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geopolitics and natural gas

IGU
INTERNATIONAL GAS UNION
UNION INTERNATIONALE DU GAZ

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Geopolitics and Natural Gas

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FOREWORD

One of the key issues identified in the International Gas Union's Triennial Work Programme 2009-2012, "Gas: Sustaining the Future Global Growth", was the role that Geopolitics may play in the shift to a more natural gas intensive world.

To a large degree, a rapid shift to a world economy that is increasingly powered by natural gas will not be constrained by resources or technology. The technological and economic viability of gas is well founded but the central issues are political and institutional. The key concern among producing and consuming countries alike is the issue of global energy security. Competition for control of, and access to, natural gas resources, supply routes and markets will set the political agenda. Will strategic manoeuvring pit major powers, International Oil Companies, National Oil Companies and consuming countries against each other in the pursuit of energy security? How will Governments resolve these geographical tensions?

In order to address the above issues, the Malaysian Presidency launched a Special Task Force during the Triennium in order to study and report its findings at the 2012 World Gas Conference.

The aim of the Special Task Force was to facilitate global and regional discussions on geopolitics as they relate to natural gas as instructive inputs to the Clingendael International Energy Programme (CIEP), who were charged with the accountability of producing an independent global report on Geopolitics and Natural Gas.

In order to properly conduct the overall project and facilitate a process of rich input to the overall report, it was necessary that a number of sponsorships be secured. The Special Task Force is very grateful to the very significant and kind contributions of these sponsors including KVGN-Royal Dutch Gas Association, Chevron, Gazprom and Eni S.p.A. The Task Force is also most grateful to the regional roundtable sponsors including CPC Corporation, TAQA Arabia, Oman LNG, Brazilian Petroleum, Gas and Biofuels Institute, Gasunie, GasTerra and the International Energy Agency.

The approach adopted for the initiative began with the development of an independent draft report on global Geopolitics and Natural Gas, by the CIEP. This document was used as a basis to engage in specific regional dialogue to garner greater understanding and provide a more regional perspective as an input to the final report. To accomplish this, four regional roundtables were held. These four sessions included the Asia-Pacific region, the Middle East and North Africa region, the South American region, and finally the Europe-CIS region. In addition, a final global roundtable was co-hosted with the International Energy Agency.

Both time and resources did not allow the engagement of a number of other key developed and developing regions. Most notably, a North America roundtable was not held. The assessment and decision at the launch of the project was that the North American market operates effectively and efficiently and without significant geopolitical issues and could be sufficiently covered without the need for a specific regional roundtable.

To the extent that much work remains, the French Presidency of the International Gas Union will continue this work during the next Triennium.

I would like to personally thank the Special Task Force Members for their support, the Special Advisory Committee who provided invaluable perspectives and inputs, the Malaysian Presidency and the IGU Secretariat for their ongoing commitment to this project, and finally, the Clingendael International Energy Programme for their outstanding effort on this project.

Mel Ydreos
Chair, Geopolitics and Natural Gas
International Gas Union

Executive Summary

Natural gas and geopolitics have never been far apart. The rigid, long-term nature and economic impact of international gas transactions not only require more government involvement on both the producer and consumer end – and in any other transit country – than other forms of international energy transaction, but may also stir up wider political interest: for example, in the 1980s, the acquisition by European market players of a substantial volume of additional gas from Russia provoked a political reaction from the US.

GAS IN THE MIX

As the flow of natural gas expanded across national and regional borders, geopolitical dynamics were par for the course. The natural gas industry is coming of age as an international sector after many years of national and regional development. In many countries, natural gas is an important fuel for households and the industrial, transportation and power sectors. Not so long ago, the international natural gas sector was geographically divided into three distinct regional markets: the US and Europe, supplied mainly by pipelines; and Asia, supplied by LNG. Improved economies of scale and the climate for intense and high-tech industrial activity created by the Qatar government further unlocked vast Middle East reserves for the international LNG market, but equally important, connected the previously separated Pacific and Atlantic basins. The prospect of converging gas prices appeared on the horizon with the impending growth of LNG imports in the US, South America and Europe, but did not materialise with the rapid emergence of unconventional gas in North America and the continued difference in market dynamics. Access to reserves, the development of liquefaction and terminal capacity, and the development of new pipeline routes became increasingly important. These developments coincided with China's blazing demand for energy and the transition of Russia from a planned to a more market-based economy. Following the break-up of the Soviet Union, the supply arrangements to, as well as the reserve potential of its newly independent states became part of intense economic diplomacy. Across the world, competing economic interests and political power plays lifted natural gas on to today's geopolitical agenda.

GEOPOLITICS

Setting the geopolitical agenda is the purview of important states, so called geostrategic players, which influence the working of the international political system, but also determine the mores of that system. The structure of the international political system is dynamic, influencing states' relative positions. The strength of a state depends on its structural powers, which include economy, finance, knowledge and the military. Natural gas contributes to these structural powers.

The relative strengths of states play an important role in the transition from a bi-polar to a more multi-polar world, after a brief period of uni-polarity in the 1990s. They also prominently feature in regional politics, because some states – so called rule setters – can shape relations, while others are rule followers. This also explains the continuous formation of coalitions around certain political and economic principles and interests promoted by geostrategic players. Powerful states are not only active in shaping international political relations; they also shape the way in which national economies interact through trade and investment. Geostrategic states thus play on the geopolitical as well as the geoeconomic board. Moreover, states position themselves in the international system using different timeframes and organise their domestic economies differently, creating varying economic and political interests. These differences also influence the way in which the natural gas sector is developed and the direction of gas trade flows. Access to resources and markets is important for all states, but for geostrategic powers it can be vital to their own position in the system, as well as that of their coalition partners.

GEOECONOMICS

In past decades, the rapid liberalisation of economies shaped international economic relations. The expansion of the liberal economy is often referred to as the Washington Consensus. The growing integration of large countries such as China, India and Brazil into the world economy led to new centres of growth and power. The rapid economic growth of these countries translated into a buoyant demand for energy, while in traditional consumer markets, it was mainly the power sector that fuelled additional growth in demand for gas.

With the prospect of growth in international gas markets, and perhaps as a reaction to the rapid expansion of foreign direct investments in the 1990s, producer states became increasingly keen to manage and reap the benefits of their underground resources. They often opted for partial state company participation in the development of the natural gas sector. This phenomenon is often referred to as resource nationalism. Also, many governments became more concerned with guaranteeing domestic supplies as part of the socio-economic needs of the domestic economy, making exports dependent on those needs. Combined with a growing demand for gas to support enhanced oil recovery, the export option was exercised with far more caution than before. At the same time, new gas finds in other countries added to the number of gas-exporting states.

STATE VIZ. MARKET

The market reform process initiated by governments of predominantly consumer countries has also changed the structure of the natural gas industry, with mixed results so far. The industry's next challenge comes from the desire of governments to manage energy imports, including natural gas, and the growing demand for a more sustainable energy mix. Adjustments to the market process will need to be made again, if only to reflect the changing dynamics of the business and its environment, and notably where sustainability policies will require more prescriptive measures.

At its World Gas Conference in 2006, the IGU produced and discussed a study on market reform. Its analysis showed that market reform is not a "one size fits all" concept. Liberalisation offers the most benefits in a self-sufficient, mature market. Different models reflect the varying types of market developments. The natural gas industry could offer the benefit of its global experience to any new process of change by working closely with all relevant stakeholders, nationally and internationally. No doubt, governments will be in the driver's seat in re-evaluating the rules of the game and will likely become more directly involved in gas market development, particularly in light of emerging environmental policies. But stronger partnerships between business and governments, on national and international levels, may help to avoid future issues causing (political) apprehension and securing the view of natural gas as a reliable and economically attractive energy source in a low-carbon energy economy.

CLIMATE CHANGE

The value of natural gas, as a low-carbon fuel, seemed until recently to have been lost on many governments and analysts. In some low-carbon emission scenarios, gas – like all fossil fuels -- plays a significantly reduced role. Although many countries see the advantages of a greater role for natural gas in the fossil fuel mix, European governments take a dimmer view due to the growing import dependency and the very high targets for CO2 reduction they have set themselves for 2050. Here, both security of supply concerns and climate change policies have worked against the popularity of natural gas. While Europe's high CO2 reduction targets may throw doubt on the long-term contribution of natural gas, in other regions concerns about climate change are valued differently. In various places, natural gas is favoured for its ability to deal with local air pollution concerns, but policies towards a low-carbon energy economy are not in place in many regions.

It may not be surprising that the IGU Sustainability scenario projects a higher demand for natural gas and its analysis may have been biased, but the underlying fact is that using natural gas in combination with its new application technologies results in considerably lower greenhouse gas emissions compared with other fossil fuels. Recent advocacy efforts and the IEA report entitled "Are We Entering a Golden Age of Gas?"" have addressed parts of this issue, illustrating that this effort can make a difference and that this form of "advocacy" needs to be continued and, if possible, institutionalized. Uncertainties about future demand and the place of gas in the energy mix (as a result of climate change, among other factors) are affecting the gas business. This applies to the true value of the low-carbon properties of gas, which are still insufficiently reflected in national and business economics, and may also have an impact on future long-term investments in supplies and infrastructure.

FAIR DISTRIBUTION OF RENT

Apart from uncertainties arising from low-carbon economy policies, evolving market regulations, and low economic growth, changes in rent distribution in international supplies could have geopolitical implications. These could arise from subsidies on other energy sources and taxes on fossil fuels, but also in the case of a widening gap between international gas prices and those of oil, in case of a gas supply overhang. Advocates of unlinking gas prices from oil in current international long-term supply contracts take the view that natural gas should be treated like other commodities where fair value is the price dictated by the market, as is clearly demonstrated by current North American gas prices. Gas-exporting countries may take a different view on fair value, however. Once the market price is significantly lower than its perceived value for a prolonged period, a gas-exporting country will become uncomfortable seeing its resource exported at a price far below what it thinks it is worth. In these circumstances, as in the past, governments of gas-exporting countries may look for ways to redress any perceived leakage of gas value.

PIPELINE GAS VS. LNG

For all regions, there is a striking difference between the geopolitical context of international pipeline gas business and that of LNG. LNG transactions are generally conducted on a business-to-business basis. Japan, one of the first major LNG importers, traditionally developed strong diplomatic ties with its supplying countries, but by and large government involvement is small or, in the case of flexible LNG trade, virtually non-existent. Pipeline business has always required more hands-on government involvement. The long-term nature of this business and the construction of high-volume gas supply highways across various countries require governments of producing, transiting and consuming countries to establish robust conditions for uninterrupted supply over a very long period, contributing to wider regional economic co-operation. This was long regarded as a positive contribution of the gas industry to geopolitical stability.

Over the course of time, the same close relationship can create tensions, which are not found in the relatively young LNG business. Over time, commercial or technical incidents, economic downturns, transit problems, changes in energy policies, gas market developments and pricing issues can affect the framework in which the pipeline business was conceived. Together, they can create discord between governments, leading to uneasiness over interdependence. These qualms are exacerbated by the high stakes of international pipeline business; supply and purchase contracts with a total value of $10bn or more are no exception. In various regions, there are examples of governments and market players who have become concerned about the dependence on fixed pipeline supply links to a single producing country and have chosen to develop the more flexible LNG option. Widening supply options or opening up new markets may alienate the producing and consuming governments connected by a gas pipeline. Such choices, in turn, can create a public perception that international natural gas trade carries geopolitical risks and structural dependence.

INTERNATIONAL TRADE

Since pipeline gas exports, and to a lesser extent LNG exports, depend on rigidly interconnected infrastructure and long-term production arrangements, gas sector arrangements tend to carry an intrinsically more long-term and strategic character than, for instance, oil where international markets are more deeply integrated. The role of governments of both exporting and importing countries in the underlying arrangements is far more intensive as a consequence. With some markets becoming more import dependent, natural gas will have to travel further from the wellhead to the final consumer, crossing through more jurisdictions, and playing a strategically different role along the way.

LNG trade has grown considerably over the last decade, in part because complex transit arrangements have been avoided, in part for supply diversification reasons, and in part because it offers more flexible supply routes. New business models have been developed for LNG, capitalising on this flexibility.

In spite of the growth in international LNG trade and regional integration of supplies from the Middle East, the expected convergence of prices among the three large consumer markets has not materialized, in a large part because of the emergence of large supplies of North American unconventional gas, and the existence of oil-indexed contracts concluded before the financial and economic crisis, which started in 2008. This will not change overnight. Moreover, the wide variety of ownership models of both the economy at large and individual companies, the role of natural gas in domestic economies, and any new development of unconventional gas in other parts of the world could play an important part in how the future of prices and trade models unfolds.

The emergence of unconventional gas in other parts of the world as an indigenous source of supply (and potentially later also gas hydrates under programmes from Japan and Korea) would reduce international gas trade potential and hence temper any concerns of geopolitical leverage around gas imports, but it could also deprive gas-exporting countries of an important source of income.

DIVERSITY

The difference in the domestic, regional, and global organisation of the state and the economy, leading to a wide variety in ownership models, including in the natural gas sector, has created the need for a more demanding international governance model. The current governance model is a patchwork of different institutions, often dealing with one fuel, sector, or a single interest, and with mixed constituencies. They have come about in response to past events or shared interests. They often continue to be carriers of these past legacies, and although they have developed along with the international energy markets, their mandates are weak compared with those of states, state companies or international energy companies. Most international institutions rely on voluntary co-operation and information sharing, while their ability to set or re-adjust rules is limited.

NEW MORES

The rise of more state capitalist structures in the international economy and the debate surrounding the success or failure of the liberal economic model pose both a geopolitical and a geoeconomic challenge to the current multilateral institutions. The vision of the role of state in the economy, as a regulator of private interests or owner of crucial sectors is not universally shared among the geostrategic players. The model which comes out trumps will dominate the mores of the system for decades to come.

INTERNATIONAL INSTITUTIONS

The international organisations explicitly dealing with natural gas are few. The GECF organises the natural gas producing and exporting countries, while the IGU is a non-governmental organisation, organising companies and gas associations of both producing

and consuming countries. These include companies with every type of ownership structure and also domestic and international operating firms. Other organisations, such as the IEF and the IEA, also explicitly discuss gas issues. Both the internationalisation of natural gas beyond national and regional borders and the growing concern with decarbonisation of the energy mix imply that more organisations and states are directly or indirectly involved in shaping the context in which natural gas is produced, transported and consumed. It also implies that geopolitical issues will present themselves to the international gas business more often.

IGU

The IGU rightly involves itself with other international organisations to become part of the institutional community shaping the context of international natural gas issues. Moreover, more explicit official contact with governments and other policy-makers places the IGU closer to the centre of discussions. Other organisations need to be considered for inclusion in this effort. The IGU's varied membership has something to offer to these policymakers, while at the same time IGU members are forced to discuss natural gas matters outside their internal comfort zone. The gas advocacy programme is a start, but to remain meaningful it needs to be strengthened and carried forward, not only into the public domain and the debates on future environmental policies, but also into the deeper structures of geopolitics and geoeconomics. This is not a given. Not all IGU members will be willing to abandon the comfort of the past organisation and trade it to become a meaningful player in international affairs. Also, some members might run into difficulty promoting the ever-more diverging interests they represent and run into the limits of their own mandate. The current solid fabric of the IGU can be both a strong point and a hindrance in the evolving international geopolitical context. Geopolitics and natural gas is not a fleeting issue, also not for the IGU.

Chapter 1
Introduction

1.1 PURPOSE OF THIS STUDY

Geopolitical developments, politics and policies affect the gas industry in ways that stretch beyond the horizon. These forces can affect the timing, direction and size of gas flows, whether by pipeline or liquefied natural gas (LNG), and the role of gas in energy systems. The objective of this project is to examine the interplay between economic and political factors in the development, flows and employment of natural gas resources, using the lens of geopolitics. This should enable us to grasp how political challenges impede or stimulate the expansion of the international gas sector.

