekofisk field to the Tyra field or directly to Danish shores, continuing to Sweden.[116] Negotiations started with the Norwegian State Committee for Gas Negotiation (Gasförhandlingsutvalget). The negotiated amount was 1 bcm each from Norway and the Soviet Union, with a start of delivery in 1992/1993.[117] One possibility to connect the Swedish gas grid to a Norwegian source would be to build a pipeline from Norwegian fields to the Oslo area and the eastern part of Norway, and this was discussed within Norway.[118] Another possibility was direct transfer from the Norwegian platforms to the Swedish West Coast.[119]

When Swedegas presented the final report on the Mid-Swedish project, a route east of Lake Vättern was shown to be the most advantageous, since a large part of the market would be concentrated along that trunk line. The basis of the analysis has been a future market of about 55 Twh in the early 2000s, and a final level of about 70 Twh. The report accounted for a supply of 4,9 bcm per year plus the already contracted 0.6 bcm from Dangas, 0.4 bcm more from Denmark, 2.5 bcm from Norway, and 2 bcm from the Soviet Union. With two or three access points, as well as storage being planned in Sweden, the security of supply was considered high from a regional perspective. The chosen route would mean an added route of 1260 km and a total investment of about SEK 6,350 million in a first development stage. Two main uncertainties were mentioned: the contracting competition for the construction work, and unknown geological variations during the construction. The largest uncertainties here were thus considered to be related to construction, and not financial factors or policy. Construction was expected to start in 1992, and continue to the end of the 1990s, with a total need for 900-1000 construction personnel and 150-200 persons for planning per building season. Later, it was judged as possible to continue to other markets in mid-Sweden.[120]

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[115] Swedegas board of directors minutes, 29 September 1988, Swedegas archive.
[116] Report 'Teknisk rapport för transport av gass til Skandinavia via Danmark', DONG and Statoil, not dated, Swedegas technical archive.
[117] Swedegas CEO's report of activity, 2 May 1988, Swedegas archive.
[118] Report 'Teknisk rapport för transport av gass til Skandinavia via Danmark', DONG and Statoil, not dated, Swedegas technical archive; Report 'Naturgas til Østlandet. Teknik, miljö och kostnader', Swedegas and Statoil, May 1988, Swedegas technical archive.
[119] Report 'Ilandføring av gass fra norsk kontinentalsokkel till Sveriges vestkyst. Forstudie', October 1988. Swedegas and Statoil. Swedegas technical archive.
[120] Report 'Naturgasnät Mellansverige: Final report June 1989', Seliberg, Swedegas archive, pp. 1-4.

By this time, however, the political climate had started to change with regard to natural gas. The restructuring of the energy system through the 1990s, in light of the nuclear phase-out was fiercely discussed at the end of the 1980s, and, as we will see in the next chapter, natural gas became more and more criticised in this context. The attitude shown in the project description of Naturgasnät Mellansverige, however, was one of self-confidence. In the Östgas reports, Swedegas' plans were for a slow, step-by-step build-up of a larger natural gas grid. In the Naturagsnät Mellansverige report, the large scale development of a natural gas grid in mid-Sweden was presented as a large-scale project needing a more coordinated organization. The project had progressed considerably over several years, and involved entities such as the County Boards and the Swedish National Heritage Board.[121] The work with Naturgasnät Mellansverige continued throughout 1989 and into 1990, and as late as in October 1989 Swedish daily, *Dagens Industri*, reported that the Swedish-Soviet negotiations had reached an advanced stage.[122] In June 1990 (three years before the earliest foreseen date of first deliveries), doubts regarding the project were raised for the first time. According to the minutes, the board ordered an estimate of profits and losses for the existing pipeline system between 1991 and 1995 and an impact report in the event the Mid-Swedish project would not become reality and Swedegas' role as a national gas company would change.[123]

## Concluding Remarks

While the Sydgas pipeline and its extensions were being constructed, and natural gas made its way into Sweden, the issue of energy security had to be dealt with. Swedegas, as pointed out earlier, had a vision regarding a larger Swedish/Scandinavian natural gas network, and during the 1980s, strengthened by the deal already struck with Denmark, they put plans in motion to connect the Nordic countries. These thoughts were echoed in Denmark and Norway, which, at this point, were also looking into new ways of transporting gas. During the 1980s, Swedegas negotiated with Norway, Denmark, Finland and the Soviet Union for new large projects. The Gas Transit project and Östgas were considered as separate projects, although they had to take each other into consideration.

The discussions and plans for new transnational pipelines were messy and complex, to say the least. Although the projects that were investigated in the 1980s were new, they built on older ones and contacts established in earlier stages. Sometimes it is even difficult to distinguish one project from the other, as actors in different projects had interlocking involvement and mutual dependence. The groundwork done in the Gas Transit project and Östgas were

[121] Karl Johan Eklund, Interview 7 October 2011.
[122] Högselius, p. 334.
[123] Swedegas board of directors minutes, 18 June 1990.

also present in the Mid-Swedish project. While plans for gas deliveries from the far north started to play less of a role in the discussions, other plans took over, but generally used the same contacts and older plans. Coordination between the different projects was important, and highlighted issues such as security of supply and market coordination.

Later in the 1980s, many possibilities that were open with regard to how the different countries were planning on using natural gas, closed up. The Norwegian discussion regarding whether natural gas was to be used inside the country or not was basically closed, and the thoughts of a Nordic natural gas pipeline system became more difficult to visualise. Although many of the partners in the Mid-Swedish project were commercial actors, they were all closely connected to state actors in their respective countries, and thus adhered to their national context. There were also tensions between actors in different countries, as we have seen, and the natural gas dealings cannot be completely separated either from earlier gas projects, or from the histories of dealings between the countries involved. Nina Wormbs has referred to something called the "Phoenix-effect" when it comes to Nordic cooperation. It alludes to the fact that in many cases, a new project is born from the ashes of an old Nordic cooperation project.[124] During the long history of Nordic natural gas negotiations, new project ideas often evolved from old ones. The attempts to create a common gas grid have also evolved together with the overall politics concerning Nordic transnational cooperation. Thus, each country was coping with its own domestic natural gas situation, and the will to extend their concern to those outside their own country could only be done under certain circumstances. All actors had their priorities within the chaos. Domestic issues were more important in this context than transnational issues.

Except for dealing with the many-facetted negotiations with actors in other countries, Swedegas also had to relate to the context of Swedish energy policy. As shown in the previous chapter, political opinion about natural gas was ambiguous in the early 1980s. Regulatory issues like taxes were important, especially since gas was getting less and less competitive on the Swedish energy market due to the falling coal and oil prices. In the reports on the Soviet project in the early 1980s, Swedegas aligned itself with the changing political views of the energy market, but this did not help. The market risk that already existed became more pronounced when taking into account both the unclear political view of natural gas and the political position that natural gas had to be completely commercially viable.

From a project perspective, the period of the 1980s is quite messy and chaotic, both regarding the amount of actors involved and the negotiations going on at

[124] Nina Wormbs, 'Det blev en filmfond: Nordsat, Tele-x och nordiskt samarbete', in *Norden i sicksack: Tre spårbyten inom nordiskt samarbete*, ed. by Bengt Sundelius and Claes Wiklund (Stockholm: Santérus Förlag, 2000), p. 180.

all levels. The early years of the decade were marked by the Sydgas project conflict as well as a certain political uncertainty regarding the place of natural gas in the Swedish energy system. From the mid-1980s, following the Chernobyl accident, the decision for an early phase-out of nuclear energy and a new, partly foreign, ownership of Swedegas, the natural gas actors gained confidence and launched the Mid-Swedish project. In the Mid-Swedish project report, the main risks were described to be geological conditions and entrepreneurial competition, not institutional, regulatory or political risks. While Swedegas was very enthusiastic regarding the new project, however, the political attitude in Sweden was changing, and natural gas slowly went out of favour. This process will be considered in the next chapter.

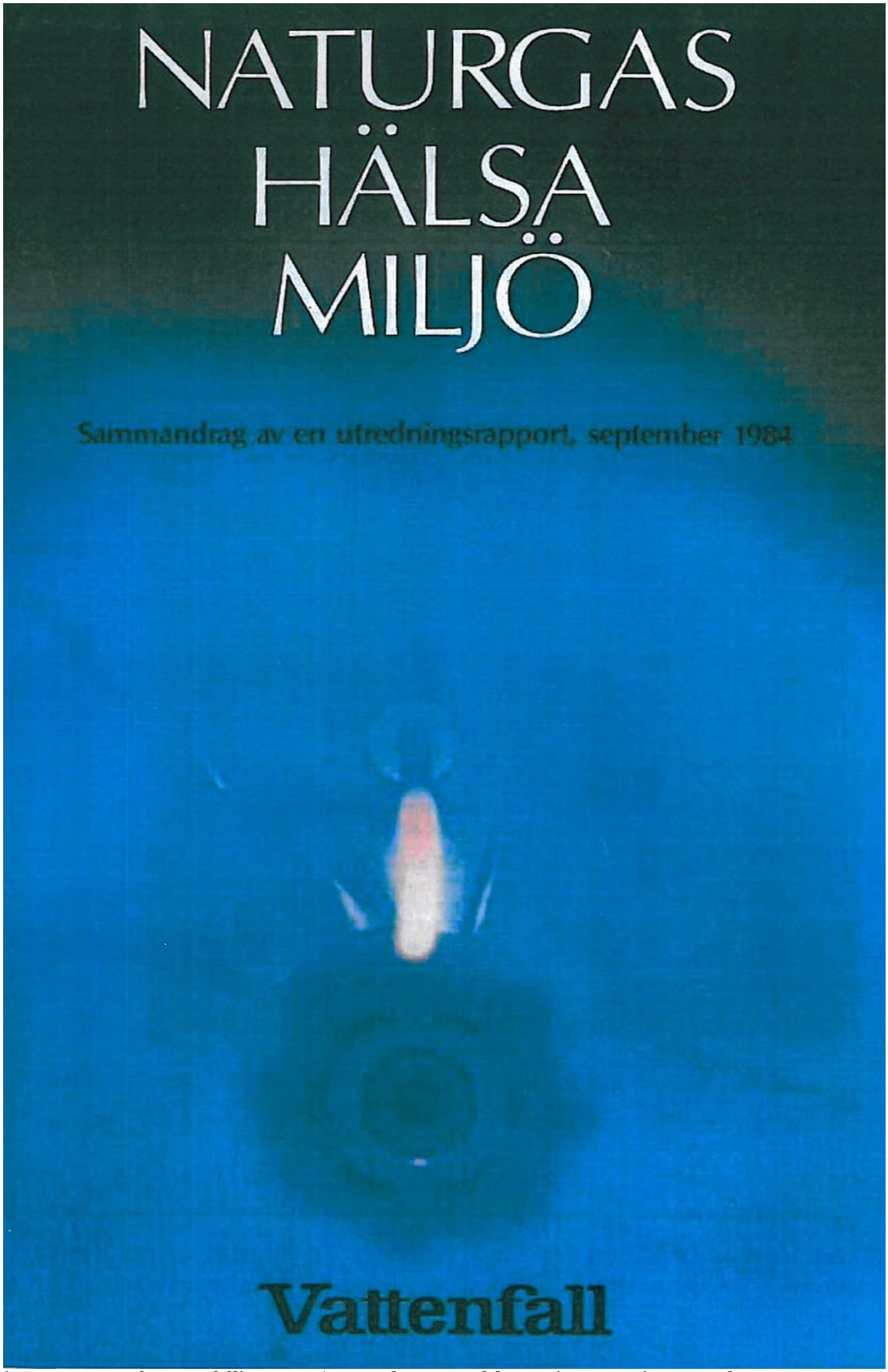

Fig. 10: Cover of Vattenfall's report 'Natural gas, Health, Environment', September 1984, Swedegas archive

# Chapter 8: The Energy Dilemma: Swedish Gas Politics at the End of the 1980s

Nothing came of any of the large projects described in the last chapter, and the tide seemed to be turning for the natural gas business by the end of the 1980s, which is close to the end of my period of study. Part of why the natural gas project, as a whole, lost its impetus was the change in energy policy context in which natural gas was placed at the end of that decade by different actors. This change was deeply embedded in the restructuring of the Swedish energy system planned for the 1990s in connection to the nuclear phase-out, and in this chapter I will follow the debate in this regard.

## Turning Tides

In the report "Natural gas, Health, Environment" written by Vattenfall in cooperation with the Swedish Environmental Protection Agency, Swedegas, Sydgas AB and the Swedish Gas Association in 1984, natural gas was lauded as a very environmentally friendly fuel, and, as seen, this was the common view of the fuel.[1] Nevertheless, the agenda was about to change to the detriment of natural gas. Up until about 1987, natural gas had been discussed in relation to other fossil fuels, both in the gas actors' discourse and in the political debate. When fossil fuels were high on the agenda as a replacement for nuclear energy, natural gas could hold its position as one of the cleanest fuels available. In this context, no one questioned the environmental properties of natural gas. Over the 1980s, however, a new environmental discourse took over, and this changed the perception of natural gas rather quickly. Several researchers have noted what could be called an "environmental turn" in Swedish politics, and the activism of the mid-to late 1980s. Historian Martin Hultman points out that this turn spans over all parts of society: laws, government, media, public opinion, and controversies over large industrial projects.[2] In the media, up until 1989, the number of newspaper articles and television spots regarding environmental issues multiplied.[3] Magnus Linderström notes that the change in environmental discourse over the 1980s meant that the environmental discussion was moved down to the individual level, towards the individual citizen and consumer, and assumed a more social dimension.[4] Both the Swedish Society for Nature Conservation and Greenpeace in Sweden greatly increased their membership in these years.[5]

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[1] Report 'Naturgas, hälsa, miljö', Vattenfall, September 1984, Swedegas archive.
[2] Hultman, p. 80. Vedung and Brandel also point out the heightened environmental awareness, especially in the spring 1988, Vedung and Brandel, p. 340.
[3] Monika Djerf Pierre, *Gröna nyheter: Miljöjournalistiken i televisionens nyhetssändningar 1961-1994* (Göteborg: Institutionen för journalistik och masskommunikation, Göteborgs universitet 1996), p. 60.
[4] Linderström, p. 161.
[5] Anshelm, *Socialdemokraterna och miljöfrågan,* p. 120.

Furthermore, a political change took place on an organisational level during this period. In 1985 a position of Minister for the Environment had been created, operating under the Ministry of Agriculture. In January 1987, the Ministry for Energy and the Environment was established, taking the environmental issues out of the Ministry of Agriculture and the energy issues out of the Ministry of Industry, thus connecting energy and environmental issue in a very concrete way. According to Linderström, the newly formed ministry had an important coordinating function for the governmental work.[6] At the same time, as Linderström also points out, the environmental problems were increasingly shown to be international.[7] In 1987, the Bruntland report, "Our Common Future" argued that environmental policy should be central in global economic and social policy.[8] The new environmental discourse became a power factor, and the Brundtland concept of a sustainable development built on modern environmental technologies was seen as a way out of both environmental problems and financial and industrial difficulties, issues that had earlier been discussed in opposing discourses.[9] One major part of the new environmental discussion was climate change, with a focus on greenhouse gas emissions. Research on climate change and climate modelling had been attracting increasing attention by the end of the 1970s, and in 1988 the intergovernmental Panel on Climate Change was formed.[10] In the wake of the Brundtland report as well as an increasing climate debate in the USA, the climate discussion continued to grow globally.

In the early 1980s, a commission for the use of natural resources and the environment was created in Sweden. Its subsequent report pointed out the increasing risks stemming from $CO_2$ emissions. However, as pointed out by Åsa Knaggård, this report, as well as other documents regarding climate change, did not influence the policy debate to any great extent prior to 1988. According to Knaggård, both the scientific uncertainty regarding climate change and the importance of fossil fuels to the Swedish economy and energy policy at the time, made it difficult to argue for a practical policy to lessen $CO_2$ emissions.[11] In 1988, the first comprehensive environmental bill was introduced by the Social Democrats. This focused heavily on water pollution, the ozone layer, acidity, and "chemicalisation".[12] Although climate change was not the focus of the bill, it was

[6] Linderström, p. 174. In Maj 1990, the energy issues were transferred back to the Department of Industry, leaving behind the Department of the Environment.
[7] Linderström, p. 161. For a discussion of the climate discourse and its change from the local to the global, see Paul N. Edwards, 'Representing the Global Atmosphere', in *Changing the Atmosphere. Expert Knowledge and Environmental Governance*, ed. by Clark A. Miller and Paul N. Edwards (Cambridge (Mass.): MIT Press, 2001), pp. 31–64.
[8] World Commission on Environment and Development, *Our Common Future* (Nairobi: United Nations Environment Programme, 1987), p. 22.
[9] Linderström, p. 175.
[10] Edwards, p. 50.
[11] Knaggård, pp. 117–119.
[12] Govt. Bill 1987/88:85 'Om miljöpolitiken inför 1990-talet'; Anshelm, *Socialdemokraterna och miljöfrågan*, p. 143.

mentioned, and Knaggård viewed the bill as having opened a "policy window", allowing politicians to put the climate issue on the political agenda.[13] The Centre Party, the Liberal Party and the Moderate Party all presented motions criticising the fact that climate change and $CO_2$ emissions were given so little attention in the bill.[14] The Moderate Party also proposed a ceiling for $CO_2$ emissions, to prevent emissions to exceed current levels. This proposal was later passed by the Riksdag.[15]

The Social Democrats presented their new energy bill on the same day as the environmental bill. In the energy bill, they proposed to start the phase-out of nuclear power, meaning that two reactors should be taken out of use by 1995-1996.[16] In connection to this discussion, the debate now addressed bio-fuels. Renewables had been an important part of the discussion during the referendum campaign, when there had been an agreement that nuclear power was going to be replaced by renewable energy sources. This changed directly after the referendum when the focus of Swedish energy policy shifted instead to oil replacement and, as we have seen, there was a heightened interest in fossil fuels.[17] At the end of the 1980s, especially in the wake of the government bill to phase out nuclear early, biofuels entered the debate. According to Jonas Anshelm, two decisive events opened the debate for bio-fuels: the Chernobyl accident and the decision on a $CO_2$ ceiling. While the Chernobyl accident pushed the government towards starting the nuclear phase-out, the $CO_2$ ceiling made it impossible to replace nuclear with fossil fuels.[18] The Communist Party and the Centre Party had previously tried to argue for renewable energy sources, but, as Kall has shown, renewables were marginalized in the energy policy discussion during the earliy 1980s, despite the goal to replace nuclear with renrewables after the referendum. Now these parties could raise bio-fuels as the way to handle a nuclear phase-out and a $CO_2$ ceiling at the same time.[19] The $CO_2$ ceiling and the early start of the phase-out, in combination, became two important points of discussion in the following debate, and the natural gas issue was discussed along with biofuels in this context. In the following section, I will examine this discussion.

## Part of a Solution or Part of the Problem?

In the midst of the discussion about the nuclear energy phase-out and $CO_2$ emissions, one political goal, at the end of the 1980s, was to negotiate a broad energy agreement regarding the restructuring of the energy system in the 1990s. Since negotiations regarding imports of large amounts of natural gas were going

[13] Knaggård, pp. 140–141.
[14] Motion 1987/88:Jo30, p. 4; 1987/88:Jo719; motion 1987/88:Jo25.
[15] Riksdag communication 1987/88:373. The decision was taken on 7 June 1988.
[16] Govt. Bill 1987/88:90, p. 5.
[17] Kall, p. 134.
[18] Anshelm, *Att ersätta kärnkraften med bioenergi*, p. 6.
[19] Kall, pp. 131–132, 139.

on during these years, the role of natural gas in this future system was much discussed. In the February 1988 energy bill, Birgitta Dahl determined that during a bridging period, electricity should be used to replace coal and oil, mostly for heating purposes. The goal was for this electricity to later be replaced by natural gas and other fuels.[20] She pointed out a potential for natural gas in the industry and in the district heating sector, and while Swedegas considered that the market for mid-Sweden could reach 6-8 TWh, plus another 5 TWh in district heating, according to Dahl, even larger amounts could be of interest for use in cogeneration plants and power production after the phase-out of nuclear power. This expansion was nevertheless conditioned on many factors. She emphasized strictly commercial grounds for the natural gas projects, which had to adhere to environmental and security of supply policies. In terms of security of supply, two suppliers were considered minimum. An assessment of the socio-economic impact also had to be made for each project. In connection to the $CO_2$ issue, she commented that a limited power production using natural gas could be accepted if a large part of other fossil fuels were replaced by biofuels and natural gas so as not to increase $CO_2$ emissions. Dahl saw natural gas as an interesting alternative despite the overall energy policy guidelines, and determined that national, durable, renewable and environmentally friendly sources should be used first hand. She pointed out that natural gas has many environmental advantages in comparison to other fuels, and that one of the directions to of Vattenfall was to increase the use of natural gas in Sweden.[21] These opinions about natural gas in the Swedish energy system were what Dahl and the Social Democrats would have to defend in the following, quite heated, energy discussion.

In response to the bill, the Gas Association stressed that gas should be used both as a direct fuel and for electricity production, and with Swedegas they supported a quick development of power and cogeneration plants if needed.[22] The Environmental Protection Agency had a harsher attitude, pointing out that although natural gas was a better replacement for nuclear power than was coal, (which they deemed unacceptable) it was not better by much, and still not sustainable in the long run.[23] The Federation of Swedish Farmers (LRF) was also critical to the use of both coal and natural gas, pointing to biofuels as the better option. Together with other interest groups, they were also sceptical to replacing electric heating with natural gas.[24]

[20] Govt. Bill 1987/88:90, p. 28
[21] Govt. Bill 1987/88:90, pp. 60-62; It is worth noting, that the government bill regarding a restructuring of the Swedish energy system from May 1987 still presented coal as the main option for a combination cycle, since natural gas would have to be imported in a large scale, and therefore would not be an option for another 10 years. See Govt. Bill 1986/87:159 'Om vissa utgångspunkter för energisystemets omställning', p. 22.
[22] Govt. Bill 1987/88:90, p. 145.
[23] Govt. Bill 1987/88:90, p. 133.
[24] Govt. Bill 1987/88:90, p. 157, 159.