Energy is the key

Energy – and in particular fossil fuels – is a key factor in shaping international political and economic relations and interests. The realisation that finite fossil fuels will be the lifeline of modern economies for some time to come, combined with the scale of future energy demand, has elevated control of and access to these resources on the strategic agenda of industrialised and industrialising countries alike in the 2000s.[1] Indeed, many observers foresee that fossil fuels and their transport will continue to be the single dominant factor in international politics in the years to come.[2]

Natural gas as a new frontier in geopolitics

In a world where the need for versatility and environmentally friendly sources of energy is high, gas stands a good chance of becoming a fuel of choice for many economies, despite the geopolitical dimensions of gas trade. This gives gas a certain economic and strategic value, which both governments and firms seek to extract. Since gas exports depend more on rigidly interconnected infrastructure and long-term production arrangements that generate lower revenue streams than those derived from oil, gas sector arrangements carry an intrinsically long-term and strategic character.

The strategic importance of gas supply and, for many countries, the growing dependence on imports, have increasingly raised concerns. Import dependency has also become more problematic because of changing international political and economic relations. These concerns may well be mirrored in gas-exporting countries, particularly those with a strong dependency on transit countries or a small number of markets. Regional frictions, which are difficult to negotiate in the short term (given the rigid nature of gas supply infrastructure), also play an important role in this regard. In light of the strong interdependence between importing, transiting and exporting countries that characterises gas trade, increasing import and export dependency and the pending environmental constraints on fossil fuels (e.g., climate change policy) further contribute to the strategic importance of natural gas on the geopolitical agenda.

More connected markets, more geopolitical risks

The growing natural gas trade introduced the sector first to the intricacies of regional politics, when natural gas was mainly traded on a regional level in North America, South America, Europe and Asia. The development of Middle Eastern LNG export flows added new geopolitical dimensions. It introduced the natural gas sector to the same vulnerabilities as some global oil flows, although the share in total trade for natural gas is still lower than oil. Access to world LNG markets depends for instance on free passage through narrow straits, such as the Straits of Hormuz and Malacca. Tensions in the Persian Gulf region could impact

[1] D. Yergin, *The Quest, Energy, Security, and the Remaking of the Modern World*, The Penguin Press, New York, 2011, p. 4.

[2] A. Rahr, 'The New OPEC', *International Politics*, April 2006.

the free flow of LNG, and could intensify involvement in security matters in the region. Natural gas is more vulnerable to this type of tension and tends to rely more on unhindered long-term supply chains, because natural gas is more expensive and difficult to store, making security of supply policies more complex than for oil.

Concentration of gas resources also shape the policies

A geographic given is the fact that, like oil, conventional gas resources are highly concentrated and asymmetrically distributed. Some 70 percent of the world's known conventional gas resources are found within the so-called strategic gas ellipse (stretching from Russia's north, via central Asia to the Middle East).[3] The recent development of unconventional gas has changed its overall global distribution, influencing the routing of trade flows and the constraints that come along with it, and having an impact on the geoeconomic and geopolitical position of natural gas.

Expectations viz. reality: The growing role of the state …

The expansion of natural gas trade and interregional gas flows as result of growing demand and supply was not always seen as problematic. The world of free trade and capital flows that loomed on the horizon in the 1990s never materialised because both producing and consuming countries reserved the right to act in their national interests and reduce or impede these free flows.[4] These interests stretch from the short to the long term and between (strategic) economic and political considerations.

Governments determine the boundary solutions of commercial projects in the gas industry. This position appeared vindicated as so-called resource nationalism intensified after 2001-2003; access to natural gas resources became an issue for consuming countries. The stimulation of renewable energy in consuming countries was partly driven by a desire to manage import dependency, but also changed the market for natural gas for producers. National energy policies do matter. From the vantage point of the producing countries, free access to their resources for both domestic and foreign capital, apart from the political interests, was a different issue. The expansion of the natural gas sector emphasized the prerogative of producing countries to reserve for the state alone the right to develop and manage natural resources in the national interest. Although these reservations about the free flow of capital and trade of both natural gas producing and consuming countries are understandable from a national perspective, the accompanying policy choices and measures of states have both political and economic consequences from an international perspective.

... is affecting market outcomes

As a free market paradigm continues to be replaced by one in which the state shapes market developments beyond the purely economic domain, it is shifting the overall political-economic context of the internationalisation of gas markets. In such an environment, strategic economic and political behaviour to protect the diverging national interests of states and the fabric of the natural gas value chain, are fertile ground for geopolitical and/or regional conflicts over natural gas flows, regulatory choices and the ability to balance risks and benefits along the value chain.

Commercial and political forces intertwine

In such an environment, commercial competition quickly becomes intertwined with the political and economic interests of the individual states that participate in the international economy. States engage in strategic behaviour to defend and further these national interests to position themselves in the international arena, and this strategic behaviour is manifested by policies that can be perceived as geopolitical rather than purely economic. Such

[3] BP, *Statistical Review of World Energy 2009*, (London: BP, 2009).

[4] C. van der Linde, Energy in a Changing World, CIEP, 2005.

geopolitical competition changes the ability to capture economic rents between companies and governments and among states along the natural gas value chain. It also shapes the wider political-economic agenda of states and their position in the hierarchy of power. Faced with these complex changes in the energy sector, Daniel Yergin argues that: "The potential flash points in this new world of oil will arise not from standard commercial competition, but rather when oil (along with natural gas) gets caught up in larger foreign policy issues (…)."[5]

1.2 APPROACH OF THIS STUDY

A study on the interplay between economic and political factors in the development of natural gas resources and markets requires us to deconstruct the complex relationship between politics and economics at the regional and international levels (see Appendix A for the analytical framework). Great powers (geostrategic players) in the international political system are assumed to have or to aspire to have access to and control of the scarce resources necessary for economic growth and development.[6] More often than not, situations in which one state exerts power over another lead to disagreements, for one reason or another. Therefore, the aim of this study is simultaneously to discuss developments in geopolitical affairs, and events related to the gas sector, which may develop into political challenges and *vice versa*.

The strategic importance of natural gas and the level of internationalisation of regional gas markets can play an important role in the perception of states. Therefore, these states may become involved, directly or indirectly, in shaping the gas business, depending on what position any given state has in the power hierarchy. Geopolitical manoeuvring is not necessarily the prerogative of just a few powerful states, such as the US, China and Russia. In other words, geopolitics can also be of a more regional nature, e.g., regional allies and foes of such states also practice geopolitics (see Appendix A).

This study will address those developments and issues, which have, or may have, international political dimensions now or in the future. These include those regional political or strategic developments with the potential to impact either geopolitics or the natural gas sector. The intention of this study is not only to analyse current geopolitical or geostrategic issues that may impact the gas industry, but also to examine those developments in the gas business environment, which may later be translated into geopolitical action. For this reason, the approach used in this study is as follows:

In the following chapters, geopolitics and natural gas are addressed from different angles. Each of the chapters represents a particular theme and contains specific subjects, selected for their perceived or potential role in the interaction between natural gas and geopolitics. These themes have been discussed in four regional roundtables and one overarching roundtable. These roundtables were organised by IGU Task Force III between November 2010 and October 2011. The following themes are presented:[7]

Chapter 2 focuses on the main issues around the "areas of strategic interest", i.e. the areas of potential tension and of particular interest for the gas business. Chapter 3 looks at the geopolitical positions of the major powers, in the context of gas and also at major international policy issues and their potential impact on the gas industry. Chapter 4 addresses the developments in the (international) gas market that could have international

[5] Yergin, D., The New Prize in World Oil, in: The Wall Street Journal, 9 March 2010.

[6] R. Schweller, 'Realism and the Present Great Power System: Growth and Positional Conflict over Scarce Resources,' in *Unipolar Politics: Realism and State Strategies after the Cold War*, E.B. Kapstein and M. Mastanduno (eds.), (New York: Columbia University Press, 1999), pp. 28 - 67.

[7] The selection of subjects covered in this study is unavoidably incomplete. The selection is based on what are today regarded as subjects of interest, which rise or may rise above local or bilateral issues, for reflection in the natural gas industry as a whole. Situations that can be considered as outliers in the current framework of international relations were not addressed in the roundtables.

political implications, while Chapter 5 concentrates on governance issues, international organisations and energy policy making. Chapter 6 is a conclusion.

Appendix A sets out the analytical framework dimensions of geopolitics and discusses the global developments, trends and dynamics around the interface and interaction between geopolitics and energy, with a particular focus on natural gas.

Most of the chapters finish by highlighting the key points and issues that emerged from this study and the round tables.

Chapter 2
Areas of Strategic Interests

2.1 LOCATION, LOCATION, LOCATION

Across the natural gas sector stresses and strains appear in certain regions, affecting natural gas production, transit and consumption. These can undermine the perception of security of supply and demand. These situations have a variety of root causes: in the demise of the Soviet Union and the still-incomplete transition to new relations across the whole region; in economic instabilities in general; in domestic and regional conflicts with ethnic or religious roots; in politically unstable countries and also in geopolitical manoeuvring in developing areas of special interest. These root causes have something in common: Each makes it difficult for a natural gas value chain to develop to its potential or for relations to becoming exclusive rather than inclusive. The wider changes in the dynamics of the world economy also play a role because they shifts trading routes, creating opportunities but also drawbacks, while new regulatory insights in one market can affect the balance in others. Moreover, changing relations can also infringe on traditional distribution patterns of economic rents and create new ones, sometimes creating discussions among governments along the value chain.

From a geopolitical perspective, each region has tensions and characteristics that could have an impact on international natural gas markets, particularly when changing trade flows shift dependency from one strategic region to another, and because geopolitical relations themselves are changing across traditional gas flows. The European region, with its particular relationship to Russia as its main gas supplier, will be addressed in Chapter 3. The regions discussed in this chapter have their own unique characteristics and, to different extents, have the potential to develop into such positions.

2.2 THE CASPIAN REGION

Geopolitical and strategic-economic dynamics characterise gas market development in the resource-rich Caspian Sea region[8], with the established regional powers of Russia and Iran in the north and south and the aspiring newly independent states of Central Asia and the South Caucasus to the east and west. To add complexity to an already highly diverse and volatile region, the Caspian is on the nexus of land-bound gas trade between Asia's emerging markets, in which China is a new assertive player, and established demand centres in Russia, Ukraine, Turkey and the European Union (EU). In response to the high dependency on concentrated gas import routes through fragile transit states, south-eastern and central European gas markets within the EU seek to gain more direct access to the gas export potential of Caspian producers. Mobilisation of investment in new cross-border infrastructure to diversify transit routes and innovative gas purchase arrangements to access Caspian and Middle Eastern production are central to the EU's strategic-economic and political effort.[9]

The strategic-economic perspective of Caspian states varies between the incumbent oil and gas producers on the Caspian north-south axis and the potential new market entrants on the east -west axis. On one hand, Russia and to a lesser extent Iran, have a vested interest to manage the direct access of oil and gas exports from Central Asia and Azerbaijan to international markets. This geoeconomic interest could easily be perceived as having a geopolitical dimension, as Gazprom itself alluded to some years ago, while at the same time,

[8] See also J. Stern, ibid., 14 November 2011.

[9] "The EU Energy Policy: Engaging with Partners beyond Our Borders", Com (2011) 539 final, 7 September 2011 at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0539:FIN:EN:PDF

supplying Russia's south and other countries in the region from these sources also has economic logic.

The vast changes in the framework of gas trade did not appear immediately after the demise of the Soviet Union, but rather much later when the newly independent countries began to develop their own energy policies and strategies, while others, in east and southeast Europe, adopted the energy "acquis" when they joined the EU in 2004. Commercial or technical incidents, economic downturns, transit problems, changes in energy policies, gas market developments and pricing issues all affected the framework in which the pipeline business was originally conceived. Governments and market players became more concerned about the dependence on immutable pipeline supply links to single producing countries and have opted to include more flexible LNG options or alternative supply routes. Widening supply options or opening up new markets may alienate the producing and consuming governments connected by an existing gas pipeline.

Open-ended debates on Caspian Sea delimitation and the environmental integrity of the Caspian Sea are useful vehicles to slow-track development. However, to optimise the revenues from their oil and gas resources and finance socioeconomic development needed to underpin their newly found sovereignty, Caspian oil and gas producer governments pursue their own strategic-economic interests in complementing the historic transit and export routes through Russia with new pipeline export routes.

Eastbound gas sales to China may be less controversial to Russia, since the strategic-economic interest it holds in EU gas markets is not affected. In fact, potential competing volumes are diverted away from the EU, Russia's premium market. Iran and China may also be in a better position to arrange gas supplies from Turkmenistan, as they do not require the levels of scrutiny and sophistication in negotiations that their Euro-Atlantic counterparts do. Nevertheless, China's rapid investment moves in Central Asian gas resources and infrastructure has sparked some concern within the EU, Russia and Central Asia itself about the wider geopolitical implications of long-term Chinese involvement in the region. It stands in stark contrast to the EU's ambiguous policy of balancing its emerging interest in the Caspian with its long-term relationship with a much more assertive Russia.

To position EU demand for Caspian gas more strategically, the European Commission launched the innovative concept of a Caspian Development Corporation (CDC). This would offer Turkmenistan, in particular, aggregated border off-take terms similar to those of Russian and Chinese state companies. This effort remains controversial, and the credibility of the concept remains questionable. It appears to go against the essence of the EU's open energy market model as well as the EU's own obligations and aspirations under international trade and investment law. The CDC's implementation therefore remains far from certain and appears inconsistent with the deep and comprehensive free trade agreements the EU wishes the Eastern Partnership countries, including the South Caucasus, to join. This underscores the scepticism with which many Central Asian governments, who are not part of a broader EU strategy, view the EU's regional initiatives.

2.3 THE MIDDLE EAST AND NORTH AFRICA (MENA)

The region has been engulfed by international conflicts and regional disputes, which over the years have reduced its ability to attract investment and transfer technology, limiting its supply and export potential.[10]

In Iran, geopolitical factors have been manifested in the imposition of sanctions, which prevented investment flows and technology transfer and were therefore to some extent

[10] See also Bassam Fattouh, *The Geopolitics of Natural Gas in the Middle East and North Africa*, paper for Task Force III IGU, MENA roundtable, May 2011.

responsible for Iran becoming a net gas importer, while sitting on the world's second biggest conventional reserve base.

While most international sanctions imposed during the Saddam Hussein era have been lifted, Iraq currently faces a different set of challenges, including a fragile political coalition, security challenges, a weak central government and regional tensions. This is likely to delay any prospects of gas exports by pipeline. Instead, exports will most likely happen as a result of the development of an LNG plant on the Gulf coast.

Libya has also suffered from a long period of sanctions, which prevented the country from fully realising its gas potential in the 1980s and 1990s. Sanctions were lifted in 2004 following Libya's rapprochement with the West**,** but were temporarily re-imposed in February 2011 as fighting between the rebels and Moammar Gadhafi's forces intensified, leading to a cessation of exports. Sanctions have been lifted again following the end the civil war, but developing Libya's gas potential will take time. Political stability still needs to be established under the new regime.

In the east Mediterranean, regional ambitions and conflicts may prevent some countries from maximizing the potential of recent gas discoveries, as well as limiting the scope for regional gas trade. In particular, the current dispute between Turkey and Cyprus concerning exploration for oil and gas in the waters around Cyprus has created serious political tensions. The options to bring the natural gas to market are limited by the competing political claims, making LNG the most likely option to bring both the Israeli and Cypriot gas to the market.

Geopolitical events have also affected the direction of gas trade flows and efforts towards greater regional integration. MENA has been entrenched in longstanding political problems and border disputes. Suspicions and fears about Iran's hegemony in the region make many GCC countries reluctant to rely on its gas supplies. Poor political relations between Mashreq countries and Israel will likely limit the scope of future co-operation in gas trade, while security problems may prevent Iraqi gas from reaching that region to compensate for shortfalls in Egyptian deliveries partly caused by political upheavals in that country. In North Africa, political tensions remain the main stumbling block to a more meaningful penetration of natural gas in gas-poor countries such as Morocco.

The interplay between rising domestic and regional demand, low domestic pricing policy and geopolitics implies that the MENA region is unlikely to make a major contribution to future global gas trade, with the exception of Qatar LNG, and, to a lesser extent, Algeria. As such, MENA gas will not have same geopolitical relevance as MENA oil. Historically, the security of oil supplies from the region has played a major role in shaping international relations between the West and the Middle East. Natural gas is likely to play a secondary role in shaping the Middle East's relations with the rest of the world. Qatar remains a notable exception. By leveraging its gas revenues, Qatar has gained influence disproportionate to its size and has been increasingly playing a leading role in the region's thorny political issues in Lebanon, Sudan, and most recently Yemen, Libya and Syria. Qatar is also a founding member of the Gas Exporting Countries Forum (GECF).

Regional co-operation in gas supply is limited to a few pipelines exporting gas from resource-rich countries to neighbouring markets. They have two things in common: They have been based on government-to-government deals and they carry heavy political baggage. LNG exports from the region are generally more business to business. For this reason it is not surprising that Dubai has developed its own LNG import terminal and is now considering extending these facilities to export and become a trading hub for LNG.

Given the region's massive gas reserves and its geographic position, fundamental changes in the international and domestic scenes could prove to be key game changers for the global and regional gas outlook. Of these potential game changers, the following six stand out:

- An improvement in Iran's relations with the West and neighbouring countries, which would enable Iran to attract investment and technology;

- An improvement in Iraq's political situation, which would allow the country to develop its gas and oil reserves and integrate with the rest of the region;
- The relaxation of the moratorium on gas development in Qatar, which would allow exports to continue to increase;
- A comprehensive peace process between Israel and neighbouring economies, which would allow new finds to be developed rapidly;
- Price reform and a more attractive local investment environment, which would contribute to the rapid development of the regions' reserves, slow down growth in consumption and foster regional integration and gas trade. This would help alleviate the gas supply shortage that is afflicting some countries in the Middle East;
- Uncertainties about the flow of gas (and oil) through the Strait of Hormuz, which could raise serious security of supply and demand questions.

2.4 ASIA

As the fastest-growing economic region in the world, Asia's consumption of natural gas doubled in the past decade. Traditionally the region has focused on LNG imports, with Australia as the main source of supply, in addition to traditional suppliers Malaysia, Indonesia and Brunei. The lack of integration between Asian markets is the result of commercial, economic and political considerations.

China, as a major geopolitical player, dominates the eastern flank of Asia, where Russia has the potential to develop into a major supplier. Japan and South Korea are traditional LNG markets. Potentially they could also develop into markets for pipeline gas from Russia. Geostrategic and economic differences have so far held back this development.

South Asia boasts a number of growth markets for gas, most importantly India and Pakistan. India and Pakistan are both short of energy, poised to become more import dependent in the near future. Both countries see natural gas as an important fuel. For years, India's relationship with Pakistan has been tenuous, and Pakistan's political instability and the 2008 Mumbai terrorist attacks have only added to the strain. These countries have considerable import options, both in terms of pipeline gas (mainly from Iran and Turkmenistan) and LNG. Given the geopolitical tensions in this region, not just between India and Pakistan, but also in Afghanistan, and the political and economic complexities of Iran's position, gas market integration in southern Asia is still far away. While an integrated regional pipeline system probably offers an economically rational solution to the region's growing energy demand, political difficulties highlight the immense impact geopolitics can have on the prospects for such projects. Instead, LNG supplies are likely to grow to overcome these difficulties.

In the future, safety of sea routes from the Middle East, the Asian producing countries and Australia to China, India and Japan will grow in importance, not only to transport LNG, but also for other natural resources. This will undoubtedly increase the attention of the main geopolitical players. Already, both India and China are developing their navies, and more activity in the Pacific Ocean, where the US Navy is dominant, is to be expected. China also has geopolitical ambitions to control sea lanes in the South China Sea. Also there, geopolitical rivalry may impact the development of the natural gas business, if governance fails to organise effective co-operation. Although there are no imminent conflicts in the region, the stability of the Philippines and its ability to control piracy matters for these new energy and resource trading routes. Also the Asian region has some unresolved conflicts, which can easily flare up if not handled carefully. Some of these conflicts concern the boundaries of the economic zones and sovereignty over, for instance, the Spratly Islands and its resources in the economic zone. Interestingly, the region has recently seen co-operation in overlapping areas, such as the Malaysia Thai Joint Development Area (MTJDA), which could set an example for others.

2.5 SOUTH AMERICA AND ITS SOUTHERN CONE

Natural gas has a relatively short history in South America. With the exception of Argentina, most countries only started to develop natural gas markets in the last 10 to15 years. During the 1990s, in parallel with a wave of market opening and privatisation, there were ambitious expectations about regional energy integration in South America, in particular gas integration, and great efforts and substantial investments were put into interconnecting resources and markets. The resulting infrastructure, concentrated in the Southern Cone, connected countries by pipelines, based on bilateral agreements.

In the first decade of this century, however, this trend was radically modified. Excessive monetization of productive fields, lack of major new finds and distorted pricing policies discouraged further exploration, while boosting demand generated supply shortages in Argentina (the main regional producer and market) and export cuts to neighbouring countries (Chile, Uruguay and Brazil). This return to resource nationalism was also reflected by nationalisation in Bolivia, which took place at about the same time in response to extensive privatisation imposed in the 1990s (see also 3.3, the Washington Consensus). This development reduced investment in new exploration and generated doubts about the country's future ability to supply its domestic and export markets (Brazil and Argentina). The result was a general mood of distrust, which stopped all new interconnection projects. Producing countries gave priority to their domestic market. Receiving countries faced unexpected constraints and increasing cuts, and started to look for alternatives (LNG or substitution with other fuels). Even liquid fuels restored their presence in the power generation and industrial segments, impacting supply decisions (gas-to-oil competition).

It is unlikely that the gas sector in South America will have geopolitical and social conflicts with global ramifications or vice versa.[11] However, there are specific, and geographically focused, issues, notably of a bilateral nature, which can be divided in two categories: those that are geopolitical from the outset and those that reflect the impact of national internal policies and politics. In the first category are included the historical tensions between Chile, Bolivia and Peru linked to past border disputes, which have impeded the export of Bolivian LNG through Chile, or the construction of a pipeline from Peru to Chile. Another example is the dispute between Argentina and the UK about the Malvinas/Falkland Islands, which will likely generate different obstacles (from diplomatic to logistic ones) to exploration and production in that area. In the latter category (internal policies having regional impacts), are the natural gas supply cuts from Argentina to Chile, which generated tensions between the two countries and led Chile to develop alternative sources. Also the political and/or social tensions in Bolivia and Peru with regards to natural gas exports versus supply to the domestic market fit in this category. To mitigate some of the difficulties, LNG regasification plants were rapidly built in recent years. As a result, today, consuming countries increasingly rely on LNG supply from the global market. Of course, also the potential for unconventional gas in this region, notably in Argentina, could change the outlook considerably.

2.6 FUTURE AREAS OF STRATEGIC INTEREST

REGIONAL ISSUES

Regional complexities often play a more important role in the relations among countries and history and cultural differences also play their part. What these areas of strategic interest have in common is an underlying (latent) political and economic instability, sometimes originating in the domestic situation, for instance in changing priorities in energy policy, sometimes in regional issues and sometimes in wider geopolitical issues, such as oil and/or gas dependencies and a strategic geographic location.

[11] Sylvie D'Apote and Agustin Castano, *Geopolitics and Natural Gas in South America*, prepared for Task Force III IGU, December 2011.

UNCONVENTIONAL GAS

The distribution of conventional gas resources was considered fairly concentrated, with large shares for Russia, Iran and Qatar. The development of unconventional gas resources could lead to a wider geographic distribution of resources and more domestic or regional production in or close to important consuming countries. This would reduce the potential for tension, although countries that now derive substantial transit incomes would see a degradation of their strategic position in gas transit.

THE ARCTIC AND ANTARCTICA

Other future issues involve developing the potential energy resources of the Arctic and Antarctica. The success of developing the resources at Sakhalin has also brought development of natural gas resources in the cold and fragile environments within closer range. As well, climate change in the Arctic could change the current logic of trading routes. The Arctic Monitoring and Assessment Program (AMAP), forecasts that within 30 to 40 years, the Arctic Ocean could be ice free in the summer, opening new shipping routes, also for LNG.[12] The changing circumstances in the Arctic will allow more exploration activities to take place. Exxon Mobil recently entered into a joint venture with Rosneft to undertake exploration in Russia's sector of the Arctic offshore.

BORDER DISPUTES

Various regions have unresolved conflicts, which can easily flare up in the future when not handled carefully. Some of these conflicts concern the boundaries of the economic zones and sovereignty over, for instance, the Spratly Islands and its resources in the economic zone. Apart from any more serious geopolitical dimensions, these disputes remain obstacles to exploration for and development of resources. Regional or bilateral co-operation on issues related to these overlapping (maritime) claims will be of great geostrategic value. There are many situations where disputes have been resolved in such a cooperative way. We already mentioned the Malaysia-Thailand Joint Development Area, and akin projects in the region, but should also mention the "Common Area" between The Netherlands and Germany, the agreement between Norway and Russia on the Barents Sea, which includes clauses to treat oil or gas structures crossing the border as one unit and determine each countries' share from the development. These examples could serve as examples of best practice for other countries struggling with the same issue. Collaborative development of resources in areas with overlapping claims could prevent geopolitical tensions from developing.

GOVERNANCE

The energy sector is, because of its strategic nature, governed by many different organisations and agreements, some political and some economic in origin, and most of an inter-governmental nature, leaving the national sovereignty intact. The management of security of supply and demand risks depends on clear structures for governments to deal with their wide array of commercial, strategic and geopolitical interests.

[12] AMAP website at http://www.amap.no/; AMAP is an organisation of the eight Arctic countries and has its Secretariat in Oslo, Norway.

Chapter 3
Developments in (geo)politics and policies affecting natural gas

3.1 BALANCING OF SUPER POWERS

The end of the Cold War period did not end the commitment of the OECD countries to an open world economy, its multilateral governance, and stable socioeconomic welfare, but rather stimulated a push for deeper and wider integration of new nations into the liberal economic order.[13] The eastern enlargement of the EU and Chinese membership in the WTO are prime examples of this development. Globalisation was heralded as the world economy's new engine of growth, and liberal democracy was expected to follow these developments. Although the socioeconomic welfare of many people in developing and previous centrally planned economies slowly began to increase in the 1990s and accelerated in the 2000s, it was the more centrally controlled regimes and partially liberal economies that prospered in the last decade. Incomes from exports, either based on low labour costs or raw materials, propelled domestic growth in these countries. Energy, and notably natural gas, played an important part in the changing positions of the superpowers.

US

The unilateralism of the US of the early 1990s and the emergence of new states as important powers heralded a new period of geopolitical re-balancing, which became even more pronounced after the 2008 economic crisis.

From the beginning of the 21st century, the dominant position of the US as the sole super power was increasingly challenged, not only economically, but also politically. The effort to seek multilateral consensus for action, which had characterised American foreign policy in the 1990s, was challenged by the more unilateral stance of the new Bush administration in 2001.[14] This foreign policy posture of the US forced other powers, such as China, Russia and the EU, to reposition themselves. Although globalisation per se was not challenged, great and regional powers increasingly began to assert their own vision of how their integration into the world economy was to take shape and what role they wished to play in their own regions and at the international level.

In energy, the US became increasingly concerned about its growing dependency on imports, popularly called its "addiction to oil". The outlook then was that oil and gas imports would increasingly have to come from the Middle East, and much importance was given to alternative flows from the Caspian Sea region and Russia. Access to resources became an important issue in international relations, and companies from the US, Europe and China were competing for resources around the world. The emergence of large quantities of unconventional gas on the US market changed that perception, particularly while it looks as though the successes in natural gas could be replicated in the production of more domestic oil. The changing energy outlook of the US[15] implies it will be less dependent on Middle East resources. Most of its reduced import needs can be sourced from the Atlantic Basin, and

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[13] G.J. Ikenberry, The Myth of Post-Cold War Chaos, in: *The Clash of Ideas*, Gideon Rose and Jonathan Tepperman (eds.), originally in Foreign Affairs, May/June 1996.

[14] The termination of the ABM treaty and the refusal to become a signatory to the Kyoto protocol underlined the more unilateral position of the Bush administration. From here on, the Bush doctrine, as it was coined, developed further to include, after 9/11/2001, the "either with or against us" policy regarding the war on terror, the "axis of evil speech" and the preemptive strike of 2002, leading up to the Iraq intervention, and the freedom agenda, as propagated in the 2nd inaugural address of Bush in 2005, where the fundamental mission of America foreign policy was declared 'to spread democracy throughout the world'.

[15] Energy Information Agency, at http://www.eia.gov/energy_in_brief/foreign_oil_dependence.cfm

could signal a change in the way the US is involved in the Middle East. Although many of its allies continue to rely on these resources and China and India expect to structurally increase their import needs from the region, a US presence may well continue, to service its other geopolitical interests. However, other countries can expect the US to ask for a more active contribution to manage security in the region and other sensitive naval passages important for security of supply. Currently, US gas prices are among the lowest in the world as a result of the unconventional gas revolution. In this report, resource nationalism is discussed in its different shapes and impact. The debate in the US over whether it should allow exports of its gas as LNG or retain it for its domestic market, creating and preserving a competitive advantage of low energy costs for its own economy, is, if exports are hindered, another typical example of resource nationalism.[16]

EU

In the EU, the market-oriented approach of the US became the bedrock of the deeper and wider integration embracing larger parts of the European continent. The EU enlargement of 2004 during which eight former East European bloc countries were integrated into the EU, and another two in the process of finishing the transition period solidified the western grip on the European continent, while the monetary and economic union served to definitively link the economies together. Strategically, this process was mirrored in NATO's enlargement. In 1999, Poland, Hungary and the Czech Republic had already joined NATO, while in 2004 the Baltic States and the rest of the East European countries joined. The latter enlargement chagrined Russia, because it went against the promise made in the 1990s that no country belonging to the former Soviet Union would be invited to join. This impinged on the "near abroad" policy of Russia, given much more importance by President Vladimir Putin.

The European countries had great difficulty with the Bush administration's departure from multilateralism. While European countries grew increasingly uncertain about the American strategy in the war on terror, the Americans became irritated with the European's lack of commitment. When the US began to promote NATO membership of Ukraine and Georgia and indicated that EU membership should also be considered, the West European countries began to balk in earnest, partly because they did not wanting to strain the relationship with Russia further, but also because the integration of poor and badly organised countries from the East was straining the EU's internal policy cohesion. EU-Russia gas relations were already becoming tense because the EU was liberalising its policies, and, from 2003 onwards, the Russian government centralised its energy interests.