As mentioned earlier, the energy bill was presented at the same time as the environmental bill, and the two were thus connected in the political discussion. Per-Richard Molén of the Moderate Party and Hadar Cars of the Liberal Party argued for a rethinking of the early phase-out policy, in view of the $CO_2$ decision, seeing them as non-compatible. Molén pointed out that all nuclear replacement would have to be imported. In Cars's view, an early phase-out would mean a hastened natural gas introduction, which he opposed due to emergency storage problem, as well as the import status of natural gas and $CO_2$ emissions. He also pointed out that if large investments were made in natural gas, the market would become saturated and no investments would be made in biofuels. In Cars's opinion this would mean that a new imported fossil fuel ruins the chances of those farmers and forest owners who want to invest in bio-energy as an alternative to fossil fuels. This also would mean that the government abandoned the energy political decision made earlier, according to which nuclear energy should be replaced with renewables.[25]

Ivar Franzén of the Centre Party supported a start of the phase-out, and pointed out that the most important changes to be made were heightened energy efficiency and more renewable fuels. Due to the $CO_2$ issue, he considered biofuels better than natural gas, (but sun, wind and hydropower even better) and he agreed with Cars in his worry about the elimination of biofuels in the trail of natural gas and therefore argued for higher taxes on coal, oil and natural gas. He conceded that natural gas was clearly preferable to coal during a transitional period, but that all fossil fuels should be strongly regulated since the transitional period should not lead to any climate changes.[26] The Centre Party had been one of the most faithful supporters of natural gas, and although they were still, in principle. pro-gas, they now primarily argued for renewables, and, to an increasing degree, biofuels. Oswald Söderqvist of the Communist Party criticised the government for their coal subsidies, and pointed out that natural gas was better than all other imported fuels, including uranium. He argued for better support for indigenous fuels, but maintained that natural gas should be prioritized among the imported ones.[27]

In this debate, natural gas was directly pitted against biofuels, which had not been the case earlier in the decade when natural gas was being compared mainly to oil, coal and LPG. The stances of the different political parties are also interesting here. Ann-Sofie Kall pointed out that while the Moderate Party raised the contradiction between the early phase-out and the $CO_2$ ceiling, the Communist Party and the Centre Party did not see this opposition.[28] The natural gas discussion seemingly followed the same pattern as earlier, with the Social Democrats, the Centre Party and the Communist Party cautiously supporting

[25] Riksdag minutes nr. 135, 7 June 1988, pp. 28-29.
[26] Riksdag minutes nr. 135, 7 June 1988, pp. 35-36.
[27] Riksdag minutes nr. 135, 7 June 1988, pp. 40, 65.
[28] Kall, p. 131.

the fuel, while the Moderate Party and the Liberal Party were more opposed. Despite this, however, it is clear that an unease regarding natural gas was spreading. The Moderate Party and the Liberal Party wanted to postpone the phase-out of nuclear power. The Centre Party, the Left Party and the Green Party all supported an early phase-out, but pushed for bio-fuels and renewables. For both these positions, natural gas represented unwanted competition.

The lack of support became tangible when Swedegas tried to approach the committee on energy taxes in the early summer of 1988, but could not find anyone "whose hand to hold, a strong actor", in the words of CEO Bengt Wallenberg. Three "heavy" politicians had promised to help but the election had come in between.[29] In November, the energy tax situation was still uncertain. This meant problems for the planned extension of the Sydgas pipeline up to Gothenburg, but Bengt Wallenberg considered it too defensive to slow the project down over the tax issue, and the project was continued despite the uncertainties. The company also had to battle a deficit and some board members questioned whether it was a good idea to increase regular expenses through new employees. Others considered that the personnel must be allowed to grow, since the company was growing, even risking to have to phase out people at a later stage.[30]

In the so called "environmental election" in 1988 the Green Party entered the Riksdag for the first time. This changed the dynamics in the Riksdag, which had long consisted of five parties.[31] In a political debate in February 1989, Birgitta Dahl defended the Social Democratic natural gas policy by referring to well-known climate researcher professor Bert Bolin, who maintained that since the redirection of the energy system would take time, natural gas was a good interim solution to replace oil, coal and nuclear energy. Dahl spoke about natural gas as a bridge to the next energy system, in concordance with the leading climate experts at the time.[32] The bridge metaphor was countered by Franzén, commenting that although natural gas could be used as a bridge, "why dig the ditch deeper before building the bridge" and Molén who asked "A bridge to what?" and wanted Dahl to point out a concrete example from a country where nuclear power had been abandoned.[33]

In April, Dahl commented that natural gas was to be used together with biofuels primarily as a replacement for oil and coal, and possibly nuclear power, as well, as a step toward a society built on efficiency, reduced total use of energy and greater emphasis on renewable sources. The Moderate representative, Gunnar Hökmark, then accused Dahl of walking in the front line of a fossil fuel policy. In

[29] Swedegas board of directors minutes, 29 September 1988, Swedegas archive.
[30] Swedegas board of directors minutes, 30 November 1988, Swedegasarchive.
[31] Löfstedt, pp. 6–7; Anshelm, *Socialdemokraterna och miljöfrågan,* p. 128.
[32] Riksdag minutes nr. 70, 21 February 1989, p. 130.
[33] Riksdag minutes nr. 70, 21 February 1989, p.132, 134.

his opinion, the earlier inaction of the government now meant they had to grab natural gas as a panic measure.[34] Gudrun Norberg of the Liberal Party joined in this criticism and pointed out that alternative fuels, not fossil fuels, should replace nuclear energy. She commented that

> …the Social Democrats should stop trying to trick the Swedish people into believing that natural gas is a clean energy source. It is surely better than coal, but is still a fossil fuel emitting a considerable amount of $CO_2$…[35]

Dahl countered that the right-wing government had introduced natural gas under "hopeless economic conditions", and planned for a massive coal introduction, which was stopped by her. She also pointed out that she was talking about a natural gas usage that would be less than biofuels and hydropower. After this Hökmark conceded that natural gas was a good way of replacing oil and coal, but that the "euphoria" surrounding natural gas "as if it were a completely clean energy form", was uncalled for. He also pointed out the problem of import dependence.[36]

In the end of May, Hökmark and Cars both drew attention to a new report concerning methane leakage in natural gas grids, which, according to Cars, might make natural gas an even worse fuel than oil, and Hökmark called the natural gas solution a "panic-like policy" and argued for a slower introduction of natural gas. Cars went even further and argued against a natural gas deal for lack of democratic decision-making. He pointed out that the Riksdag was supposed to agree on an energy policy for the 1990s, and if a natural gas deal was struck before this agreement, the freedom of action in the Riksdag would be restricted. This was, in his opinion, a threat to democracy that almost justified a complaint to the standing committee on the constitution. He accused the Social Democrats of deceit since the original agreement in 1980 was to first develop renewable fuels, and then phase out nuclear energy. Cars also threw a barb at the Centre Party for supporting a natural gas introduction despite the competition with biofuels from Swedish farmers. Franzén answered that they always had been for a balanced natural gas introduction, subject to the same reservations as the Liberal Party and Moderate Party. He argued that more natural gas should be introduced, but only insofar as it did not hinder the development of biofuels. The Green Party supported the Liberal Party in this issue. Although they admitted that natural gas was better than coal and oil, it was still imported and a fossil fuel and the party warned of the possibility of getting stuck in another large scale energy system that would be difficult to get

[34] Riksdag minutes nr. 92, 7 April 1989, p. 84.
[35] Riksdag minutes nr. 92, 7 April 1989, p. 87.
[36] Riksdag minutes nr. 92, 7 April 1989, pp. 92, 94.

out of later. Furthermore, they considered that the SEK 16 billion investment estimated for the trunk line could be put to better use.[37]

In June 1989, the political debate moved out into the press, where Hadar Cars wrote an opinion piece in Aftonbladet under the title "Natural gas worse than oil?" and argued that Sweden was on its way to making the same mistake as when it entered the oil system. He warned against seeing natural gas as a "saviour", and pointed to the methane leakages and dependency problems.[38] In the same month, both the head of the Environmental Protection Agency and Gunnar Hökmark from the Moderate Party wrote opinion pieces arguing for a more laid-back view on natural gas.[39] Hökmark attacked the sitting government for its "fossil fuel" policy, and claimed that "natural gas has been said to save the situation". As Cars in the earlier debate, he pointed out that this is in opposition to the result of the referendum.[40] The Swedish Bio Energy Association wrote in an opinion piece that natural gas would be in competition with biofuels, and in light of the economical life of natural gas pipelines, the "natural gas parenthesis" could be a long one. The association nevertheless endorsed a pipeline from Finland to Stockholm, but not a larger grid in Mid-Sweden with a connection to Norway since such a pipeline would pass through areas with large unused potential for biofuels.[41]

Thus, the tone against natural gas had hardened in 1989. Now the long-term contracts and dependence were seen as a problem, in a way they were not before. As Kall observes, the result of the referendum was used to argue for many different standpoints. In Birgitta Dahls point of view, Sweden could phase out nuclear and cut down on emissions even with the large introduction of natural gas that was now planned. She maintained that a natural gas introduction would not be at the cost of biofuels, and that the infrastructure later could be used for hydrogen and biogas. Instead, natural gas would be able to give environmental advantages during the nuclear phase-out, and therefore energy efficiency, biofuels and gas would be favoured in the upcoming law on environmental fees.[42] Dahl chose to focus on greenhouse gasses overall, thus including CFC (freon) as an important part of the climate work. Hökmark criticised her for this, claiming that Dahl tried to steer the discussion away from $CO_2$ in order to open up a space to increase $CO_2$ emissions from natural gas. As Åsa Knaggård has pointed out, however, in view of the reported methane leakages, a reframing of the issue from $CO_2$ to greenhouse gases hardly meant a

[37] Riksdag minutes nr. 119, 23 May 1989, p. 36.
[38] 'Naturgas värre än kol?', Hadar Cars, *Aftonbladet*, 9 June 1989.
[39] 'Se upp med naturgasen?', Göran Persson (the Swedish Environmental Protection Agency), *Dagens Industri*, 22 June 1989; 'Birgitta Dahl mellan två stolar', Gunnar Hökmark, *Svenska Dagbladet*, 25 June 1989.
[40] 'Birgitta Dahl mellan två stolar', Gunnar Hökmark, *Svenska Dagbladet*, 25 June 1989.
[41] 'Gassatsning på bioenergins bekostnad', Jan Häckner (the Swedish Bio Energy Association), *Ny Teknik*, 38 (1989), p. 2.
[42] 'Klimatpåverkan kan stoppas!', Birgitta Dahl, *Dagens Nyheter*, 29 June 1989.

better situation for natural gas. Still, this is one example of how the framing of the climate issue could change within the political debate.[43]

The adversaries of natural gas saw that fuel being presented as a kind of saviour in light of the nuclear phase-out. The Gas Association, however, pointed out that no one from the gas business had claimed that natural gas should replace nuclear energy, or that natural gas should be a dominating fuel in Sweden. They thought it a shame to drag natural gas into the nuclear debate, when it could very well hold its own as an advantageous fuel. In that debate, it seemed as if natural gas was on its way to take over completely, but flexibility and versatility needed to be key words in the energy system. The Gas Association did not see the cost of introducing more natural gas in Sweden as a problem and compared the investments of SEK 6 billion in a trunk line between Stockholm and Gothenburg with SEK 10-13 billion for a third nuclear block in Oskarshamn nuclear power plant, and the fact that Vattenfall built power lines at a cost of about SEK 1.5 billion per year. In their view, the problem was instead the unstable energy policy debate, where a decision was needed in order to create good conditions for investment.[44] In a later comment in Energi och Miljö, Ulf Norhammar, the head of the Gas Association, added that the only way to stop natural gas from becoming 10-15 % of the Swedish energy supply was to prohibit it. In his opinion, natural gas had been harmed by inaccuracy and exaggerations in the debate. Regarding leakages, someone had claimed that as much as 5-10% of the methane was leaked, which Norhammer found absurd. The business could never allow that, if for nothing other than economic reasons. He reported that Swedegas was waiting for the situation regarding taxes and energy decisions to clear, before making investments in new extensions, but that the planning was contining according to schedule.[45] Thus, natural gas became entangled with the nuclear phase-out issue, and in a way, became a battleground for environmental issues and nuclear phase-out. Meanwhile, negotiations with suppliers for the Mid-swedish project were going on. Sometimes it almost seems like two conflicting worlds.

A new organisational restructuring of the government moved energy issues back to the Ministry of Industry in early 1990, and Rune Molin, former head of Sweden's largest union, became Minister of Industry. Birgitta Dahl instead became Minister of the Environment. This change was one part of a re-assessment of environmental and energy issues that took place within the Social Democratic Party in 1989-1990. There was a deep divide within the Social Democratic party regarding these issues, and at this time a re-evaluation of the previous decisions regarding a $CO_2$ ceiling and the start of the phase-out in the

[43] Knaggård, pp. 144–145.
[44] 'Gasen bör inte ersätta all kärnkraft', Magnus Grill (the Swedish Gas Association), *Svenska Dagbladet,* 31 August 1989.
[45] 'Gasteknik på 90-talet: Naturgasen kan bara stoppas med förbud', P. A. Leikerud, *Energi & miljö*, 1 (1990), pp. 73-76.

1990s took place, following a difficult power struggle within the Party. As the Moderate Party and the Liberal Party had done earlier, they started to see the two decisions as conflicting, whereas they had earlier argued that both goals could be reached. This retreat shows a turn towards the more union-centred part of the Social Democrats, and since Birgitta Dahl had been the leading figure arguing for a start of the phase-out in 1995, it became impossible for her to stay on as responsible for energy issues. [46]

In the spring 1990, the debate continued, and pressure increased to find an energy policy solution for the 1990s. While the Social Democrats were re-assessing their energy policy, they kept arguing for natural gas as the best possible option, but they were becoming increasingly isolated. The Moderate Party and the Liberal Party kept on arguing against what they called a "fossil policy" and they were joined more explicitly by the Communist Party, the Green Party and the Centre Party. The Communist Party now argued that natural gas had to be viewed as a "temporary emergency solution." The Soviet Union had cut off deliveries of gas and oil to Lithuania, in response to that country's declaration of independence in March 1990, and this incident was used to point out the importance of not becoming dependent on a foreign country for supply.[47] The Lithuanian case was also used by Cars, who pointed out that instead of getting a new energy system based on durable, environmentally friendly and preferably indigenous sources, Sweden would be getting natural gas which would not only compete with biofuels but also come from the Soviet Union and most likely not be a temporary solution.[48] The Green Party called natural gas a "villain" due to $CO^2$ and methane emissions.[49]

In May 1990, Hadar Cars asked Minister of Industry Rune Molin during a parliamentary session how much state money that had been spent on the natural gas issue. The answer from Molin was that counting all loans and investments, as well as the Sydgas project, about SEK 700 million had been spent on natural gas-related activity, which would mean about SEK 1.1 billion (adjusted to current value). Molin determined that no more state money would be allocated to natural gas investments. While at the same time defending natural gas as the best fossil fuel to replace coal and oil. He also stressed that the further development of natural gas would depend on the energy policy decisions that would be reached in the Riksdag in the autumn, and opened the possibility of negotiations on the issue, pointing out that a broad support was needed for a new energy policy. Hadar Cars found this "worrisome", and commented that before he would negotiate any energy policy, he wanted a clear answer regarding

[46] Anshelm, *Socialdemokraterna och miljöfrågan*; Kall, pp. 146–148; Vedung and Brandel, pp. 157–158.
[47] Riksdag minutes nr. 106, 20 April 1990, p.15. Regarding the Soviet-Lithuanian incident, see Högselius, p. 340.
[48] Riksdag minutes nr. 106, 20 April 1990, p. 23.
[49] Riksdag minutes nr. 106, 20 April 1990, p. 27.

the phase-out. Cars also implied that the widespread support for natural gas among the Social Democrats was a way to bridge the divide within the party regarding the early phase-out.[50] That the nuclear phase-out as well as future energy policy divided politicians all over the board seems clear.

## Ownership and Liberalisation

Meanwhile, the long-running serial on Swedegas ownership continued. The past years had seen a discussion within the Ministry of Industry and Swedish natural gas actors regarding the market structure for natural gas in Sweden. The Swedish energy board released a report critizising the current market organization with Swedegas as both sole importer and owner of the trunk lines, arguing that this system inhibited competition. The well-known gas expert Jonathan Stern was asked to write a report on the Swedish natural gas market.[51]

By the spring of 1989 the Riksdag had given Vattenfall permission to buy back the shares owned by Statoil and DONG.[52] The aim was for these shares to be sold to other owners, and in 1989 Vattenfall negotiated with Sydkraft AB, a group called the Mid-Swedish Natural Gas Consortium (Mellansvenska naturgaskonsortiet, including the municipalities of Uppsala, Västerås, Linköping, Örebro, Eskilstuna and Norrköping, as well as the municipally-owned energy company, Stockholm Energy AB), and a group of industrial actors (including power companies Gullspångs kraft AB, Uddeholm kraft AB, Stora kraft and Graningeverkens AB, as well as ASEA and OK Petroleum). The goal of the change in ownership was to ensure that important actors on the future natural gas market should own shares in Swedegas. It was seen as especially important that large users of natural gas had more influence and responsibility and the broadening of ownership in Swedegas would "give the company better possibilities to carry out its mission related to the continued natural gas introduction." The consequence of the sale would be that Vattenfall was no longer the majority owner of Swedegas. This was considered desirable by Sydkraft and the municipal actors, and it was not seen as problematic by the government. After the introduction phase, state support would not be as crucial, and state withdrawal would also decrease the state's financial risk. The ownership situation would thus be Vattenfall AB 40 %, Shell 15%, Sydkraft AB 15%, the municipality group 15% and the industrial group 15%.[53]

This led to a new discussion regarding the degree of state involvement in Swedegas, as well as the suitability of Vattenfall to handle natural gas in

[50] Riksdag minutes nr. 120, 11 May 1990, pp.2-4.
[51] Jansson (the Swedish Ministry of Environment and Energy) to Stern, 22 December 1988, material from Jan Thyberg.
[52] Swedegas annual report 1989, Swedegas archive.
[53] Govt. Bill 1989/90:125, 'Med förslag om tilläggsbudget II till statsbudgeten för budgetåret 1989/90', pp. 37-38; Moberg, *Naturgas i Sverige,* p. 74.

Sweden. The Centre Party wanted a clearer message regarding a future energy policy to accept the ownership change and stressed that investments in renewable, indigenous energy and energy efficiency were more important than the investment in natural gas, fossil fuel. In the opinion of the Centre Party, it would be wrong to replace a large-scale investment in nuclear power with a large-scale investment in natural gas. The ownership change would mean that all the power interests of any significance in Sweden would have representation in the company, and the users would be tied to the municipality-owned consortium. Thus, everybody needed to be given very clear rules or Sweden would risk becoming too dependent on natural gas.[54] In relation to the Vattenfall discussion, Ivar Franzén also argued openly against natural gas in an opinion piece. He wrote that although there was talk about a risk of lack of energy due to the nuclear phase-out, what was really going on was a power game in order to secure shares in the future energy market. Thus, natural gas, according to Franzén, was a way for the large power companies to keep a large-scale a monopoly-like market for energy. He considered this deplorable for the Swedish consumers and environment.[55] The Communist Party argued against industry ownership, since they considered a high degree of private ownership in Swedegas problematic. They also criticized the presence of Shell as an owner, due to that company's connection to the apartheid regime in South Africa.[56]

The Green Party questioned Vattenfall's role in the restructuring, wondering whether the production-focused Vattenfall would really help decrease electricity use. Instead, they wanted the state to take over Swedegas completely and keep Vattenfall out of the natural gas business so as to stop them from developing a new large-scale system similar to the nuclear energy system.[57] Later, the Green Party made a motion to have the state use its influence in Swedegas to stop natural gas expansion.[58] In his argument, Krister Skåneberg pointed out that the Green Party wanted to call natural gas fossil gas instead. This was most likely one of the first times the term "fossil gas" was used in the Riksdag debate. The term seems to have emerged at or around the Swedish Society for Natural Conservation, at the end of the 1980s.[59] The term was a way of anchoring natural gas in the fossil fuel corner, and removing the positively connotated word "natural".[60]

[54] Riksdag minutes nr. 132, 31 May 1990, pp. 154-155.
[55] 'Naturgasen inte överlägsen', Ivar Franzén, *Kommunaktuellt*, 28 (1990), p. 42.
[56] Riksdag minutes nr. 132, 31 May 1990, p. 156.
[57] Riksdag minutes nr. 132, 31 May 1990, pp. 157-158. The Green party had critizised Vattenfalls actions in this regard earlier, see Riksdag minutes nr. 11, 19 October 1988, pp. 179-180.
[58] Motion 1990/91:N9.
[59] The first documented use I have been able to find is by Thomas Kåberger in a discussion about natural gas and biogas in Växjö in November 1989, Brita Olerup, *Bioenergi Kontra Naturgas. Hearing i Växjö 16 November 1989.* (KVMs arbetsgrupp för Miljövärderingsfrågor, February 1990), p. 8.
[60] The term "fossil gas" is used within certain groups today, and it seems as if the use is spreading, but it has not reached the level of official use..