The liberalisation of the gas and electricity market became an essential part of the EU's efforts to integrate its markets as part of its vision of an internal market. Security of supply was initially not regarded as a matter of concern and did not feature on the EU's agenda. The change in the market model thus took place without consulting the EU's main gas suppliers. The subsequent attempts by the EU to export this market model to transit countries and Russia created mounting economic and political tensions. The added impact of the Ukraine crisis in 2006 and 2009 brought security of supply back on to the political agenda. Diversification of supply, which was a commercial objective of major gas importers in the EU, was actively endorsed by the EU. The Nabucco pipeline and its potential sources of supply became the symbol of that diversification. Its support for this new potential supply source and route became another irritant in its relations with Russia as the main supplier of gas for the EU.[17]

[16] Energy Information Agency, report on impact of natural gas exports at http://www.eia.gov/analysis/requests/fe/pdf/fe_lng.pdf

[17] See J. Stern, ibid., 14 November 2011

RUSSIA

The centralization of energy interests had been triggered in part by the imperfect privatisation process of the late 1990s and by overtures of western oil companies to take over Russian energy company interests. The Putin presidency was keen to preserve these interests for Russia and increased the government stake in oil and gas. The increasing price of oil from 2003 onwards intensified government efforts to capture the economic rents for the state. The process leading to the nationalization of petroleum company Yukos underlined the Russian government's new stance in energy matters. It made to clear to Western companies and governments hoping to gain a majority stake in Russia's energy sector that, at best, these activities would require a domestic partner. As a result, the West perceived energy relations as much more politicised.

US relations with Russia also changed perceptibly as the Bush doctrine evolved and a more centralized Russia emerged. The US was actively involved in helping former Soviet Union states to become more independent, supporting, for example, early NATO membership. The orange revolution in Ukraine and the subsequent gas crises of 2006 and 2009 further strained (energy) relations on the Eurasian continent. Despite these pressures, a consortium of Gazprom and European companies began to build an offshore pipeline to reduce the "nuisance power" of Ukraine, through which most of the gas destined for the European market was transiting. This project divided western and eastern European countries over energy security and raised some eyebrows in the US. There would be more American approval for the EU Commission's subsequent support for development of a gas corridor from Central Asia through Turkey to southeast Europe, circumventing Russia, to create greater diversity of gas and gas transit routes.

At the same time, Russia actively pursued closer relations with the "near abroad", as countries from the former Soviet Union were grouped according to Russian foreign policy. The pursuit of closer ties in the region was not only a response to US and EU policies in the region, but also a reaction to China's successful energy relations with key countries in the Caspian Sea region, such as Kazakhstan and Turkmenistan.[18] Twenty years after the breakup of the Soviet Union, the legacy of the energy infrastructure is beginning to change. New infrastructure not only befits the new supply and demand dynamics, but also suits the region's new political realities, which includes not only pipelines such as Nord Stream, but also the pipeline from Turkmenistan to China. Given the size of Russia's energy resources and their importance for the economy, energy policy is of strategic importance to further Russian geopolitical interests. Russia will pursue these at home, in the near abroad and further away.

CHINA

The change in American foreign policy to a more unilateral stance and the intervention in Iraq took place at a critical moment for China, changing the perception of oil supply security. China had been oil import dependent since the 1990s. Economic growth quickly expanded its import needs, and domestic coal supplies also began to fall short of demand. State oil companies from China were among those that had agreed to invest in Iraq, while links with Iran were also important. Irritation also grew with regard to Chinese exchange rates. Moreover, the freedom agenda and repeated comments about democratic deficiencies and human rights made the Chinese leadership prickly. China stepped up its efforts to arrange for its own energy security, separate from the US, declined to become a member of the IEA, (although they are cooperating) and strengthened its relations with Kazakhstan and Turkmenistan. The speed and scope of the development of new gas supplies from Turkmenistan were an impressive illustration of the power of a centrally planned economy to advance and implement policies of energy security. At the same time, China became even more active in investments in Africa and South America, and also intensified activities in its

[18] See J. Stern, ibid., 14 November 2011

own offshore, much to the alarm of other Asian states that had competing claims in the region. China's large demand potential also drove the rapid expansion of Australian energy exports. In this light, the importance of China's vast deposits – with their potential promise of unconventional gas production – cannot be underestimated. When certain problems can be overcome, it could significantly enhance China's energy security, and reduce its dependence on gas imports. It will also provide China with greater leverage for future contract negotiations with suppliers. As a consequence, China could relax its gas import strategy, including the current stand-off with Russia on gas supplies.

Despite the activities of state companies in the energy sector around the world, China's dependency on Middle Eastern oil supplies remains large, while resistance to some Chinese investments is growing. At first, Chinese companies were seen as companies offering an attractive alternative to international oil companies, but Chinese companies are also increasingly being criticised for creating insufficient local benefits, driving host countries to seek more diversification of investors. The emergence of China as an important player in the world economy is putting increasing pressure on China to get involved in global governance issues. Most recently, the Arab Spring and the role social media played in that movement, have made the Chinese leadership sensitive to foreign influences that could potentially disturb political and social stability from within. It is clear that China's rapid emergence as an important economic player has created internal strains that could play a major role in how the county will project its newfound power in the years to come.

Rebalancing

The post-2008 rebalancing among geopolitical powers is far from complete. The G20's inability to effectively cooperate to manage the financial and economic crisis is a sign of the international system's growing ingovernability. The US and the other OECD countries have relatively weakened and have difficulty setting the rules. China, Russia, India, Brazil and others have emerged as important countries that the traditional rule setters have to take into account in reforming the international system, but so far, these countries have been reluctant to share in the cost of system governance. The US and EU have been left with mounting fiscal deficits, creating more international economic uncertainty and political slippage The world is currently retreating from a multilateral-oriented international system to a more national oriented system in which each country must take care of its own imbalances, with little systemic international backing. Although the structural powers of the OECD countries are still large, they are insufficient to project the same kind of power they did in the 1990s, when they pursued globalisation based on the Washington Consensus. At the same time, state capitalism seems to offer an alternative model to the mores of the liberal economy and has proven attractive to emerging economies on various continents.[19] Emerging geostrategic players will be those with economic strength, coupled with rich endowments of resources. If the most important geopolitical players do not have a new shared vision on how best to shape and govern the international system, the danger is that the national interests of the largest players will be a source of intensified tension for the international system. Such a development could hamper economic growth and, consequently, impact way the international natural gas sector develops.

3.2 SWEEPING (GLOBAL) POLITICAL AND ECONOMIC DEVELOPMENTS

In the early 1980s, large imbalances in the balance of payments among the major economies and between oil-producing and oil-consuming countries invoked a radical monetary policy change. Many countries suffered from weak public finances, and the economies stagnated, while inflation was high. The subsequent period of structural adjustment redefined the role of the state in the economy, which, apart from the more market-oriented economies, ultimately also had a bearing on the economic structure of the planned economies of Eastern Europe,

[19] The Economist, *The visible hand, special report on state capitalism*, January 21 2012.

the former Soviet Union and China. The liberalisation of the balance of payments, i.e. trade and finance, and later also large parts of the domestic economies became a dominant model of organisation from the late 1980s onward. The dramatic change in energy prices from 1986 onward helped liberalise many economies. After the oil price increases of the 1970s and the appreciation of the US dollar, energy efficiencies and structural fuel switching had changed the energy economy of the OECD countries. The nationalization of energy production in many OPEC countries had stimulated investments elsewhere, and while energy demand growth dwindled, supply increased, leading to a prolonged period of low energy prices.

The largest current and future issue affecting the international economic and political system will be how China manages its integration in this system, and its relations with other superpowers. The liberal approach to the economy, which became prevalent in the intense period of liberalisation in the late 1980s and 1990s, with its strong focus on short-term efficiency, is not fully consistent with the approach of states such as China, Russia, India and others.[20]

In the wake of the liberalisation trend, another major issue gained prominence on the policy agendas in OECD countries: climate change. Because the liberalisation of energy markets came with less of a "bang" than in international capital markets, the slow removal of traditional government (ownership) constraints on the energy markets in the 1990s was replaced by climate policy constraints in the newly liberalised energy markets in the 2000s, shifting the playing field. Moreover, climate change policies were not implemented everywhere, nor with the same vigour, creating different boundaries to energy markets and regionalised interfuel competition. The relatively clean properties of natural gas made it an attractive option to clean up the energy mix, but some countries made introducing sustainable energy resources obligatory, as part of their Kyoto Protocol policies, while other opted for a technology push approach.

From the early 2000s, energy prices began to increase, reordering policy priorities. Security of supply gained prominence and management of import needs became more important and was often blended with climate change policies. In the EU, this was increasingly translated into promoting a switch away from imported fossil fuels, while in the US, both the domestic fossil fuel industry and the bio-fuel industry were expanded. In China, interest in renewable technologies increased rapidly, although the demand for energy from fossil fuels continued to grow fast. The energy market landscape began to change profoundly in the 2000s, as more fuels were introduced into the mix. Nevertheless, the decade is still characterised by the occurrence of the demand shock in the coal, oil and natural gas markets as a result of the call on imported energy by emerging markets such as China and India. Energy supply had difficulty catching up to demand and the cost of bringing new supplies to the market increased.

3.3 LIBERALISATION, PRIVATISATION AND THE "WASHINGTON CONSENSUS"

REDEFINING THE ROLE OF THE STATE AND THE MARKET

In the 1980s, a process of sweeping market reforms was initiated, although many only took shape in the 1990s. Started in the US and the UK capital markets, a wave of liberalisation and privatisation – the so called Big Bang – swept across the world and was later amplified by the demise of the communist system. There seemed to be no alternative: a transition to a deregulated, free and open competitive market economy became sacrosanct. Reforms were more likely to be unilaterally imposed on developing and newly independent economies, especially in the 1980s for countries involved in the debt crisis and in the early 1990s, as a part of "transition economics". These reforms, the Washington Consensus, were promoted for developing countries by Washington D.C.-based institutions such as the International

[20] I. Bremmer, (2009), State Capitalism Comes of Age, *Foreign Affairs*, vol. 88, no. 3, pp. 40-55.

Monetary Fund (IMF), the International Finance Corporation (IFC) and the World Bank (WB), and institutions in Europe, such as the Organisation for Economic Co-operation and Development (OECD), the European Commission (EC) and newly established institutions such as the European Bank for Reconstruction and Development (EBRD), the Energy Charter Conference and the World Trade Organisation (WTO).

> *"Stabilize, privatize, and liberalize" became the mantra of a generation of technocrats who cut their teeth in the developing world and of the political leaders they counselled.*[21]

In many countries, the driver for reform, willingly or unwillingly, was the decrepit state of public finances. Inspired by Keynesian economic theory, the role of the state in the economy had grown over time, to the point where it had become an important producer of (public) goods and, in some cases, the prime economic actor. In developing countries, this so called mixed economy came into existence mainly because there was no private sector to guide economies through a "take off" period. Major imbalances in the world and the growing public debt undermined the ability of both industrialised and developing countries to invest in modernizing their economies.

In the countries of the European Community (EC), the market reforms first led to the 1992 process of finalising the internal market, the progress of which had stalled during the recession of the early 1980s, and later, in the 1990s, by the prospect of absorbing the northern, central and Eastern European countries into the EU. The need to bring the Internal Market into effect and the liberalisation of the gas and electricity markets with their incumbent monopoly suppliers and generators were part of that EU coordinated process.

During the 1980s and 1990s, many countries in Latin America and Asia were forced to begin restructuring their economies as a condition of IMF structural programmes. The process continued with the 1998 Asian financial crisis.

Many of the insights developed in the days of debt restructuring in the 1980s were easily transformed into what became known as transition economics. To quickly deconstruct the planned economy and deal with large external debts, a programme of liberalisation and privatisation commenced in Eastern Europe. These same formulas were proscribed to Russia and Ukraine, the largest of the post-Soviet states, in the early 1990s, but their implementation was much slower and less profound because of domestic social and political intricacies. In Russia, oil sector privatisation was finally consumed in 1995, but the voucher system flopped and resulted in the formation of large domestic oligopolies. The owners of these large companies, the so-called oligarchs, amassed most of the country's oil assets. In the chaotic years after the demise of the Soviet Union, which coincided with relatively low international prices for oil and gas —Russia's main export products — not much income from oil and gas exports found its way into state coffers, leaving the government with very little means to create even a minimum social foundation. Only after the second monetary crisis in 1998 did the economy begin to stabilise, and when oil prices began to increase in 1999, the economic reforms began to gather steam again.

Invisible hand and visible government

The market reform measures were beneficial, notably for the OECD's more mature markets, but in hindsight they have not been universally regarded as the best recipe for all markets. Many countries have endeavoured to implement varying components of the reform packages, with varied vigour and results. Some critics have blamed the Washington Consensus for problems such as the Argentine economic crisis in the late 1990s, and for

[21] Dani Rodrik, *Goodbye Washington Consensus, Hello Washington Confusion?* Harvard University, January 2006.

exacerbating Latin America's economic inequalities. The Asian financial crisis and the way it was handled exposed the vulnerability of countries to fast-moving, short-term capital flows. In particular, countries with a weak domestic banking system saw large capital outflows. The open capital markets also implied that governments could do little to stem the haemorrhaging if they wanted to stay true to their liberalisation programme. Countries with some sort of (temporary) capital controls on short-term capital, for instance Chile and Malaysia, fared much better, making other countries aware of other policy options. The recent financial and economic crisis has also raised new questions and concerns about the virtues of the available crisis management tools in an open market.[22]

For the gas industry, the market reforms were probably the biggest upheaval for its business, nationally and internationally. In many places, the process is still underway. In others, it has slowed down or stopped. In some countries, particularly those with ample reserves and production capacities, the state is regaining control over the industry, either in ownership or pricing in the domestic economy. In various Asian countries, it has been applied in a more gradual and government-controlled manner and led to less contention. In the EU, the liberalisation of the internal gas market has advanced further than in other parts of the world, although there are still concerns that a fully integrated market is not yet in place. Regulatory differences among member states do not always facilitate the larger EU-wide market place, but rather are focused on the national markets. Current EU efforts to act as a purchasing agent for the European market appear at odds with the concept of a liberalised market, but are at the same time recognition that the international gas industry does not lend itself easily to neoclassical economic market theory. At the same time, large government-owned or -controlled companies became active players outside their national markets, infusing the market reform debate with other complexities about the boundaries between the state and the market. Generally, these activities can be explained as gaining experience in a certain part of the business, such as the investments in shale gas production or the spot trade sales and direct marketing, or as strategic economic investments to gain access or market share. But at times, these moves can provoke a political response.

Reality versus expectations

For the natural gas sector, the recurring question is to what extent liberalisation has delivered the expected benefits. It certainly fuelled the development of new business models for the industry, notably for LNG, helped the development of shale gas, and promoted competition in consumer markets and in some cases also in access to resources. It certainly created new interfaces between business and policymakers, mostly of a national or regional nature, but also led to new political tensions in the international arena.

The main issues that emerged in the context of liberalisation and privatisation, which still leave their mark on the business, include:

- Market liberalisation required numerous new regulations. Establishing the appropriate legal and regulatory frameworks for new market structures is to a large extent still a “work in progress”. Consequently, mostly incumbent market players now regard regulation as their biggest business risk, while for new additions, regulation enabled market entry and new commercial opportunities.
- In the EU, analogous reform processes were developed for gas and electricity. The fact that the two sectors were not reformed on the basis of their own characteristics, with the different value chains in mind, but rather modelling reforms to the gas sector on those to the electricity sector signalled that the gas industry had failed to make policymakers recognize the different natures of these businesses. Both the natural gas and power sectors in the EU are becoming more and more integrated, but the differences and their effects are also beginning to play out, particularly where gas

[22] Joseph Stiglitz, *Freefall, America, Free Markets, and the Sinking of the World Economy*, Norton, New York/London, 2010, pp.186-209.

markets depend significantly on imports from outside the EU. Meanwhile, EU policymakers and regulators, while struggling with a lack of consensus over a long-term vision for gas, continue to consider (re-)engineer the rules to influence market performance, prolonging uncertainty for market players.