The culture of Vattenfall was thus questioned, as was privatization. Around this time, Vattenfall was lobbying fiercely to change its status from a public enterprise to an independent joint-stock company. Although Vattenfall was a public enterprise, it had kind of a double identity, and its employees generally saw other power companies as its "peers" rather than other Ministries or national boards. Although its actions had to be approved by the government, the culture of Vattenfall had been more that of an energy company. The need to get every move approved by the government was seen as a burden for Vattenfall, and it had already asked several times to be re-constituted. The issue was discussed several times in the Riksdag, and, as can be seen also in the discussions regarding Swedegas' ownership as well as Siljansringen, the organisation of Vattenfall was a continuing topic over the last half of the 1980s.[61]

The industrial companies wanting to gain a equity share in Swedegas in 1990 showed a real interest in natural gas. At the same time, much of the industry was seen as being against nuclear phase out. For example, when the Social Democrats changed their policy with regard to the nuclear phase-out, the industrially-oriented part of the party, strongly connected to the unions, seems to have had an influence on this new way of thinking. It is hard to say much about the role of the industry here, but at least part of the actors in the industry did not see continued use of nuclear power and a natural gas introduction as conflicting.

The discussion about the future energy system was a frustration for the natural gas actors. Roger Johansson, the information manager at Swedegas said in an interview that there was "a mental moratorium" throughout the whole energy sector, due to the unclear directions regarding a nuclear energy phase-out.[62] It seems as if this was true in the extent that any energy action was on hold until a decision would be reached regarding the future energy policy. Meanwhile, in October 1990, the Swedegas ownership was in the hands of Vattenfall 43%, Shell Gas 15 %, Sydkraft 15%, Mellansvenska naturgaskonsortiet 15%, and NGI Naturgasinvest AB 12%.[63] Overall, minutes from Swedegas from 1988 and 1989 show a certain strain in the budget. A lot of work was put into projects that did not yield any financial return. As early as 1988 there was a discussion in the board regarding the dangers of building up the organization too fast.[64] The work plan for 1990-1992 showed that large capital investments were necessary, but at the same time, Swedegas had a problem with a financial deficit. At a shareholders' meeting in the autumn of 1990, shareholders demanded a profit from the company as soon as possible, and a moratorium on investment until then. A 3-5-year plan with the goal of making the company financially viable

[61] Högselius and Kaijser, pp. 82–84.
[62] 'Gas eller biobränsle i Sydsverige? Subvention avgör dragkampen', *Miljö i Sverige*, 5 (1990), p. 8.
[63] Minutes from extra shareholders' meeting, 18 October 1990, Swedegas archive.
[64] Swedegas board of directors minutes, 29 September 1988, Swedegas archive.

without expansion was set in motion. Measures for cutting costs, such as a moratorium on new advertising activities, were also discussed.[65] All LNG and storage projects were put on hold. However, the Mid-Swedish pipeline project was not put on hold until June 1991.[66] In December 1990, Swedegas announced it had to cut its personnel by almost one-half. Negotiations with the union were completed in January 1991.[67]

### The Three-party Agreement

In January 1991 the Social Democrats, the Centre Party, and the Liberal Party came to an agreement regarding future energy policy. This was known as the "three-party agreement". The new agreement postponed the nuclear phase-out forward until such time as new, environmentally friendly energy sources would be available, and the energy-saving investments had started paying off. The final date was kept at the year 2010, but, as Vedung and Brandel pointed out, another formulation said that nuclear energy should be phased out at a rate taking into consideration the need of electricity to maintain employment and welfare.[68] In practice, this meant that the three-party agreement opened the door for postponing the nuclear phase-out beyond 2010. The agreement in effect, set aside both the decision about early nuclear phase out and the $CO_2$ ceiling. This made nuclear power replacement less urgent, and natural gas lost one possible position on the Swedish market. Bengt Wallenberg commented that "the politicians who participated in the agreement were very well aware of the consequences it would have for natural gas".[69] Thus, it seems natural gas had lost its proponents in the Riksdag at this point. On the other hand, as Hultman has pointed out, when the phase-out disappeared from the agenda, natural gas was no longer a threat to nuclear, and despite that biofuels were in focus in the three-party agreement, not much was done in practice to enforce them. Instead, new power plants were built for fossil fuels, and fuel cell plants planned by Sydkraft and Vattenfall along the West Coast in the 1990s were natural gas powered.[70]

Apart from the political climate and the three-party agreement, other circumstances also made a large natural gas project difficult at the beginning of the 1990s. Negotiations continued with Soviet representatives well up until 1990. It is easy to imagine, however, that the focus of Soviet actors in 1991 was not first and foremost to negotiate new gas contracts, but to re-organise and

[65] Swedegas board of directors minutes, 18 October 1990, Swedegas archive.
[66] Swedegas board of directors minutes, 24 June 1991, Swedegas archive.
[67] Swedegas board of directors minutes,10 January 1991, Swedegas archive.
[68] Govt. Bill 1990/1991:88 'Om energipolitiken', pp. 6-8; Vedung and Brandel, pp. 371–372. Algotsson, p. 166 ff.
[69] Swedegas board of directors minutes, 30 January 1991, Swedegas archive.
[70] Hultman, p. 89.

manage the gas grid in the collapsing Soviet Union.[71] Furthermore, in the early 1990s a recession and growing national budget deficit began to make themselves known, although the big downturn in Sweden did not happen until 1992.[72] As often before, one of the main ways of restructuring the organization in times of stress was a change of ownership structure. In 1991, Vattenfall again took over as a 100% owner. Vattenfall bought the shares from the remaining shareholders, and in early 1992, when Vattenfall became a state-owned stock company, Swedegas AB became Vattenfall Naturgas AB.

## Concluding Remarks

While the plans for a large-scale introduction of natural gas in Sweden continued, the political discussion regarding energy and climate issues grew fiercer. The heightened awareness of $CO_2$ emissions and their consequences had an impact both on the view of nuclear power and on fossil fuels. The strongest argument for natural gas had always been its environmental friendliness. As the sulphur issue was increasingly dropped from the agenda, and $CO_2$ gained in importance, natural gas could still claim to do well in comparison to other fossil fuels, but it was also bundled together in the discourse with the $CO_2$-emitting fuels, and therefore went from being part of the solution to being part of the problem. In the end, gas was even found lacking in comparison to coal, in the opinion of Hadar Cars.

There are at least two ways of interpreting this discussion. One way is that the actors that were against the nuclear phase-out were able to use the climate debate in order to argue their cause. In this context, natural gas became the target in the debate since it could be constructed as a threat both to the environment and to nuclear power. Another interpretation is that the environmental problems inherent in natural gas and the large system it represents were finally laid bare and discussed in a proper way. In the first context, public debate was a threat and constituted a social acceptability risk for the natural gas project. In the second context, natural gas itself was a risk to the environment and, in extension, to people's health and well-being. Regardless of interpretation, the overall impression of this debate is that natural gas was used to a large degree to fight other fights, and, in my interpretation, the gas itself was not what was most important for the political actors. Instead the $CO_2$ issue, and the nuclear phase-out were central to the debate, and natural gas was used to argue points in relation to those issues.

The political opponents of natural gas also spoke of the risk of becoming dependent on a foreign supplier, an issue that had not been raised to any larger extent earlier. This made biofuels a better alternative, since they were

[71] Regarding the Soviet gas trade around and after the collapse, see Högselius, chap. 11.
[72] Schön, p. 506.

indigenous and thus safer from a supply perspective as well as beneficial for Swedish producers. From being compared mainly to oil and coal in a market context, natural gas was now pitted against biofuels and nuclear power. Hadar Cars's comment regarding natural gas as a threat to the democratic decision-making process may seem exaggerated, but he and other participants in the debate at the end of the 1980s expressed increasing concern regarding large-scale infrastructure as a whole. Several actors compared natural gas to the oil system in this sense, as "another large system to get stuck in".[73] On the other hand, nuclear energy is also a large system and some of the actors arguing against the large natural gas system did not seem to have a problem with the nuclear energy system.

Thus, adding to the market problem, which had been the most common argument against natural gas in the earlier debate, now almost every argument that could be used against natural gas, was trotted out. Even actors who had earlier supported natural gas, changed sides. This change in attitude happened rather quickly and mainly in the political sphere, showing again the weaknesses of the natural gas actor coalitions in Sweden. Swedegas had to watch while their political allies changed opinion, and they did not have the strength to oppose this change, regardless of owners.

During 1991 and 1992, the whole Swedish natural gas project was criticised from several sides. The previously-mentioned text by Erik Moberg is one example, but PG Gyllenhammar also publicly declared that the Swedish natural gas project had been handled carelessly, and that both the right-wing and left-wing policy had been too uncertain. He also blamed the Swedish nuclear fixation: "While we have debated, the rest of Europe has built a system."[74] Björn Jerkert at Dagens Nyheter agreed, observing that "natural gas has crashed quietly and after decades of commissions."[75] He further stated that it had been an expensive adventure for Swedish taxpayers that ended in a fiasco. Jerkert called the three-party agreement a kiss of death for natural gas. I will agree to a certain extent. The agreement was not the end of the natural gas story in Sweden, not by a long shot, but it does mark the end of an era in the way that the hope of national, political support for a greater natural gas development might be said to have died here. I would furthermore argue that, so far, it has not really been revived.

[73] Anshelm? Should I write more about this in the chapter?
[74] 'Svår energibrist hotar Sverige', Pehr G. Gyllenhammar, *Dagens Nyheter,* 6 juni 1991.
[75] 'Naturgas ett dyrt haveri: Statligt hattande och effektiva påtryckningar bakom miljardförluster', Björn Jerkert, *Dagens Nyheter*, 22 September 1991.


Fig. 11: The Swedish natural gas grid today. Map courtesy of Swedegas AB, http://www.swedegas.se/gasnatet/gasnatet

# Chapter 9: Concluding Discussion

In this thesis I have described and analysed the long-term process of introducing natural gas in Sweden. I have done this by following actors, in Sweden and other countries, in their attempts to negotiate and construct a natural gas infrastructure. In this final chapter, I will discuss the messy complexity that I have observed, and its various aspects.

## A Messy Tangle of Actors and Interests

The questions I have worked with concern which actors that engaged in the introduction of a natural gas infrastructure in Sweden and the coalitions they formed. Most of the actors I have followed worked during this time to promote or oppose natural gas. Although many of these were enthusiastic and put a lot of time, money and effort into the natural gas endeavour, it is clear that the Swedish natural gas business has suffered from a lack of stable actor coalitions. Even though certain actors have been central all through the period I have studied, these actors have suffered from changing ownership structures and uncertain conditions.

The Swedish Academy of Engineering Sciences was an important actor early on when new information needed to be gathered about the new fuel. The expertise needed in order to find information was in the energy and fuel business, with the Gas Association representing an especially important network. A main actor in the Swedish gas sphere, the Gas Association had a strong enthusiasm for gas issues, as well as access to an infrastructure possible to use for natural gas. Further, in the context of a possible phase-out of town gas, natural gas could be seen as a survival strategy, at least in an early phase. The Association's members were companies and organisations, some who had an interest as future users of natural gas.

Early on, the main uses for natural gas were considered to be industrial ones, and some of the first actors to take interest in natural gas import to Sweden were two important Swedish industrial companies, Gränges and AB Johnson. Their main interest however, was exporting pipe. The import of gas for these companies' own use was clearly justified through the exchange with pipe. The steel industry was also slowly waking up to an economic crisis at the end of the 1960s, and pipe production became part of their risk management. In this context, the fairly limited grid that possibly could be constructed in Sweden would hardly be sufficient to face the larger problems. Thus, export was likely even more important, as was continued oil supply, which we can see in the negotiations with the Soviet Union. Another of Sweden's great export groups was the naval industry. Like the steel companies, Kockums saw natural gas as a way of getting out of a crisis, and launch tanker exports. Later, Volvo showed an interest both as a gas customer and as a way of creating more jobs within the

industry. However, a strong Industrial-State cooperation as in the case of ASEA and Vattenfall, or LM Ericsson and Televerket did not materialise in the gas case.

The crisis context has a built-in tension. Since many industries were in financial trouble and some even were being liquidated at that time, who could afford to start a natural gas project? State financial help would almost always be necessary, and thus natural gas was in some ways used in order to gain state support. On the other hand, natural gas was seen in the context of the oil crises, and could be used to substitute oil. Several industrial actors were also interested in becoming owners of Swedegas at the end of the 1980s. One dimension that I have not explored in detail is that industry was, and still remains, one of the largest customer base for natural gas.[1] This shows that industries were interested in using natural gas from the time this fuel entered the market.

The industry actors had an interest in natural gas as users and as suppliers of equipment. Many Swedish energy companies were also interested in this new energy form. For them, natural gas was either a competition or a way to develop their markets and ensure energy supply. Some joined the Gas Association, as we have seen, but Sydkraft took its own initiative through connections with other gas companies abroad, as well as local and regional networks, and worked through those. In a regional context the companies could argue for regional development, working together with municipalities (some were municipality-owned) as well as for a new commercial business area. Although Vattenfall had a different position as a public enterprise, the relation between Vattenfall and Sydkraft was one of both cooperation and rivalry, which can be put into a historical context of a longer relationship between the two. They were both involved in the two first commercial companies created in the early 1970s to handle negotiations with foreign actors.

## Gas Companies and Ownership

When the Natural Gas Delegation was created by the Swedish government in 1973 its mission was to study a possible introduction of natural gas in Sweden. Thus, the state actively promoted cooperation on the natural gas issue, but remained in a more investigating capacity, choosing not to take complete commercial responsibility. Nevertheless, all through the 1970s there was a consensus regarding state involvement as a prerequisite for a gas project to be carried through. Later on, this mode of organisation was consolidated through the creation of Swedegas AB in 1976. Swedegas took over the majority in Sydgas AB and Östgas AB as well as the tasks of the Natural Gas Delegation. Vattenfall went in as state owners here, as well, but this time as a majority shareholder. The Gas Association was also a shareholder and all the original personnel came

[1] See http://energigas.se/Energigaser/Naturgas/Statistik

from them. As its predecessors, the new company worked through lobbying and networking, both in Sweden and internationally. Despite different views, there was a strong will for cooperation, especially in the early 1970s when there were many arenas where different actors met and discussed the issue. When the organisation of the Swedish natural gas business was stabilised in the form of Swedegas, this company, instead, became a platform for cooperation. On the Swedegas Board, members from different places in the business met. Thus, the interest groups remained as representatives on the Board although a company in which the state was the majority shareholder took over the reins.

Swedegas was (and has remained) a key player in the Swedish natural gas business, but its ownership changed many times from 1976-1991, shifting between Vattenfall (several times), Svenska Petroleum, and a coalition of Shell, DONG and Statoil.[2] The changes in ownership can be interpreted in terms of a lack of real willingness by the owners to engage seriously in natural gas. Their priorities were elsewhere. Such an interpretation supports the results of Sven Olof Olsson who argues that since the natural gas business has been dominated by commercial actors whose main interest was not gas, these actors have not provided a sufficient endorsement of gas.[3] In comparison with other countries, the electricity sector had a larger influence on the natural gas business in Sweden. In Holland, the oil companies Esso and Shell had central roles in natural gas development, and in Finland, the same applied to the state-owned oil company Neste. In Denmark, DONG was created as a state oil and gas company without any power interests, and in countries with domestic gas supply, such as Germany and France, regional and national companies were created with gas as their main activity.[4]

The changing ownership has clearly been a problem for Swedegas, and my material also demonstrates that the owners have not always been supportive of natural gas projects. Nevertheless, there are nuances to be found. Vattenfall has been accused both by politicians and Swedegas employees of not really being interested in natural gas. On the other hand, Vattenfall was given ownership of Swedegas three times, and even during a period when they were not the owner of Swedegas, they started the Gas Transit Project, one of the largest planned natural gas projects in Sweden. An organisation such as Vattenfall contains many different interests and is difficult to judge as one entity. It is fully possible that even though there were interested individuals or even a larger interest in gas within Vattenfall, in a situation where a choice had to be made, the individual actors nevertheless had to prioritize the larger agenda of Vattenfall and, in extension, the state. This was especially true where Vattenfall would

[2] For a full list of Swedegas owners see appendix.
[3] See Chapter 1; Olsson, *Energiorganisation i Norden*.
[4] See Högselius; Arne Kaijser, 'Striking bonanza:The Establishment of a Natural Gas Regime in the Netherlands', in *The Governance of Large Technical Systems*, ed. by Olivier Coutard (Routledge, 1999); Olsson, *Energiorganisation i Norden*; Rüdiger, *DONG og energien*.

have to take upon itself the main responsibility for a large risk. An example of this was the opposition by Gunnar Gornitzka of Vattenfall to the Sydgas project in 1979. The same can be said for Svenska Petroleum, and this problem became visible during times of conflict, such as the one surrounding the Sydgas deal in 1983, when the Sydgas project showed a large deficit. It then became apparent that Svenska Petroleum and the government had different priorities from Sydgas AB and some groupings on the Swedegas board. There were tensions between actors from different spheres that became clear in a state of conflict. It is interesting to note that the ownership discussion regarding Swedegas still continues today. In November 2012, the Swedish daily, *Svenska Dagbladet,* reported a discussion regarding the current ownership of Swedegas by EQT, a risk capital group, and the question was raised whether this type of company is the right owner for such an infrastructure.[5] The ownership story thus is by no means finished.

Another example of tension is found in the relationship between the state and Vattenfall. Although Vattenfall was a public authority during the period of study, many Vattenfall emloyees did not see themselves as state representatives, but instead viewed the employees of other energy companies as their peers. As a public enterprise, Vattenfall often assumed the role of state representative when the government and /or the riksdag wanted more involvement in the gas business. It could also exercise a certain independence vis-à-vis the government, since Vattenfall possessed the energy expertise. There were always different opinions within the Riksdag regarding which role Vattenfall should play in the gas business, and the opinions probably differed within Vattenfall as well. Vattenfall's main interest was as a power producer, and natural gas was never more than a very small part of what the company did. Vattenfall also had to protect its position with regard to the other power companies.

## State Interest

State involvement in infrastructure development is not unusual in Sweden, even though it has taken different forms over time, as in the case of the railways or the electricity grid. In this sense, the decision to create a state limited company in order to build a trunk line was not unprecedented, nor was the format of Swedegas, with a state majority owner (Vattenfall), in cooperation with interest groups and private companies. Swedegas was the first state-owned company created directly to introduce an imported fuel into Sweden. This did not happen in the case of oil and coal.[6] During the mid-1970s, the Swedish state assumed a firmer grip on the oil business and created its own companies for exploration, but the oil business, itself, was never nationalised. The context of Swedegas' creation after the oil crisis is important here, but also the inherent transnationality as well as the technical characteristics of a natural gas pipeline.

[5] "Riskkapitalist i bråk om gas", *Svenska Dagbladet Näringsliv,* 29 November 2012.
[6] The discussion was,however, fierce regarding oil, see Jonter, *Socialiseringen som kom av sig, p. 54 ff.*

In comparison to other large systems, the electricity system and the telephone system started as small local networks, while the national trunk lines came later. In the case of natural gas there was (and still is) an organisational divide between the responsibility for the trunkline and the responsibility for the regional distribution grids, as is the case with the power grid, but the transnational trunkline in this case was a prerequisite for the regional grid development, not the other way around. Thus, the natural gas system is the only energy transport infrastructure built in Sweden meant solely to transport an imported fuel. In other words, while the development of the power grid can be characterized as a "bottom-up" process, the natural gas grid was based on a more "top-down" approach. In a other countries, natural gas development has been helped by local town gas grids in other countries. This was, however, seldom the case in Sweden where most of the town gas grids had already been closed down when natural gas was introduced.

Many other countries involved in the natural gas negotiations saw state support as something natural, and in the case of the Soviet Union it was even a prerequisite. The Soviet Union was, of course, an example of a country where state institutions were the main negotiation partners. But governmental contacts were important also in the Danish case, in which a governmental contract was signed, and the Danish Ministry of Energy was heavily involved. As we have seen, the ministers of energy conducted the final price negotiations in private. The commercial actors in other countries that have participated in the process were almost all state-owned or connected with the state in some way, such as DONG, Statoil, Norsk Hydro, Neste Oy, and Sonatrach. The few exceptions include Phillips Petroleum, Shell and Ruhrgas.

In other ways, too, the natural gas project differed from other large Swedish energy systems. Compared to the cases of hydropower and nuclear power, which initially enjoyed virtually unanimous political support, this did not apply to natural gas. There was never a unified political force either for or against natural gas in Sweden, as was the case with both nuclear and hydropower. Even in the discussion above regarding opinions on natural gas, the fuel is seen as a risk or an opportunity depending on the way the actors relate to the other contexts in which gas is placed. The Conservatives and the Liberals were against the nuclear phase-out, and therefore also against natural gas as well as biofuels if they would replace nuclear energy. They had a more positive view of biofuels, however, since it was an indigenous energy source. Neither of these parties had showed any marked enthusiasm for natural gas earlier during the 1970s and early 1980s, but neither had they officially opposed it, and the Danish contract was concluded when they were in government. The Centre Party, which had previously been a proponent of natural gas, and continued in this view far along in the debate, showed increased reservations, and accepted natural gas only as a

replacement for coal and oil, and not as a fuel to replace nuclear energy. Nuclear energy should instead be replaced by biofuels, as well as energy efficiency and savings. The Green Party was also for saving energy saving, and had a generally negative view of large new energy systems. However, at certain points it was positive with regard to natural gas as a "transitional" fuel. At the end of the discussions, however, the Green Party turned completely against natural gas. Only the Social Democrats argued unequivocally both for natural gas and the early closing of nuclear reactors during the 1980s. In the end, in a slight echo of the hydropower debate in the 1960s, they were left alone defending natural gas. The $CO_2$-context was also important, and here the divide at the end of the 1980s also ended up being everyone against the Social Democrats, who considered a small increase of $CO_2$-emissions to be acceptable during a transition period.