- In some countries, the liberalisation and privatisation processes allegedly failed to deliver the expected benefits. In a few others, these processes had not been applied carefully enough. Governments ceded control over the use of their resources or worse, licenses, and state enterprises and assets ended up being sold below their true value, leading to excessive enrichment at the expense of the state. Subsequent governments have sought to restore control and ownership in what they perceived to be legitimate sovereign actions to return to the state the value and management of its natural resources. Where this "resource nationalism" in reaction to the Washington Consensus occurred, it created serious frictions and concerns of "politicising" the gas business.
- Over a number of years, the EU attempted to export its market model to its major gas suppliers. This created tensions between the EU and Russia, leading to a breach of confidence between the region's two major supply stakeholders.

Due to a preoccupation with only market models, aligning the inseparable twin interests – security of supply and security of demand – was not a policy concern. The amply supplied markets of the 1990s and relatively low natural gas prices were regarded to be a result of liberalisation, not a result of special economic circumstances. The EU security of supply issue was elevated to the political agenda mainly due to the prospect of greater import needs, the asymmetry of import dependence and diversification opportunities, and the risks related to Russia and Ukraine.

More recently, the issues regarding energy sustainability have also risen on the energy policy agenda. The introduction of new fuels to the energy mix is another challenge for the natural gas sector because of larger demands for flexibility, but also because of the uncertainty over how much of a share natural gas will have in the future energy mix. The transition to a more sustainable energy mix calls for more government intervention to fill the competitive gap between fossil fuels and new energy resources. These issues tend to have a further impact on prevailing market models.

In conclusion

It may not be surprising that market liberalization works best in countries with a (nearly) self-sufficient, mature gas industry. Both security of supply and security of demand suffered in the process, because the previous certainties of risk and benefit distribution in long-term contracts and adequacy of infrastructure were often traded for the shorter-term oriented markets and "asset-sweating", where the distribution of risks and benefits were captured in certain parts of the value chain by regulation. Uncertainty about how some imperfections in regulations would be addressed, also in relation to the regulated introduction of new fuels, also impacted both security of supply and demand. In import-dependent countries, this has strained political and business relationships between producers and consumers. Today, these aspects receive more attention on the political scene, but unfortunately more as a source of concern than as a co-dependency that was once a characteristic of the business. Political tensions and policy uncertainties are bad medicine for any business, but particularly for natural gas with its heavy dependence on a proper international political imbedding, its major investments, long lead times, long payout times and long-term (pipeline) interrelationships.

With their market reform processes, governments have taken the lead in changing the structure of the natural gas industry, so far with mixed results. Adjustments will need to be made again, if only to reflect the changing dynamics of the business and its environment, and notably where sustainability policies will require more prescriptive measures.

At its World Gas Conference in 2006, the IGU produced and discussed a study on market reform.[23] Its analysis showed that market reform is not a "one size fits all" concept. Liberalisation offers the most benefits in a self-sufficient, mature market. The natural gas industry could offer the benefit of its global experience to any new process of change by working closely with all relevant stakeholders, nationally and internationally. No doubt, governments will be in the driver's seat in re-evaluating the rules of the game and will likely become more directly involved in gas market development, particularly in the light of emerging environmental policies. But stronger partnerships between business and governments, on national and international levels, may help to avoid future issues causing apprehension and securing the view of natural gas as a reliable and economically attractive energy source in a low-carbon energy economy.

3.4 CLIMATE CHANGE AND THE OUTLOOK FOR GAS

Climate change and its political implication is a very significant issue affecting the future of natural gas. Over the last decade, when climate science developed and the UNFCC reporting about the rise in CO_2 emissions became more alarming, concerns about the risks and consequences of global warming became more widespread. Major global changes in energy use will be required to restrain the growth greenhouse gas emissions, while both the contribution to and the impact of climate change is predicted to be unevenly distributed geographically. The required changes to the energy system will come with considerable upfront costs to national economies, and would only be effective if introduced in a coordinated manner by the international community. Even if an equitable distribution of the available emission space over time can be agreed upon, some states would have to invest early without guarantees that others would follow suit. Moreover, the cost of prevention does not fall equally to those who invested most and/or early, while adaptation costs can be particularly high for the weakest countries. Climate change presents the world with a "geopolitical prisoners" dilemma, where geopolitical distrust and geoeconomic competition are the virtual walls that keep the prisoners separate to reach a better outcome.

International agreement would not only help to set out serious steps to reduce greenhouse gas emissions, but would also create more clarity for private industry about the rules and conditions under which future business can be conducted. This clarity is badly needed across all segments of the energy sector, not just natural gas. In many countries, the focus is on the power sector, where conservation of energy and substitutes for fossil fuels must help reduce CO_2 emissions. The nuclear sector is also emerging as a (transition) alternative, although its prospects have been affected by the Fukushima accident, while carbon capture and storage (CCS) developments can keep both coal and gas in the mix.

Without Carbon CCS, coal could not claim a place in a more sustainable energy mix. The fact that coal is important in the energy mix of geopolitical powers such as China and the US makes a phase-out unlikely, particularly because coal is largely domestically produced. However, the optimism about the early introduction of CCS technologies could be misleading. Its deferral could result in a larger call on lower carbon fuels, such as natural gas. The interventions of governments, via climate change policies, to help introduce new and more sustainable fuels to the energy mix are only the newest form of government intervention.

In the absence of international agreement, business and governments have to continue to speculate on future steps to deal with the environment. The likelihood that national or

[23] Coby van der Linde, Aad Correljé, Jacques de Jong en Christoph Tönjes**, The** *paradigm change in international natural gas markets and the impact on regulation*, CIEP/International Gas Union (IGU), The Hague, April 2006.

regional systems emerge is large, introducing yet another economic barrier between countries.

Potential Effect of Climate Control Measures on Gas

The overhang of possible climate control policies and the impact on energy consumption have prompted many analysts and governments to study the ramifications and possible consequences of new policies, and to quantify their effect. All scenarios make different assumptions about which measures will be taken and arrive at different conclusions for the role of natural gas. An IGU "sustainability scenario" made for the 2009 WGC suggests an increase in demand for natural gas, resulting mainly from the replacement of coal for power generation. Others suggest a reduction in natural gas demand, resulting from major strides in energy efficiency and/or a massive transition to renewable energy. Some scenarios see a transition role for gas until the 2030s and a subsequent phasing out of gas in favour of electric power from carbon-free renewable sources. Others offer a future in which natural gas, mixed with "green" gas, will play a long-term role. In general, the outlook for gas varies between different countries or regions. In North America and Asia, in the latter also for reasons of air quality, gas is predicted to become a bigger part of the energy mix. This is also the case in the Middle East, Russia and Africa. Based on the scenarios, the case for growth in Europe is less clear. These different outcomes illustrate how difficult it is to predict what type of policies may be introduced to manage greenhouse emissions and how to assess their impact.

Meanwhile, uncertainty reigns for fossils

While governments are struggling to introduce policies to reduce emissions without harming the economy and international competitiveness, businesses search for investment strategies with a minimum of downside risk. All are aware that stricter environmental policies cannot be avoided. Yet, given the range of possible policies, a no-regret strategy is hard to find.

For the longer term, work is progressing to assess the feasibility, timing aspects and investment implications of a low-carbon society by 2050. This could have important consequences for energy investments at a fairly early stage, particularly for the gas industry with its long lead times and payout horizons. Also, scant attention has so far been paid to the effect that the uncertainty and future policies have on international relations between gas-exporting and importing states. Security of demand for gas exporting countries could be seriously undermined under some of the scenarios. Conversely, any reluctance by these countries to invest due to uncertainty over future demand may affect security of supply.

In conclusion

It may not be surprising that the IGU Sustainability scenario projects a higher demand for natural gas and its analysis may have been biased, but the underlying fact is that using natural gas in combination with its new application technologies results in considerably lower greenhouse gas emissions in comparison with other fossil fuels. This scenario was supported by insights in the 2011 IEA's analyses of future world gas demand.[24] The developments in the EU, exemplified by the 2050 Energy Roadmap[25], are an exception to global gas demand developments.

Gas could make a positive contribution in a transition to a low-carbon society. It is questionable whether policymakers recognize this potential sufficiently. Recent advocacy efforts and the IEA report "Are We Entering a Golden Age of Gas?" have addressed some of these issues, illustrating that this effort can make a difference and that this form of "advocacy" needs to be continued and, if possible, institutionalized.

[24] IEA, 'Are We Entering a Golden Age of Gas', 2011, and the Gas scenario in WEO 2011.
[25] http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm

Uncertainties about future demand and the place of gas in the energy mix (as a result of climate change, among other factors) are affecting the gas business. This applies to the true value of the low-carbon properties of gas, which are still insufficiently reflected in national and business economics, and may also have an impact on future long-term investments in supplies and infrastructure.

Successful environmental policies will inevitably lead to more government intervention in markets to create space for new fuels that have not emerged from the “valley of death”. Already the growing share of renewable energy is stimulating debate about the introduction of new market models to help these fuels along. Also natural gas will be affected by these new interventions, depending on government instruments. Carbon reduction targets have a different impact on the composition of the energy mix than an obligatory share for renewables. The “currency” used to bring about change in the energy mix and import dependency leave the natural gas sector with uncertainties. The instrumentation of climate change policies and import management policies in an international system more geared towards a liberal market approach is different from that of a system more geared towards “state capitalist” approaches.

Chapter 4
Developments in the gas industry and geopolitics

4.1 Developments in the natural gas business

Developments in international relations and how these may have an impact on the natural gas business have been amply dealt with in the previous chapters. It is clear that the international natural gas business and the way it will and can develop depends very much on the way states operate in the international arena, how they regulate and organise their economies and which policies will determine the boundaries for further natural gas developments. The natural gas sector, however, also has its own dynamic, which in turn can influence the way in which international relations develop.

The LNG "revolution" was followed by the unconventional gas revolution, illustrating the vibrancy of the natural gas sector. In the past few years, LNG has connected the Pacific and Atlantic basins and increasingly pipeline suppliers also have to take LNG flows into account when assessing the market for their natural gas.[26] Moreover, the dynamics of security of supply and demand have changed as a result of new gas supplied under new business models, while unconventional gas has greatly changed the import dependency development of North America and the positions of suppliers and other markets. These developments in the natural gas industry thus affect relations, and are part of the wider interplay in the international system.

Yet, national markets are also growing in importance. The pricing of natural gas for domestic and regional markets is relevant for the inclusion of these markets into the development models, although additional factors, for instance regional relations, can play a role in servicing these markets. In Russia, the domestic market is large compared to the export sector, so the domestic supply and demand development, combined with the export income needs, both play a role in developing supply strategies.

It is clear that developments in natural gas sectors around the world, whether they are domestic, regional or international in origin, also influence relations between importing and exporting countries. In order to understand the interplay of natural gas and geopolitics, it is important to understand the dynamics of those sectors.

4.2 Supply and Demand: are we moving towards pig cycles?

Generally, in international natural gas markets, supply tends to follow demand. In a self-contained gas market like North America, with its fairly ready access to marginal fields, gas supply and demand were in reasonable balance for a long time, with spot prices determining the appetite of the market for gas, on the one hand, and the interest of producers to develop new supplies, on the other. In other markets, dependent on long-distance imports and a lumpier pattern of new supplies, the sales of gas were for a long time "demand-driven". Investments in new supplies were only made after long-term supply contracts with large buyers and resellers in the gas markets concluded.

In more recent years, the international gas market has moved from famine to feast. The early years of the past decade saw unprecedented growth in perceived and real demand for international supplies, and particularly LNG, across all major regions. For the first time in many years, the US was predicted to become a market for LNG imports, while the Asian

[26] The enlargement of the Panama Canal is likely to encourage the development of the interregional gas market, particularly as far as LNG flows are concerned (i.e. it strengthens the link between the Pacific and Atlantic basins).

market, mainly driven by China's economic growth, was equally interested in new supplies. Europe, in its drive to diversify its supply sources was likewise interested in acquiring new supplies. A seller's market was the consequence.

Supported by this comfortable position, and prompted by the short-term nature of North American and UK markets, "self-contracting" (i.e., producers buying their own LNG production under long-term contracts) became a new business model. As a result, arbitrage strategies are the logical consequence, mainly in the Atlantic Basin. Because LNG supply under this model has little or no supply commitments to specific markets, it is also referred to as "flexible" LNG. On this basis, a substantial supply capacity was developed in a number of exporting countries, notably in the Atlantic Basin.

The unconventional gas production boom in North America returned the continent to self-sufficiency –reducing the appetite of the market for LNG imports (and vice versa). Combined with the global recession, this has radically changed the global market from a seller's market into a buyer's market. Due to ample supply in the North American market, a political discussion has erupted over building natural gas export capacities and the impact on domestic energy markets.[27]

Comfortable as the current situation may seem for the consumer markets, long periods of surplus may stifle future investments, which could result in supply shortages and very high prices down the road. Very strong swings in the balance between supply and demand create new questions around the forms of coordination that may be desirable to contain the risk of violent swings in supply availability and gas prices.

"Flexible" LNG and pipeline gas, as well as unconventional gas have created new supply dynamics, affecting government policies to ensure security of supply and demand. While flexible LNG may lead to concerns about security of supply in some markets, it also contributes to dealing with planned and unplanned changes in energy systems: the contribution of additional LNG to make up for the loss of nuclear energy in Japan in the wake of the Fukushima disaster was undoubtedly facilitated by the availability of flexible LNG. The potential development of shale gas in China could also change the expected call on imports.

4.3 INTERNATIONAL GAS PRICES

Different regions, different prices

Over the past 40 years, differences in structures and levels of gas prices in the wholesale markets have underscored the regional nature of the gas industry, which was traditionally separated into three main gas regions: the Asia-Pacific markets, the North American market, and the European markets, and, smaller in size, the South American market. Given the growing international gas trade, it was generally expected that gas prices in these regions would converge. However, in 2012, regional differences are larger than ever.

For the Asian markets, the guiding principle for price formation has been, and still is, by and large, the linkage to oil prices.

Short-term supply and demand set North American gas prices. As a result, gas prices move independently from those of other fuels, albeit not totally unrelated over the longer term. The unconventional gas boom has returned North American gas prices to levels close to those in the 1990s, to less than $4/MMBtu, compared with $8/MMBtu and higher before the

[27] EIA, *Effect of Increased Natural Gas Exports on Domestic Energy Markets*, January 2012; M. Ratner, P. Parfomak, L. Luther, *United States Natural Gas Exports: New Opportunities, Uncertain Outcomes*, Congressional Research Service, 4 November 2011.

unconventional gas revolution. Moreover, due to the ample supplies the relationship with oil prices has weakened.[28]

Wholesale gas prices in Europe offer a more differentiated picture. For many years, international trade in continental Europe has been conducted through long-term contracts, with pricing formulae linked to alternative fuels in the end-use market, notably fuel oil and gas oil. Market reform in Europe opened the door for the development of spot markets, which are now spreading across the continent. With the exception of the UK spot market, those on the continent constitute a relatively small part of the total volume of business to date and have acted mainly as a means to clear short-term surpluses and shortages between market players. In today's market with its supply overhang, spot prices are consistently and substantially lower than long-term contract prices. This creates significant tensions in the relationship between international suppliers and buyers under these contracts.

The price differentials between North American prices and those in other markets have raised the interest of American and Canadian producers to export gas to European and Asian markets as LNG. Export license requests have sparked a discussion about the economic and strategic merits of denying approval to keep North American prices low and conserve natural gas reserves for the future, while proponents of sustainable energy worry about the growing competitive gap and the environmental footprint of unconventional gas.[29]

Domestic markets of many gas-producing countries have their own price regimes, independent of, and generally much lower than international gas prices. Much as this may be justified by the efforts of a government to stimulate the domestic economy and/or maintain prices to socially affordable levels, sooner or later this creates tensions, both in national policies and in the context of international trade, where industries in these countries will be considered to have an unfair competitive advantage, derived from low energy prices.

Decoupling oil and gas prices: winners and losers

A discussion about oil indexation is in many ways also a discussion about longer term investment setting and risks and benefits sharing along the value chain. Proponents of delinking natural gas prices from oil focus on unbundling the value chain and releasing economic rents in the downstream part of the value chain.

There may be good reasons for both sellers and buyers to uphold the oil-indexed price principles under long-term contracts. But it is also conceivable that current market conditions will drive a transition to spot-price linkage in international supply contracts. This could imply lower gas prices in those regions experiencing the change from oil indexation to spot prices while there is a supply surplus. Lower gas prices would be welcomed by governments and consumers in these markets, and would create a more level playing field for industries competing with those in the US and the UK markets, where spot prices already dictate the market. Price volatility may be higher as a result, but the expectation of lower gas prices may well be considered to justify the costs of hedging from a consumer perspective.

International natural gas trade differs from oil trade: contrary to expectations, a global market for gas does not exist in the way it does for oil. Gas prices differ significantly between the three major gas-consuming regions. Price linkage to oil has been a long-standing arrangement in international gas supply and purchase contracts. The current surplus of gas

[28] EIA, Long Term Outlook 2011.

[29] See footnote 29 and also Odd Alliance says no to Gas Exports, *The Wall Street Journal,* 8 March 2012; Jim Jelter, Shale gas: A game-changer in slow motion, *Market Watch, The Wall Street Journal*, 5 December 2011; David Hughes, Canadian Gas Exports Threaten Energy Security, Sacrificing BC's environment and energy resources for profit, *Watershed Sentinel*, November-December 2011; Deloitte Center for Energy Solutions, Made in America, The economic impact of LNG exports from the United States, a report by the Deloitte Center for Energy Solutions and Deloitte MarketPoint LLC., 2011.

supply capacity in the global market has renewed pressure to abandon or dilute the oil-indexation price principles. It is yet not certain whether these will lead to structural changes in the longer run, in terms of gas price formulae in these contracts, as well as with the willingness of producers and buyers to enter into long-term contracts in future.

Changes in rent distribution in international supplies could have geopolitical implications. By unlinking natural gas prices from those of oil, natural gas prices would behave like other commodities: fair value is the price the market dictates. Gas-exporting countries may take a different view on fair value, however. Once the market price is significantly lower than the perceived value for a prolonged period, a gas-exporting country may become uncomfortable seeing its resource exported at a price far below what it thinks it is worth. What options would be available to such exporting countries to restore export price levels? First, they could reduce their supplies to the extent contractually possible. This could be a painful process, particularly if other exporters do not follow suit. From the exporting country's perspective, it would be more even-handed and the effect would be higher if it was joined by other exporting countries. Such a response would not necessarily have to be formalised between countries. It could be a logical reaction of all exporting states. But the stakes are high and reaching some form of joint understanding might be beneficial, at least between some of the key exporting countries. GECF, the international organisation among gas-exporting countries, could possibly become a vehicle to manage volume and price. It has to be noted here again that gas and oil supply processes differ structurally: this could impact the effectiveness of GECF as an instrument of price and volume management for producing countries.

4.4 UNCONVENTIONAL GAS

Emergence of unconventional gas

Unconventional gas is the collective name for tight gas, coalbed methane (CBM) and shale gas. The first two have been on the charts for quite some time. Tight gas developments were limited essentially because of cost. Over time, tight gas production has grown steadily, particularly in North America. CBM has been a success in North America for many years, but did not get off the ground easily in other parts of the world. Its economic recovery is not only affected by cost, but also by the geological nature of coal deposits. Other major "sweet spots" include Australia, and possibly China and India. The latter two, with their vast coal resources, offer much potential.

The unprecedented growth of shale gas production in the US has taken the international gas industry by surprise. Over a period of little more than three years, shale gas has totally changed the North American gas scene, turning it from a region with a declining indigenous supply base and a growing need for imports into one that is expected to be virtually self-sufficient for the foreseeable future.[30]

The switch to self-sufficiency in the US market had a considerable effect on the global gas market. It is quite likely that gas prices in the US will remain at levels around $4/MMBtu for the foreseeable future. This has changed the historic correlation with oil product prices.

Outside the US, in the Atlantic Basin and Qatar, various LNG projects were developed over the last five to six years, destined for the US market, as it was expected to show a growing supply deficit. These projects have now come on stream, only to find a well-supplied US market with gas prices that are possibly lower than the full LNG supply costs. The producers/owners of this LNG are now turning to other markets, some of which are also suffering from the recession. The growing demand from China and the aftermath of Fukushima have absorbed some of this LNG, but it is most likely that the international gas business, particularly in the Atlantic Basin, will be conducted under an overhang of supply

[30] EIA Annual Energy Outlook 2010 (http://www.eia.doe.gov/oiaf/aeo/index.html)

capacity until 2015 or beyond, depending on the speed and depth of the global economy's recovery.

A 'game changer' for the US, could it become a 'game changer' for the rest of the world?

The successful development of shale gas in the US has spurred the industry, analysts and governments to take a great deal of interest in its potential in other parts of the world. Shale gas successes along the lines of the US could have a significant effect on gas supply systems and the competitive position of imports.

Major shale deposits are indeed present worldwide.[31] Statistically, these may hold very considerably volumes of gas. Speculation over their potential contribution to gas supply is very high. However, there are many reasons why North American successes may not be repeated in other shale formations. First, the economic productivity of other deposits may offer very different results from area to area. The other hurdles are all of an aboveground nature. The number of wells needed to develop a shale gas field, combined with the difficulties or lack of incentives around the ownership of land and sub-surface, concerns about ground water, water treatment and disposal have a major impact on the local political environment. This could make it more complicated to develop a shale gas field, particularly in densely populated countries.

If such developments are given the green light, the measures and conditions that would need to be met could lead to higher production costs than experienced in the US, possibly countered by improved technology costs. Shale gas has already shown that it can create dramatic changes in the global supply outlook. From a (geo)political perspective, successful development of indigenous shale gas resources offers the promise of abundant gas, leading to lower prices, a contribution to the domestic economy, better environmental prospects (a larger share of gas in the fossil fuel mix) and less dependence on gas imports. In the US market, it undoubtedly changed the political energy agenda, since the country's direct interest in gas imports is reduced. Other countries, particularly Poland and China, could pursue such a development as well. A lower structural import dependence would temper concerns about gas as a geopolitical instrument in the hands of exporting countries.

Furthermore, shale gas has shown that, in case of proximity to markets and pipelines, it can be developed with relatively short lead times. This compares very favourably with conventional, long-haul supply investments. Unconventional gas made its debut in the US while investments in new LNG facilities were under way, and by the time that LNG came to market, unconventional gas had taken its place. This must be accepted as a business risk. For investors in LNG regasification terminals in the US, the risks are high that their investments will be underutilized. The combination of low domestic gas prices and the availability of these LNG regasification terminals have prompted market players to plan to refurbish these facilities for LNG exports, notably to the Asian and European markets where prices are considerably higher. Without any political obstacles, the first LNG exports may well come on stream in 2015. Interest in exports is considerable, so, depending on the outcome of the political debate over exports, substantial volumes of North American LNG may well enter the global market towards the end of the decade.

Similar situations of high domestic gas production could arise in other countries, currently relying on international long-term supply agreements. Successful development of unconventional gas in these countries, such as China, could extend the international supply overhang and put pressure on their import contracts, which form the backbone for the economic and financial robustness of investments in producing countries, which normally

[31] http://www.eia.doe.gov/neic/speeches/newell030210.pdf: Shale Gas, a game changer for U.S. and international gas markets? at Flame – European Gas Conference, Amsterdam – March 2, 2010

have a very long pay-back period. Political assurances of the performance of these contracts by the government of an importing country are not normally part of the package.

To summarise, the surge of shale gas production has undoubtedly changed the US perspective on energy policy, as evidenced by putting the development of gas supplies from Alaska on the back burner and more broadly through its international positioning on energy and concerns around international gas trade. The emergence of unconventional gas in other parts of the world as an indigenous source of supply (and potentially later also gas hydrates, given the programmes of Japan and Korea) would further reduce international gas trade potential and temper any concerns of geopolitical leverage around gas imports. However, it could also deprive gas exporting countries from an important source of income.

In the event that in countries dependent on imports, a further (unplanned and unforeseen) advance of indigenous unconventional gas production inhibits the ability of market players to honour long-term international supply contracts, this could have political implications.

4.5 Old and New Supply Models

The value of regional pipeline integration

There is a large difference in the (geo)political context of international pipeline gas business and that of LNG. LNG transactions are generally conducted on a business-to-business basis. Pipeline business has always required more government involvement, and was, for a long time, regarded as a positive contribution of the gas industry to geopolitical (regional) stability. Pipeline gas assumes intensive (regional) co-operation and creates interdependence. It can incentivise wider economic integration. These qualities are still important today, but relationships can change over time when the logic of collaboration shifts with market or policy changes. Commercial or technical incidents, economic downturns, transit problems, changes in energy policies and pricing issues can affect the framework in which the pipeline business was conceived and create discord between governments, leading to uneasiness over interdependence. This is exacerbated by the high stakes of international pipeline business; supply and purchase contracts with a total value of $10bn or more are no exception. In various regions, there are examples of governments and market players who have become concerned about the dependence on fixed pipeline supply links to a single producing country and have chosen to develop the more flexible LNG option. Such an option does not necessarily offer the most economic solution and may also alienate the producing and consuming governments connected by a gas pipeline. This can in turn create a public perception that the international natural gas trade carries high geopolitical risks, and a dependence which is to be avoided or at least limited where possible.

To summarise, regional gas market integration with pipelines and market-reflective long-term supply contracts not only helps to alleviate energy shortages in the region, but offers a strong foundation for regional co-operation and prosperity. The corollary of such close collaboration is that over a period of 20 years or more, commercial or policy tensions are to be expected and that conflicts can more easily have an undesirable (geo)political fall-out. Awareness of this risk will help to create contractual and diplomatic early warnings and remedies to avoid escalating political conflict.

Towards flexible LNG (and pipeline gas)?

In recent years, a number of LNG producers – notably those aiming for the liberalised markets of the Atlantic Basin – moved away from the traditional model based on long-term contracts. In the context of high gas prices and a seller's market in the period up to 2008, producers were driven mainly by the expected demand for LNG by the US market and the pursuit of arbitrage opportunities between the US, Europe and Asia.

To realise the value of arbitrage opportunities, LNG producers moved to business models offering more destination flexibility of supply. Financially strong producers or third-party

aggregators buy LNG produced in joint ventures with producer countries, mostly under long-term contracts. Subsequently, they dispose of it, either in the form of LNG to buyers under short- or medium-term contracts, or by taking the LNG to a (liberalised and liquid) market, regasifying it and selling it directly in the market.

The LNG not committed to a specific market is commonly known as “flexible” LNG. Flexible LNG is likely to become a truly global commodity, looking for markets where it can realise the best netback value. In addition, more flexibility was introduced in long-term supply contracts under which, mostly by mutual agreements, volumes can be diverted to other buyers.

For internationally traded pipeline gas, a shift away from long-term supply contracts to short-term supplies and flexibility has been more cautious. In Europe, producers from Norway and Algeria, the Netherlands, and Russia have started to produce and trade gas on short-term/spot basis. In Asia and South America, long-term contracts still form the basis of international gas business, but changes in contracts and contractual flexibility are also developing in this region, albeit at a slower pace. Volumes of this “flexible” pipeline gas are still relatively small, compared with the contractual long-term business.

Vertical integration
Increasingly, and also as a further consequence of flexible LNG (and pipeline gas), producers seek to advance their position down the value chain, taking positions in liberalised markets to enhance their ability to find profitable outlets for their gas. Direct marketing in high volume market sectors by LNG (and pipeline gas) producers in consumer markets is a growing feature of liberalised markets, notably in Europe.

Globalisation
The globalisation of LNG trade did not begin until after 2000. Initially, LNG trade was concentrated in the Atlantic Basin and the Asia-Pacific Basin, respectively; the connection between these two regional markets is only a relatively recent development. The emergence of Qatar as the most significant LNG supplier has made the gas market intercontinental. Qatar’s geographic position makes it possible to supply both the European and the Asian markets at similar cost, while the US market is also within competitive reach. Both European and Asian markets are interested in acquiring LNG from Qatar, and Qatar producers have also been interested in diversifying their sales portfolio. Australia is rapidly developing into a major LNG producer, and over time may find itself in competition with Qatar for first place. It is targeting almost all its volumes to Asia, which is geographically and economically rational and manageable so long as this premium market continues to grow at the current rate. If not, it may find that Qatar will not be prepared to give up its market share and this may lead it to extend its market beyond Asia.

Flexible gas and security of supply
If the trend towards shorter-term contracts and more flexible natural gas persists, the traditional form of security of supply and demand through long-term contracts will be replaced by one that relies on the working of a (global) market. Flexible LNG and pipeline gas can alleviate the impact of disruptions or higher winter demand, but at a price topping other markets and provided there are no other factors of a commercial, logistic or political nature limiting availability. In this way, it has the potential to enhance security of supply for consumer countries. This will be a market with little or no room for special government-to-government relationships. The LNG business, with its greater inherent flexibility, is better suited than the pipeline gas trade for such development. The overall effect of an increasing supply of flexible gas on supply security could be significant. Its impact may depend on:

- the (global) supply/demand situation: in a buyer’s market, security concerns – and natural gas prices – will be low; in the event of a tight market they can be high;

- The portfolio position of markets and market players: a broad portfolio of supplies and supply options reduces security risks, even to the extent that flexible supplies may be considered to enhance security.

If governments take the view that a transition to flexible gas requires more measures to ensure supply security, this may come at an extra cost for the market (and consumers).

4.7 In conclusion

Since pipeline gas exports depend more on rigidly interconnected infrastructure and long-term production arrangements, gas sector arrangements tend to carry an intrinsically longer-term and strategic character than, for instance, oil, where international markets are more deeply integrated. With some markets becoming more import-dependent, natural gas will have to travel further from the wellhead to the final consumer, crossing through more jurisdictions and playing a strategically different role along the way.

The cost of security of supply increases when alternative routes or types of transportation must be developed to satisfy the security of demand and supply needs of both the supplier and consumer. The attraction of LNG lies in part in its diversity of supply, the smaller quantities and the avoidance of transit countries, which may exert their “nuisance” power over pipeline corridors. However, LNG is not without its own supply security risks. It relies on the same shipping routes as crude oil. Some of these routes are vulnerable to substantial geopolitical risks.

The emergence of flexible LNG, together with the tendency of producers to further integrate their control of the value chain by moving into consumer markets, creates changing business dynamics and new stresses and strains that policy-makers must resolve. It is likely that the organisation of the energy sector, including natural gas, will be influenced by these developments:

- If policy makers find it necessary to respond to the new business models of short-term, flexible supplies by imposing costly security measures or even by limiting the share of gas in the country’s energy mix, the overall effect may not be in society’s best interest. Similarly, the emergence of flexible gas could lead to more public or private investments in infrastructure to enhance optionality and/or security, at a cost.
- More vertical integration could run counter to attempts by regulators and policymakers to create a competitive market, particularly if measured by market liquidity and the number of players. Opening markets for external producers or traders could also lead to demands for reciprocity to access resources.

Recent developments in the natural gas sector, such as changing business models, the emergence of unconventional sources and the associated changes in gas prices, have radically changed the outlook of importing and exporting countries and businesses. Combined with the economic downturn in some important consuming countries, the tight markets of recent years transformed into amply supplied markets for years to come. These changing market conditions will unquestionably have an impact on national energy policies, and possibly international relations. It will be interesting to see whether the new dynamics of the market under new business models will instil sufficient confidence; for producing countries in securing a fair value for their resource and for consuming countries in an efficient commercial business environment as well as an adequate security of supply and demand. If not, a geostrategic response can be expected.