The "state" can be a rather impenetrable entity. Who or what do I talk about when I point out the state as an actor? I have tried to make a clear difference between the government, the riksdag and the other state entities, such as boards, public enterprises, state-owned companies and ministries, but there is quite a bit of ambivalence in my material and among my actors regarding what the state is. The actors I have followed regularly refer to the "state", without specifying what they mean, both in contracts, negotiations, investigations and commissions. This becomes interesting when, as in the discussion about Vattenfall's ownership of Swedegas, some politicians argue for the "state" to take over Swedegas instead of Vattenfall, although Vattenfall is a public enterprise, and is at other times referred to as the state representation in the company. State ownership and state financing can look very different from case to case.

The government and the riksdag of course have the ultimate decision-making power, but their decisions depend to a large degree on the investigations and preparations made by leading civil servants at the ministries. Officials at the Swedish embassies and at the Foreign Ministry were important links in the flow of information and during negotiations. In the case of natural gas, a group of officials within the Ministry of Industry responsible for energy matters often played a crucial role; they handled much of the gas negotiations, suggested appointments for representatives in boards of public enterprises and limited companies, wrote the ministers official proposals and conducted commissions of inquiry. Most of these officials worked many years at the Ministries and gained much knowledge about energy matters as well as developed extensive networks both in Sweden and abroad, while the ministers they served stayed in office for much shorter periods. This gave the officials a considerable informal influence.

These officials also served an important function in the corporate state. Much of the state-organised activities concerning natural gas took place within state

commissions, delegations and similar forms where representatives from industry, interest groups and other public entities met and where the officials from the Ministry of Industry often served as secretaries or coordinators. In fact, much of the ground work for the natural gas introduction in Sweden took place in these kinds of corporate meeting grounds, mostly far away from the lime lights of media. This makes the state a rather complex and sometimes opaque power structure.

The lack of political agreement behind natural gas as well as the conflicting and changing energy policy discussion that developed during the 1980s made it more difficult to promote natural gas as a fuel in Sweden. Changes of political actors involved, as well as the ownership of Swedegas, added to this complexity. On the other hand, there were at times surprising continuity between the actors and organisations I have examined. Their representatives were involved in boards, committees, delegations and other groups coordinated by state officials and subordinate to the state. Often they occupied several positions at the same time, and sometimes they had to represent conflicting interests. Several of them moved between organisations, circulating within what sometimes seems to be a large group of actors, situated around a smaller, more tightly-knit core. The same actors kept reappearing, wearing different hats, especially during the 1970s, despite the fact that the organisations changed over time.

### Transnational Complexity

Throughout the period studied, DONG and Statoil functioned as the business partners, negotiation partners or, briefly, as owners of Swedegas. They were interested in expanding their markets and ensuring a higher security of supply. For Danish actors, gas export to Sweden was put into a context of the development of their national gas grid. The same can be said for actors from the Soviet Union, who saw an opportunity to expand their export market. Another matter of interest by the Soviet Union was the balance of trade. The recurring discussion regarding the balance of trade shows it to be important, and the gas trade was seen as an opportunity to balance trade from both sides. It was likely a goal to maintain a good balance of trade with other countries, as well. One example of this occurred when Norwegian actors seemed to take issue with the fact that Sweden only exported goods to them, but did not reciprocate by importing Norwegian goods. This discussion was connected to industrial policy, which was important for political actors in all countries. For Finnish actors, the connection to Sweden and eventually on to the European grid represented an opportunity to increase supply security. Nordic cooperation was also an incentive for the Nordic actors at various times.

All actors in different countries were involved in the development of their own natural gas infrastructures, as well as negotiating with other countries in different groupings. Even when there were only two parties involved in a negotiation, both parties were often also dependent on, or attempting to engage

in, negotiations with other parties. An example of this in the case of Sweden and Denmark is the relation to Rurhgas that had to be taken into account all the time. Another example the refusal of Danish actors to commit to natural gas export while the domestic project was under construction, due to their delicate domestic political situation. Finland did not want to give Sweden shared ownership of the grid in Finland since this might lead to the Soviet Union wanting the same thing. Here the relationship with other transnational and national actors influenced their actions toward Sweden. In these cases, more often than not, the domestic situation took precedence over the transnational project. The consequence to the transnational situation involved too many parameters outside the control of the actors, thus increasing the risks. On the other hand, in the rest of Europe, actors have apparently been able to overcome the transnational problems. The messy complexity I have observed is in large part due to the many and changing actors and interests on different levels, and this complexity increases due to the transnational characteristic of the actors.

## Market Problems

As seen, the actor structure has been one part of the messy complexity that has characterized natural gas development in Sweden. Finally, how did the actors relate the natural gas issue to political, economic and social contexts? Another problem has been finding a place for natural gas on the Swedish energy market. The biggest and often most decisive concern in negotiations and proposals was the financial situation and possible market problems. Miller and Lessard describe market risks as the inability to predict market demand. This is a problem on any market, and in the context of the Swedish energy market, many actors have hesitated with regard to natural gas. Sparsely populated areas with industrial customers spread out, as well as an already well-developed power supply, have been main arguments against the introduction of natural gas in Sweden, during both the 1970s and the 1980s. The price gap problem, that is the difference between the possible market price in Europe and what the Swedish customer would be willing to pay, was formulated by the Gas Delegation, but had already been recognised by the Commission for pipe transport of oil and gas, and thus shows that actors were worried about the ability of the Swedish market to cover the costs of constructing the infrastructure. Due to this view of the Swedish market, a natural gas project was considered financially risky. Nevertheless, there have been different views as to the gravity of this problem, and how to handle it. In a context of large infrastructure construction, some natural gas proponents claimed that the market risk was not greater than in other projects. Other advocates of natural gas have aligned the natural gas issue in a socio-economic context, and considered the benefits of natural gas, mainly its environmental and technical properties, to be enough to warrant state intervention through regulation and subsidies to help the market along. This,

however, changed as the environmental properties of natural gas were called into question. Latour comments regarding Aramis that

> If politics imposes its will on the budget office, then the budget office has to take into account the calculation of passenger time and comfort, and Aramis becomes profitable once again. If politics hesitates, then the budget office imposes its own method of calculation, and Aramis goes back in the red.[7]

This means that the profitability of the project is decided not by mere calculation, but, rather, an economic estimate that makes the project most profitable is chosen for every project. Economics is not what decides the fate of a project. Instead the estimates are made to fit the context of the project. One example of this was the different estimates made around the Sydgas crisis. The Sydgas pipeline was one instance when the socio-economic profit of natural gas was included, and thus the project was considered profitable. Even though market considerations were important during the negotiations and investigations, they were not the deciding factor, and in the end the deal owed more to the energy policy context than to the economic one. Thus, the proponents managed to use the context of the energy crisis to convince the other actors to consider solutions and investments that may not have been made at another time.

Another part of the market problem was competition with other fuels and carriers. Natural gas was first and foremost seen in the context of replacing heavy fuel oil, coal, and later, for light fuel oil. This was successful to some degree, but when the oil price declined, oil was once again in favour. Although natural gas prices followed oil prices, oil was simpler to obtain, as it did not require the added investment of constructing a pipeline. Early on, the power market was considered out of bounds for natural gas due to the strong position of hydropower and later, nuclear energy on the Swedish energy market. After the problem of the hydropower moratorium, nuclear energy was seen as the "post-hydro" solution. This changed over the 1970s, and in 1978-79, when nuclear energy was being contested all over the field. Then the energy market changed due to an increasing dependence on electricity and the decision to phase out nuclear power.

In the early 1980s, interest in coal increased, and both coal and LPG became competitors of natural gas. Starting from about 1982 and then increasing, natural gas was put into the context of nuclear replacement by mainly political actors. Nevertheless, gas was never allowed to become a real alternative for power generation. This is also connected to the context of the anticipated restructurings of the energy system, which did not happen as expected. After the

[7] Latour, p. 184.

two oil crises, the price of oil went down again, and the effects of the energy efficiency programs put in motion in the 1970s started to show. The anticipated increased energy consumption was thus not as high as expected. In addition, the restructuring that was supposed to happen when nuclear power was phased out did not take place. Instead, electricity was increasingly used in more and more places, and natural gas could not compete with nuclear power as an electricity generator. It seems as after the shocks of the 1970s the energy situation was "normalised". Hydropower, oil and nuclear power were again considered reliable. Both coal and natural gas lost their place in the Swedish energy context. After the Chernobyl accident and the decision to start the phase-out of nuclear energy in the 1990s, natural gas again became a possible competitor to nuclear energy. Later in the 1980s, biofuels rose as a strong competitor to natural gas. It is important, however, to remember that the opposition between these fuels were also context-dependent. This can be seen in the discussions regarding fuel taxes, for example, or in the fact that some actors saw natural gas as a competitor to nuclear power, while others did not. The proponents of natural gas tried to align their arguments for natural gas into the changing political contexts, adapting to the context they saw as important for the benefit of natural gas.

Another risk that Miller and Lessard connect to markets is supply risk. Many countries used natural gas as a way of diversifying their fuel supply and getting away from oil dependence. Most of these countries had some degree of domestic supply. In Denmark, for example, the whole Danish natural gas project can be interpreted as a way of getting away from the heavy dependence on foreign energy sources in the aftermath of the oil crisis. The risks of fuel shortages and supply dependence on the Middle East were discussed in Sweden even before 1973, and negotiations with Finland, the Soviet Union, Denmark and Germany were all undertaken before the crisis. After the first oil crisis, this became an even more pressing issue. One might think that since natural gas also was an imported fuel, it would not be interesting as a substitute for oil. However, in this context natural gas import was seen as an opportunity to decrease supply risk by diversification; it would not decrease importation dependence per se, but it would spread the risks.

There was little to no discussion regarding the risk of being too heavily dependent on another country for gas supply before the 1980s, even though the natural gas market looked very different from the oil market, with the bilateral contracts described as marriage agreements by Lönnroth and the static transportation systems differing greatly from the more flexible oil market organisation. Natural gas seems to have been seen as equal to oil in terms of degree of dependence. The first real discussions regarding dependence and supply security began at the end of the 1980s, when natural gas was under attack for other reasons as well. The different projects were generally either seen

as too small to warrant any worry with regard to dependence, or large enough so as to envision a future national pipeline system with several suppliers. In that case the issue of dependence would be a minor one.

In light of today's discussion regarding dependence on Russian gas, it is interesting to note that the Soviet Union was generally considered a very reliable supplier by Western European customers, although the former had experienced some technological turbulence in the early stages of their exports. The Soviets were also considered more reliable than Middle Eastern suppliers, and, at times, more reliable even than those with North Sea deposits, first because their development seemed uncertain, and later because of strikes on the platforms. Later in the 1980s, it seemed as though the volatility of Swedish energy politics may have been a larger risk for the Soviet Union, than vice versa.

## Changing Contexts

Miller and Lessard speak from the perspective of project leader and managers, and in that regard regulatory risk is occurring when governments or other regulatory institutions change the conditions of a project. Regulatory risks were discussed among natural gas actors who worried about fuel taxes and emergency storage regulations, for example. These concerns were connected to the market problems. Depending on political decisions, the market would look more or less favourable. These risks were countered through lobbying and work within the boards and commissions where interest groups were present. Despite this, as we have seen, the natural gas actors had problems aligning themselves to the changing energy policies and political opinion. This was especially true at the end of the 1980s when the political opinion changed to the detriment of natural gas.