Chapter 5
International organisations, policy instruments and their impact on natural gas

5.1 GOVERNANCE

Energy's importance is reflected by the number of international organisations that concern themselves with it. Some organisations are concerned with a single fuel, such as the Organisation of Petroleum Exporting Countries (OPEC) for oil. There are also charters and agreements among various groups of governments, and also security organisations, such as NATO and the SCO that concern themselves with energy matters. The World Bank also deals with energy matters. In 1974, the International Energy Agency was established to deal with oil security of supply matters, but it increasingly became concerned with other energy policy matters, such as natural gas, when its importance increased in the member states' energy balance.

Natural gas has, until recently, enjoyed relatively little attention from international organisations, at least not at the government level, showing that internationalisation has not yet led to the type of engagement among states that would lead them to coordinate their interests. The Gas Exporting Countries Forum (GECF) is a newer organization (2001), which established a secretariat in Doha, Qatar in 2008. The International Energy Forum, previously known as a producer-consumer dialogue, started as a dialogue on oil, but from its ministerial meeting in Amsterdam in 2004 onwards included also natural gas on its agenda. The International Gas Union (IGU) is a much older organisation (1931), and brings together the natural gas branch organisations and companies of 73 countries.

Parallel to the development of international markets and natural gas trade, international dialogue and co-operation is becoming increasingly important, not only to discuss market developments, but also to address issues such as security of supply and demand and the impact of climate change policies. In this context, a clearer appreciation of the role that natural gas can play in meeting future demand for low-carbon energy is an essential prerequisite for developing a global policy framework in which natural gas can make its fullest contribution. Regional institutions have an important contribution in offering perspectives and governance structures for future energy systems, as do international organisations. In this report, the following sections discuss the four main international governmental institutions that deal with energy issues and natural gas in particular, and the IGU and its contribution to the international debate.

5.2 INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA) is an autonomous intergovernmental organisation within the Organisation for Economic Development and Corporation (OECD) that acts as energy policy advisor to its 28 member countries[32] in their effort to ensure reliable, affordable and clean energy. The IEA was founded in November 1974, in the aftermath of the 1973 oil crisis.[33] The founding aims and working procedures of the IEA are laid down in the November

[32] Only the OECD member states can become members of the IEA. All OECD member states are members of the IEA, excluding Iceland and Mexico. There are 28 member states: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States. The European Commission also participates in the work of the IEA. Norway has a special agreement for oil crisis situations.

[33] Richard Scott, *The History of the IEA 1974-1994, IEA the FIrst 20 Years, Vol. I, Origins and Structure*, OECD/IEA, 1994 retrieved at http://www.iea.org/textbase/nppdf/free/1990/1-ieahistory.pdf; and Bassam Fattouh and Coby van der Linde, Twenty Years of Producer-Consumer Dialogue in a Changing World, IEF, 2011 retrieved at http://www.ief.org/20/Pages/index.aspx.

1974 Agreement on an International Energy Programme (IEP).[34] These can be summarised as follows:

> *i)* co-operation among IEA participating countries to reduce excessive dependence on oil through energy conservation, development of alternative energy sources and energy research and development;
> *ii)* an information system on the international oil market as well as consultation with oil companies;
> *iii)* co-operation with oil producing and other oil consuming countries with a view to developing a stable international energy trade as well as the rational management and use of world energy resources in the interest of all countries;
> *iv)* a plan to prepare participating countries against the risk of a major disruption of oil supplies and to share available oil in the event of an emergency.[35]

The IEA's central role is to co-ordinate measures in times of oil supply emergencies, which it did successfully during the 1990 Persian Gulf War, the 2003 Iraq War and in response to Hurricane Katrina, which struck the Gulf of Mexico in 2005. Though oil market security remains at the IEA's core, policy dialogue now involves all energy sectors that are commonly grouped under the "Three Es" of balanced energy policy making: energy security, economic development and environmental protection.

International Engagement

The IEA's desire to deepen dialogue with key non-member countries such as China, India, Russia and last but not least, OPEC and the Middle East, reflects progressive oil market integration and a relatively more co-operative climate between the emerging economies of oil-producing regions and the mature oil-consuming market economies of the IEA's membership. This facilitated the IEA's shift from a relatively defensive club of mature market economies concerned with short-term security of supply, to a more open platform for international dialogue and engagement on global energy security policies and long-term economic sustainability. Current work focuses on climate change policies, market reform, energy technology collaboration and outreach to the rest of the world.[36] However, though IEA has recently taken on a "green" label and evolved into a globally acknowledged institution for international energy policy dialogue, it's *raison d'être* remains vested in the fossil fuel economy and the OECD's market model.

The oil reflex to step on the gas

The IEA does not have a formal mandate to set-up a crisis mechanism for gas market security, similar to the one the geopolitical dynamics of the early 1970s bestowed upon it for maintaining oil market security. Still, there are striking similarities between past geopolitical oil market dynamics, now largely overcome, and the geopolitical gas market dynamics at play in some parts of the world today. In the 1970s, oil producing and consuming countries were deeply divided over the organisation and ownership of the value chain. In the 1980s, energy efficiency and development of independent supply regions such as the North Sea formed part of the policy response to the difference in opinion about market organisation. Today, enhancing the role of alternative energy sources and diversity of supply from independent gas sources, for instance from the Caspian region, is an echo of this pattern; what the North Sea was to oil market security in the 1970s, the Caspian, LNG and unconventional sources appear to be to Eurasian gas market security today.

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[34] Lastly amended on the 25th of September 2008, retrieved at http://www.iea.org/about/docs/IEP.PDF.
[35] Richard Scott, *The History of the IEA 1974-1994, IEA the First 20 Years, Vol. I, Origins and Structure,* OECD/IEA, 1994 retrieved at http://www.iea.org/textbase/nppdf/free/1990/1-ieahistory.pdf.
[36] International Energy Agency (2010) retrieved at http://iea.org.

At times in the recent past, the IEA voiced strong opinions on gas sector developments in Russia and elsewhere. Gas security has certainly featured on the Ministerial agenda. The IEA also has taken a strong profile on environmental sustainability, energy efficiency and technology co-operation launched at the G8 summit in Heiligendamm, Germany. While these are certainly important contemporary issues for IEA involvement, they risk crowding out the more robust and traditional engagement of the IEA on market structure and sector reform with energy producing regions in favour of overall market integration in the global fossil fuel economy.

The annual publication of the World Energy Outlook (WEO) is held in high esteem and is widely used as an authoritative projection of global energy supply and demand. In 2011, the IEA also published its paper "Are We Entering a Golden Age of Gas?" in which it focused on the role that gas can play in a future low-carbon energy system. With this publication, the IEA has made a significant contribution to medium- and longer-term analysis of gas market trends.

The IEA has a coal industry advisory body (CIAB) that analyses coal industry developments and reports on these, among others, in meetings with the IEA governing board. The IGU and the IEA could consider the creation of a similar body or another appropriate industry-government dialogue structure to ensure that the position of the gas industry is further embedded in international policy debates.

The diversity of gas policies across gas-consuming countries and the IGU's representation of the industry across the full value chain offer a basis for a balanced approach and a broad common security agenda. The IEA can contribute to a greater awareness of global gas security issues, but, just as in oil, international organisations can only build where there is a political mandate.

5.3 THE ENERGY CHARTER TREATY

The 1991 Charter declaration marked the first sovereign expression by former cold war foes in favour of multilateral co-operation and the supremacy of market economic principles over centrally planned systems in energy commerce. The 1994 Energy Charter Treaty provides a valuable energy policy framework that sets legally binding rules for the conduct of energy trade and transit as well as for investment among its contracting parties. Additional approaches[37] might complement or strengthen the baseline the Charter sets among its signatories or serve as a model for energy sector co-operation in other regions. Though the conception of the treaty may have been triggered by transitional requirements, it sets the only multilateral legally binding standard in energy commerce (investment and trade) from which non-member countries can also take guidance. The current state of international relations makes successful conclusion of new legally binding instruments increasingly elusive. Looking forward, the Charter may emphasize policy objectives and work through peer review mechanisms and diplomatic engagement with non-member countries rather than legal procedure to achieve its goals.

The big bang and the expanding marketplace

The policy dynamics that played out in the wake of the Soviet Union's demise greatly contributed to the rapid adoption of the Lisbon Energy Charter Treaty and a separate Protocol on Energy Efficiency and Related Environmental Aspects in 1994 (the Treaty). However, over time, there has been a growing perception that the treaty allegedly discounts Russian producer interests and rather favours European Union consumer interests that focus on the notion of freedom of transit and access to resources.

[37] E.g. A Global Code of Conduct proposed by Yazev, The concept of President Medvedev to work towards a comprehensive convention, in addition to initiatives on energy security launched in the context of the UN, NATO and OSCE.

With nearly two decades of unpredictable energy market evolution and policy dialogue, the Russian government of Prime Minister Putin decided to withdraw from provisional application according to art. 45(3), by submitting a respective instrument to the Portuguese government on August 24, 2009, which entered into force 60 days later.[38] According to certain experts, the decision taken by the Russian government on July 30, 2009, is tantamount to a withdrawal from the Treaty.

Aside from Australia, Belarus, Norway and Iceland, all 46 other Treaty signatories, including Russia, have ratified and continue to participate in the work of the Energy Charter Conference and its subsidiary bodies. The Treaty continues to serve globally as a model for a dialogue on energy sector development in Eurasia on the basis of WTO-inspired free trade principles and the rule of law. To some, however, the expeditious conclusion of these multilateral negotiations in the 1990s is exactly what pre-empts genuine Russian engagement in today's changed geoeconomic circumstances.

Russia, however, continues to play an active role in the Charter Conference – to which it provides a vice chairman – and in its permanent secretariat, in which the quasi-political office of the deputy secretary general is held by a senior Russian diplomat. The Russian government's apparent disengagement from the legally binding Treaty remains of concern to the international energy community and to certain policy circles in Russia itself.

In 2009, President Dmitry Medvedev launched a concept to keep Russia on board. His proposal includes that "in energy relations, it is necessary to be guided by the experience in implementation of the Energy Charter documents and approaches stipulated in the G8 Declaration and Plan of Action on Global Energy Security approved by the St. Petersburg Summit in 2006."[39] This concept provides an opportunity to take a fresh look at the Energy Charter process and Treaty and the general legal architecture for energy trade and investment with Russia.

A brief assessment of the Energy Charter Treaty in time

The political significance and utility of the Energy Charter process should not be underestimated. The Energy Charter Treaty was very useful in promoting foreign direct investment in non-OECD countries in the early 1990s and in familiarising OECD and FSU countries with each other's system requirements. It still provides the experience and the common denominator acknowledged by 50 states that can make an important contribution to tackle the rising challenges in energy market governance.

Keeping Russia actively engaged in the process and expanding the Charter's global reach will certainly augment its international appeal. The alternative will be to accept a system of greater state competition between producer and consumer interests and the geopolitical and supply-specific risks this implies, with bilateral, supply-specific governance agreements for international business transactions.

5.4 THE GECF

From an economic as well as a political point of view, gas-exporting countries, including Russia, may wish for a form of managing their supply capacity and trade flows.[40] So far, co-operation in the interregional gas market has only just begun to take shape in the form of the

[38] This terminated the treaty's provisional application in Russia on the 20th of October 2009.

[39] *"Konceptual'nyj podchod k novoj pravovoj baze mezhdunarodnovo sotrudnichestva v sfere energetiki (celi I principy)"* President of Russia, Official Web Portal, 21 April 2009, retrieved at http://www.kremlin.ru/text/docs/2009/04/215303.shtml.

[40] CIEP (2008), *The Gas Supply Outlook for Europe: The Roles of Pipeline Gas and LNG*, The Hague: Clingendael International Energy Programme.

Gas Exporting Countries Forum (GECF).[41] The member states of the GECF together hold about two-thirds of world conventional gas reserves. Together, they are responsible for almost 50 percent of total exports.[42] Though long seen as an informal club with little or no cohesion[43], the GECF has gained much traction since 2006 and, in December 2008, decided to transform into an international organisation.[44] According to its mission statement, "the GECF was set up with the objective to increase the level of coordination and strengthen the collaboration between member countries. The forum also seeks to promote dialogue between gas producers and consumers."[45]

Towards a gas-OPEC?

The direct comparison between the GECF and OPEC, or referring to it as a "gas-OPEC", can be misleading because of the structural market differences. The functioning of a group examining the common interests of gas-exporting countries is not the same as the quota-driven OPEC, which sometimes regulates prices almost overnight in a global and liquid market. With the current structure of the gas markets, exporters' market power is limited through long-term contracts. This limits the possibilities of cartel-like behaviour.[46] In the perception of many Western countries, however, the GECF may risk becoming a collusive organisation. This perception comes from the fact that many GECF members are also OPEC members, e.g., Iran, Algeria and Venezuela. With the addition of a secretariat and a secretary general, who took office in February 2010, the GECF has become more institutionalised.

The medium of co-operation between gas-exporting countries

The GECF appears to be geared towards the regulation and co-ordination of long-run investments, which may – with the emphasis on "long-run" – determine a certain level of gas supply, traded either in long- or short-term contracts. The mechanisms for further co-operation in the GECF can consist of the following:

1) Limiting flexible supplies[47]
2) Co-ordinating capacity expansions
3) Co-ordinating pricing regimes in contracts. The group had several significant meetings between 2006 and2008, most notably one that involved the formation of a high-level "pricing group" (see below).
4) Shared investments: An ultimate step in avoiding price competition in the long run, as the industry matures, would be establishing common sale consortia centred on common gas production, transport and storage. Given the widely diverging interests amongst gas-exporting countries, this form of co-operation is not very likely to arise on a broad scale.
5) Market division of regional and sub-regional markets is a possibility for long-run pipeline and LNG flows.

Gas-exporting countries are often oil-producing and exporting countries as well, and thus the relative value between both fossil fuels is an important factor in decision-making. In light of the above, co-operation between gas-exporting countries is aimed further at recovering for gas the same or greater value per unit of energy as oil, i.e., what they perceive to be the intrinsic value of their gas resources. If successful, co-operation between gas-exporting

[41] The official member countries are: Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Libya, Nigeria, Qatar, Russia, Trinidad & Tobago, and Venezuela. Kazakhstan, Norway and the Netherlands have the status of observer (GECF 2009). In the past, Brunei, Indonesia, Malaysia, Oman, Turkmenistan, and the UAE have participated at different ministerial meetings (CIEP 2008).

[42] IEA (2009b), *Natural Gas Market Review 2009*, Paris: International Energy Agency.

[43] Hallouche, H. (2006), *The Gas Exporting Countries Forum: Is it really a Gas OPEC in the making?*, Oxford: Oxford Institute for Energy Studies.

[44] IEA (2009b), *Natural Gas Market Review 2009*, Paris: International Energy Agency.

[45] www.gecf.org

[46] IEA (2009b), *Natural Gas Market Review 2009*, Paris: International Energy Agency.