At this point, some interest groups started to actively oppose natural gas in a way not done before. When natural gas was first discussed in Sweden at the end of the 1960s and the 1970s, environmental issues had just entered the energy debate, and natural gas was lauded as an environmentally friendly energy source, mainly due to its low degree of sulphur emissions. This view was held all over the spectrum of politicians, officials and engineers working at the Ministry of Industry, the Gas Committee and later, Swedegas. By the end of the 1980s, this had changed. The changing focus of the environmental movement from acid rain to $CO_2$-emissions put natural gas in a different position, and instead of being compared to other sulphur-emitting fuels, it became a rival of biofuels. In the context of the sulphur problem, natural gas was a way to counter environmental risk. In the context of the $CO_2$-debate, it became an environmental risk in itself in Sweden, and the actors who opposed the phase-out of nuclear power could use natural gas to argue for their cause. An exceptional case of natural gas actors managing to align themselves to the prevailing energy political context was during the negotiations regarding the

Sydgas pipeline. This window of opportunity was seized by actors on all levels, and this resulted in a quick development leading to signed contracts.

One might, however, ask the question: How much choice do actors really have about the contexts they relate to? In the view of Latour, actors choose contexts, they do not just comply with one "spirit of the time" which happens to be there. I agree with this, and I have also shown that actors have chosen certain contexts and ignored others at different times. Despite this, there is an element of power and interest, which is important to discuss in relation to this. An actor or an actor coalition may choose a context to align to, but that does not mean they have the power to make their particular context the most meaningful one in the debate. Certain actors have more power to set the agenda than others. During the 1980s, when natural gas had entered into Sweden as a fuel managed by a majority state-owned company, political actors had the power to choose which contexts to put the gas into, for example, the nuclear phase-out and the $CO_2$-debate. Parallel with this context, Swedegas, state-owned but also with other interests involved, related new natural gas projects to the context of the already existing natural gas project as well as to other environmental issues. Natural gas actors did not necessarily want natural gas to be discussed in the context of nuclear replacement in electricity generation, but they were not able to avoid it. In the end, however, several contexts were important to the changing attitudes to natural gas in the end of the 1980s, as well as to the suggested projects. Although the environmental turn, the nuclear phase-out and the $CO_2$-debate were prolific, underlying contexts such as the economic down-turn, the Soviet collapse and the rise of bio-fuels all were contexts that the natural gas project did not benefit from being related to.

Despite their messy and chaotic perspectives, Miller and Lessard still have a rather normative view of infrastructure project management, with clear views on what a "good" sponsor should and should not do. They point out, and quite correctly, I think, that "[O]nly projects whose leaders and sponsors have the resources, willingness and competencies to counteract destructive forces survive."[8] They see risk as being managed through a plethora of strategies, where risks and responses are matched until there is only residue risk left, which has to be embraced. Through this evolutionary process, the projects are shaped. In my study, however, the risks, although handled by actor networks, as well as allocation strategies, are themselves shaped in varying contexts which are chosen by the actors to different extents.

## A History of Failure?

In this story, the Swedish natural gas projects comes through as a messy and chaotic endeavours that include a multitude of actors and parallel,

[8] Miller and Lessard, p. 165.

interdependent processes. They can almost be seen as one large evolving project, where the different attempts build upon each other. Over time, natural gas has been placed in context such as the sulphur problem, the CO2 problem, unemployment, industrial development, the oil crisis, Western European natural gas development, and the nuclear issue. Actors have aligned themselves with the issues that were among the most pressing and beneficial to them, in line with their interests.

Looking at the contexts the actors put themselves into becomes important when we want to tell a story forwards instead of backwards, and avoid after-the-fact judgements. The concept of failure is interesting in this regard. Some actors considered it a failure that no Nordic grid was ever constructed. Others have considered the Sydgas project a failure. However, the judgements over the Sydgas project came after the fact. At the time, although the price may have been considered a bit high, it was compared with an oil price that was not expected to fall. Energy consumption was expected to increase, there was a problem with the oil supply, and nuclear power was being called into question. For the minority/coalition government to reach an agreement with another state under these circumstances can just as well be seen as an achievement.

Failure, like risk, is a subjective concept. In Miller and Lessard's view, failure is the incapability to manage evolving risk through strong governance and flexibility. Success, in this case, means recognising when a project has little possibility of realisation, and abandoning it quickly. Many of the Swedish natural gas projects never passed the "front end" stage of negotiations. This fact can be seen as a failure, but it can also be seen as a sign of good governance when actors see at an early stage that a project is not valid. In this view, a realised project that does not work properly is more of a failure than one that was never constructed in the first place.

Another fact is that infrastructure projects almost always "fail", in the sense that they always end up costing much more than was planned from the beginning.[9] Therefore, it is important to take a long-term approach to an infrastructure project. Even projects that initially cost more than expected or were not used as much as anticipated may prove to have positive externalities as well as a stable economy over a long period. If we try to understand infrastructure projects as being economically easily accomplishable plans and forecasts, or processes that follow a certain pre-set template for project evolution, then all infrastructure projects will be failures. Further, in the case of Sydgas, for example, it is almost impossible to estimate whether the project as a whole has been economically

[9] Bent Flyvbjerg, *Policy and Planning for Large Infrastructure Projects: Problems, Cures, Causes* (Washington, DC: World Bank, 2005), pp. 16–22.

profitable over time, due to organisational changes, ownership changes and different accounting practices.[10]

## Final Words

I started my investigation by asking why Sweden is a blank spot on the European natural gas grid. So far, I have found many answers, both in my own research and that of others. These answers are all part of a large and complex process, and none of them alone can answer the question. I have also shown that general explanations such as projects being "too expensive" or "not politically legitimate" do not necessarily drive final decisions.

It is easy to draw the conclusion that gas simply never fitted into the Swedish system. There was no development pair, no unanimous political support and it did not follow earlier models of infrastructure development. It was also never part of a large vision of the future in the same way as other energy sources. Another way of putting it would be that no actor strong enough found a context strong enough with which to align natural gas. Nevertheless, this did happen once. A minimum requirement for a pipeline to happen seems to be that enough strong actors agree at the same time that there are more or bigger opportunities than risks in a given project. This may sound simple, but as we have seen, the chaotic messiness of an infrastructure process, as well as the added complexity of the transnational dimension, complicates things. If we add to that various favourable and unfavourable contexts to which natural gas can be related at different times, then the question could just as well be: How did natural gas get introduced in Sweden at all? One answer to that seems to be that strong enough actor coalitions, both in Sweden and in Denmark, decided that the context was important enough to warrant a natural gas introduction and were ready to join this endeavour, as long as the risks were not too great, or the risks of *not* entering a deal were perceived as bigger than those of entering. There is also an element of time, in that there are windows of opportunity when all the actors align. The timing of the Sydgas deal provided such a window of opportunity. It was seized quickly. This was only possible because of the earlier long investigations and contacts that already existed between the actors. Although Sweden was slow in the beginning, and thus missed the Soviet window in the early 1970s, the negotiation and organisational work paid off to some extent during the Sydgas negotiations.

Once the first step had been taken, a further expansion was easier to achieve, regardless of political support. In 2009, when the Nord Stream discussion was at its peak, Sweden expanded its natural gas consumption in relative numbers

[10] For example in 2010, E.ON sold gas in Sweden for a net profit of around SEK 2 billion. However, this does not tell us anything about how costs and profits have been distributed over time. E.ON annual report 2010, p. 32.

more than any other European country, reaching its highest use ever in 2010.[11] The expansion took place through increased use of natural gas in the production of heat and electricity in two new large cogeneration plants, one in Gothenburg and one in Malmö. New investments are being made in natural gas infrastructure. In 2011, an LNG port was inaugurated in Nynäshamn, with an additional one now being constructed in Lysekil. As seen on the picture in the beginning of this chapter, the original pipeline has developed and now reaches north-east up toward the middle of Sweden. There are even signs that Igrene AB will take up deep gas drilling in Siljansringen again.[12] Despite the fact that it has been a quiet expansion, natural gas is today a thriving fuel in Sweden.

[11] Natural gas use in Sweden decreased during 2011 and although it increased again in 2012, it has not quite reached the levels of 2010.
http://www.energigas.se/Energigaser/Naturgas/~/media/Images/www_energigas_se/Energigaser/Naturgas/NaturgasUtvecklingStaplar2011Ver2.ashx

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# Appendices

## 1: Swedegas Organisation

### Swedegas Shareholders 1976-2012

| *Year* | *Owner* | *Share* |
|---|---|---|
| 1976-1980 | Vattenfall | 51% |
| | Swedish Gas Association Service AB | 49% |
| 1980- 1983 | Svenska Petroleum | 100% |
| 1983-1986 | Vattenfall | 100 % |
| 1986-1990 | Vattenfall | 60% |
| | Shell Gas B.V. | 15% |
| | Den norske stats oljeselskap Sverige AB | 15% |
| | Dansk Olie & Naturgas A/S | 10% |
| 1990-1991 | Vattenfall | 43% |
| | Shell Gas | 15% |
| | Sydkraft | 15% |
| | Mellansvenska naturgaskonsortiet | 15% |
| | NGI Naturgasinvest | 12% |
| 1991 | Vattenfall | 100% |
| 1992-1997 | Vattenfall AB | 100% |
| 1997-2001 | Vattenfall AB | 51% |
| | Ruhrgas AG, Germany | 14,5% |
| | Statoil, Norway | 14,5% |
| | DONG A/S, Denmark | 10% |
| | Neste OY, Finland | 10% |
| 2001-2004 | Ruhrgas Energie Beteiligungs AG, Germany | 29,6% |
| | Statoil ASA, Norway | 29,6% |
| | DONG A/S, Denmark | 20,4% |
| | Fortum Oil and Gas Oy, Finland | 20,4% |
| 2004-2009 | E.ON Ruhrgas International AG, Germany | 29,6% |
| | Statoil ASA, Norway | 29,6% |
| | DONG A/S, Denmark | 20,4% |
| | Fortum Heat and Gas Oy Finland | 20,4% |
| 2010- | Narob AB | 100% |

## Chairman of the Board 1976-2012

| | |
|---|---|
| Tony Hagström | 1976-1978 |
| Per Anders Örtendahl | 1978-1979 |
| Ove Rainer | 1979-1982 |
| Lars Hjorth | 1982-1984 |
| Jonas Norrby | 1984-1986 |
| Carl-Erik Nyquist | 1986-1990 |
| Olof Sjöström | 1991-1994 |
| Bertil Agrenius | 1994-2000 |
| Lennart Billfalk | 2000-2001 |
| Søren Guldborg | 2001-2006 |
| Ylva Hambraeus Björling | 2006-2009 |
| Lars Frithiof | 2010- |

## CEO 1976-1992

| | |
|---|---|
| Claes Lindgren | 1976-1982 |
| Owe Carlsson | 1982-1987 |
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