[47] Algeria's energy minister, Chalib Khelil called in March 2010 on other gas-exporting countries for a co-ordinated effort to restrict gas production amidst historically low spot prices in Europe and the US, *Financial Times*, 'Algeria calls on gas exporters to boost prices by cutting output,' March 17, 2010.

countries will likely be tested in times of a buyer's market, when downside risks materialise (e.g., the collapse of short-term prices, which can spill over into long-term contracts). In the interregional gas market, very long-term commitments would be needed to sustain effective co-operation *across all* regional and interregional projects.[48] Other forms of co-operation that do not include a cartel *per se* are imaginable.[49] It would be possible for the forum to be more proactive in regulating how natural gas is traded, collecting data, coordinating policies, and consolidating co-operation between its members.[50]

The impact of geopolitics on the GECF

The impact of geopolitical developments on co-operation between gas-exporting countries is a two-way street: certain geopolitical factors, such as relations between the US and Russia and between Russia and Europe may intensify and further politicise the GECF. As noted above, the various member states of the GECF have differing positions regarding the organization; Iran and Venezuela are the organisation's so-called political hawks, despite the fact that they do not export any gas. Algeria has in the past favoured a tough commercial position vis-à-vis gas-consuming countries, while Russia and Qatar appear to have a more market-reflective posture. Geopolitical relations between these countries themselves and between them and gas-consuming and importing countries can further influence its nature as either a geopolitical organisation or an economic-strategic one. Russia's status in the international political system as a great power and a geostrategic player with the largest conventional gas reserves profoundly impacts the character of both the GECF. It should be noted that the GECF also publicly claims to seek a stable relationship with gas-consuming countries, where the IEF plays a potential bridging role. In the first instance, co-operation in the international and regional gas markets is more economic-strategic in nature than geopolitical.

Conversely, developments in the gas market(s), especially in the area of pricing and the rise of new business models, may propel the GECF towards more economic-strategic co-operation. The geoeconomic nature of potential market division between GECF members is of an economic-strategic nature, as are other forms of co-operation (as mentioned above), especially at the firm level, where government policies of the various gas-exporting countries influence investment decisions. The further evolution of business models and pricing patterns, and certainly the current LNG supply overhang, may encourage greater co-operation between gas-exporting countries and may call on greater formality of co-operation with binding agreements. In this regard, the liberalisation dogma initiated by OECD countries (primarily pertaining to gas markets in the US and Europe) and the corresponding price and other downside risks, have triggered and encouraged greater gas-exporting country dialogue. If governance of the value chain fails to take these different interests into account, this could in turn also further politicise relations between gas-exporting countries on the one hand and gas-consuming countries on the other. At a meeting in April 2010, the GECF countries reaffirmed their commitment to oil-indexation as a valuation principle. A unanimous move by gas-exporting countries to form a common front against consumer countries on such an essentially strategic-economic issue (within a cartel-like organisation) may possibly morph the GECF into a more geopolitical grouping. It has to be noted however, that the gas industry differs structurally from the oil industry and this may limit the effectiveness of such a move, not to mention the impact that successful, large-scale unconventional gas developments could have on the gas industry.

The IGU, with its comprehensive representation of the gas industry across the value chain, should consider what its relationship with the GECF should be and how they can develop a structured dialogue to address matters of common interest.

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[48] Finon, D., *Op. Cit.*, November, 2007.

[49] Feygin, V. and Revenkov, I., "Gas OPEC" or other forms of interaction, 21 August 2007, *Russia in Global Policy*.

[50] Bahgat, G., Op-Ed: Prospects for a Gas OPEC, *Middle East Economic Survey*, January 12 2009.

5.5 THE INTERNATIONAL ENERGY FORUM

The IEF is a platform for further co-operation between energy consumers and producers. It was designed to help bridge the gap between IEA and OPEC countries and has evolved into considering wider energy issues. The organisation acts as a conduit for discussing cross-cutting issues in the energy sector, concerning both producer and consumer countries. "In addition to informal plenary discussions, the IEF provides an important venue for bilateral contacts between ministers and also with top level executives from the energy industry, as they participate in the International Energy Business Forum (IEBF) that precedes the Ministerial IEF. The Ministerial IEF and the IEBF provide valuable insights into the key concerns of policy-makers and industry leaders. Drawing on the conclusions the IEF secretariat prioritises its work programme to reflect the key issues and find practical ways to enhance global energy security through improving market transparency, investment and sustainability."[51]

With the agreement to create a joint oil data initiative (JODI) in 2001, the establishment of a secretariat and the establishment of the IEF Business Forum in 2004 (when energy CEOs meet with the ministerial forum), the IEF was able to become a more relevant player, bringing producing and consuming countries together. Since 2008, the IEF has organised a joint forum with the IGU, allowing oil and gas issues to be discussed together in combined ministerial and business settings.
The JODI followed the call by ministers at the 7th IEF in 2000 to do something about the lack of data transparency, which was seen to cause excessive oil price fluctuations. With the active participation of the Asia Pacific Economic Cooperation (APEC), the Statistical Office of the European Communities (Eurostat), the International Energy Agency (IEA), the Latin American Energy Organisation (OLADE), the Organisation of Petroleum Exporting Countries (OPEC) and the United Nations (through the UN Statistics Division), the JODI is now acting as a permanent mechanism managed by the IEF Secretariat. The JODI World Database works towards a further improvement of the quality and transparency of international oil statistics. More than 90 countries, representing more than 90 percent of global supply and demand, are now submitting data covering production, refining, demand and stocks of seven product categories: crude oil, LPG, gasoline, kerosene, diesel oil, fuel oil and total oil.

The Jeddah process started in the summer of 2008, with a follow-up in London, to discuss increasing political concerns about energy market volatilities, due to unprecedented increases and decreases in oil prices and how these volatilities related to developments in financial markets. These volatilities also significantly impeded adequate and timely energy sector investment. On February 22, 2011, a new charter was signed in Riyadh, Saudi Arabia, strengthening the architecture of consumer-producer dialogues and helping to mitigate volatility. This is underpinned by further trilateral IEF/IEA/OPEC co-operation, in areas such as future energy trends, physical and financial market linkages, energy market regulation and data transparency.

Since 2008, the IGU and IEF have co-host two ministerial meetings on natural gas. Here, the IGU can connect the concerns of natural gas business around the world with the discussions of the ministers, who are represented in so many organisations. There have been two joint IEF/IGU Ministerial Gas Forums to date, the first in Vienna and the second in Qatar in November 2010. Although the agenda covers a range of issues important for the natural gas business and governments of producing, transit and consuming countries, ministerial attendance could be improved upon. Meetings should perhaps be scheduled close to other meetings where wider ministerial attendance is more certain. Also, the agenda could be further developed to include issues that pose real problems in international gas relations and issues that address the ministers' policy agendas. The IGU should not shy away from more

[51] IEF, http://www.ief.org/.

difficult themes, such as the integration of renewables in the energy mix and the role of natural gas or issues of transit route security, or the pros and cons of certain gas market designs. With the inclusion of natural gas on the IEF agenda in 2006, much has already been achieved, but not all possibilities have been exhausted.

It seems to be in the interest of the gas industry and the IGU to cooperate closely with JODI when it comes to clearly defining the relevant criteria and definitions regarding data about global gas markets. The IGU should consider to what extent and in what format a further enhancement of relations and co-operation with the IEF should be appropriate, taking due account of the fact that the gas industry tends to be more vertically integrated than the oil industry.

5.6 ENERGY NGOS OTHER THAN IGU

NGOs, apart from the IGU, that include gas in their agenda are the World Petroleum Council (WPC) and the World Energy Council (WEC).

The World Petroleum Council (WPC) regards itself as the world's premier global oil and gas forum and the only international organisation representing all aspects of the petroleum sector. The WPC's prime function is "(…) to catalyse and facilitate dialogue among stakeholders, both internal and external to the petroleum industry on key technical, social, environmental and management issues (…)". By its own statement " *the WPC does not have a formal position on issues* but does act as a forum to bring together in dialogue the various sectors of society that have views on specific issues. WPC is a non-advocacy, non-political organisation and has accreditation as a Non-Governmental Organization (NGO) from the UN". The WPC organises the World Petroleum Congress, held every three years and generally attended by industry representatives as well as government leaders.

The World Energy Council (WEC) regards itself as "the foremost global and inclusive forum for impartial dialogue and thought leadership on our common energy future", with a network of 93 national committees, including governments, industry and expert institutions. Its mission is "to promote the sustainable supply and use of energy for the greatest benefit of all". Every three years, the WEC holds the World Energy Congress, attended by captains of industry from the electric power sector and senior representatives from many governments.

The WEC has a strong organisation: its membership is vested in autonomous country Member Committees, whose members reflect a range of local and national energy companies, *government departments* and organisations. In addition, it has a well-staffed permanent secretariat, which among other things co-ordinates the execution of a work plan and has the professional competencies to co-ordinate, deliver and communicate the reports and studies of its work plan to external stakeholders.

The global coal industry is involved in dialogue with governments and policymakers through the World Coal Institute (WCI), which has created various formal fora addressing coal-related policy issues. The WCI and its member companies engage constructively and openly with governments, the scientific community, multilateral organisations, non-governmental organisations, media, coal producers and users, and others on global issues, such as CO_2 emissions reduction and sustainable development, and on local issues including environmental and socio-economic benefits and the effects of coal mining and coal use.

The WCI's mission is threefold:

- First to deepen and broaden understanding amongst policy makers and key stakeholders of the positive role of coal in addressing global warming, widespread poverty in developing countries, and energy security;

- Second to help create a political climate supportive of action by governments to include coal in national and regional energy portfolios; CCS in climate mitigation strategies and plans; coal technologies in environmental strategies; and coal-to-liquids technologies (CTL), with CCS, in energy security considerations.
- And third, to inform and educate communities of the benefits of coal, the contribution that can be made through CCS and other advanced coal technologies, and the constructive role played by the coal industry in improving its environmental performance, enhancing energy security, and strengthening social and economic development.

The WCI has a structural involvement with and participation in various international organisations. It has Category II Consultative Status with the UN Economic and Social Council, and Consultative Status with the UN Industrial Development Organisation. The WCI also attends meetings of the UNFCCC and Kyoto Protocol on Climate Change (as an NGO observer).

The WCI is a member of a number of organisations active in the energy sector, including the Carbon Sequestration Leadership Forum, the European Commission Berlin Forum, the International Chamber of Commerce, the International Energy Agency Coal Industry Advisory Board, the United Nations Economic Commission for Europe and the World Energy Council.

5.7 INTERNATIONAL GAS UNION (IGU)

History and objectives of the IGU

The International Gas Union (IGU) was founded in 1931 as a worldwide non-profit organisation. The IGU's objective is to promote the technical and economic progress of the gas industry. According to its Articles, it organises periodic international conferences, co-operates with other international organisations concerned with energy, stimulates the exchange of information and cultivates co-operative relations amongst its members. The IGU's more than 100 members are national gas associations and the industry's major gas companies, from 73 countries. The members represent about 95 percent of the global gas markets. IGU's vision statement is very clear: "Recognising that natural gas has an important part to play in satisfying the global need for an environment-friendly energy source, IGU will be *the most influential, effective and independent non-profit organisation, while serving as the spokesman for the gas industry world-wide".* This covers a very broad range of issues. Its mission statement focuses on economic and technical matters and includes:

- "IGU will *actively, directly* and through its members promote the technical and economic progress of the global gas industry";
- In so doing, the organisation aims to "(...) enhance partnership with industry and manufacturers, *and co-operation with Governments, policy makers and international energy related organisations, (…)*".

The joint IEF/IGU Ministerial Gas Forum illustrates the IGU's potential to make a more active and visible contribution to the global energy community, in particular towards the political stakeholders and policymaking arenas. In addition, the IGU has also actively engaged with multilateral organisations like the UN and the IEA on sustainability and energy issues.

What else can the IGU do?

The IGU has an ambitious vision statement. The organisation is primarily geared towards the co-ordination of activities by its constituents for delivery at the World Gas Conference, a premier event for the gas industry. The diversity of its constituency across the entire value chain legitimises – and at times may also constrain – the IGU's ability to act as a voice for the industry. There are some important issues to address and messages to convey to and debate with external, and particularly political, stakeholders:

- Establish wider understanding of the specific characteristics of the gas business, especially around production, marketing and transportation, and why it differs from oil and other fuels in its international business;
- Obtain further recognition of the interdependence and interaction between the gas industry and governments – probably more than there is for other fuels – and appreciation that new international gas developments depend vitally on political support along the full supply line;
- Act as an effective interface between industry and government in promoting the advantages of natural gas as a preferred energy source to form part of a low-carbon future.

The challenge for the IGU will be to further develop the formulae and processes to create and use more opportunities to engage external stakeholders in achieving its stated objectives. The IGU has a strong constituency and should be able to capitalize on its authority to serve the interests of the gas industry by establishing a broader understanding of the nature of the gas business and its potential contribution to societal goals, both directly and through its regional and national gas associations. It could be achieved by developing the IGU as the focal point for gas matters and by organising discussion platforms, particularly with policymakers. Organising platforms can be done either on the IGU's own strength or through structured co-operation with other international organisations.

The IGU is well positioned for an active role in international (gas) relations because of its membership, representing the full value chain. In the context of this study on geopolitics and natural gas, we have concluded that most (potential) disputes or areas of tension are in the commercial or strategic economic area, the IGU should be able to create a framework in which members can mediate to prevent these issues developing into a political, strategic or geopolitical issue. Very often, when gas becomes part of the geopolitical agenda, other regional or geopolitical differences are in play as well and matters become an issue not of companies or branch organisations in countries, but of the government itself. From a geopolitical perspective, the IGU's role could be to help avoid, where possible, the development of instances where gas is perceived as an instrument of geopolitics, for example by promoting transparency and dialogue. The joint meeting with the IEF and more formalised engagements with organisations such as the IEA offer valuable platforms for such action.

In this time of social media and near-instant communication, the IGU should also develop its digital presence as an international focal point for gas matters, advocacy purposes and other gas studies. , by, The IGU website should be a portal to access gas facts and analytical studies, including policy matters. Such a website could also be a source of information on how gas functions in the energy mix of countries, including in a lower-carbon mix, but also provide insights on storage, pipelines, investments, governance issues, and other industry-related matters. In this way, the IGU would become a knowledge carrier for other stakeholders in energy and the wider society.

In general, the gas industry, perhaps because of its technical focus, tends to communicate most intensely with itself. With the growing internationalization of gas, communication with other (energy) sectors and with governments and representatives of myriad international organisations will become even more important to further the case of gas and to show the sector is vital and willing to make a distinct contribution to international debates around future energy issues.

5.8 A PATCHWORK OF GOVERNANCE

Many organisations are involved in energy policymaking and energy relations, each covering a certain aspect or interest in the value chain. The important gatherings of the G8 and G20 have not been covered here, despite their impact on climate change discussions and the

economic governance that is being discussed there. Also the UNFCC was not covered, even though we realise that a framework for climate change, when concluded, will have a tremendous impact on the energy business in the future, including natural gas. The evolution of the producer-consumer dialogue into the IEF and its function as conduit for the variety of organisations is important, also to streamline governments' position. In that regard, the IGU has made an important decision to co-host ministerial meeting on natural gas, and connect the concerns of the natural gas business around the world with the discussions of the ministers, represented in so many organisations. Also, the IGU, with its comprehensive representation of the gas industry across the value chain, should consider what its relationship with the GECF should be and how they can develop a structured dialogue to address matters of common interest. With regard to wider geopolitical and geoeconomic developments, the IGU should also consider linking up with the IEF and the IEA at important meetings of the G8 and G20 to get the gas message across. It is here that the overarching context for the natural gas sector is determined. The IGU could help create an atmosphere of confidence among businesses and governments with regard to international natural gas developments. The unique organisational structure and the geographically dispersed offices of past, present and future presidents offer the potential to span geopolitical divides and national organisational differences among states. The continuity of these offices can be a great asset in today's dynamic international relations and provide the glue that keeps the patchwork together.

Chapter 6
Conclusion

As natural gas trade expanded across national and regional borders, geopolitical dynamics were par for the course. The natural gas industry is coming of age as an international sector after many years of national and regional development. In many countries around the world, natural gas is an important fuel for households and the transport, industrial and power sector. Not so long ago, the international natural gas sector was geographically divided into distinct regional markets: the US, South America and Europe, supplied mainly by pipelines; and Asia, supplied by LNG. Improved economies of scale and scope in LNG unlocked vast Middle East reserves for the international market, and equally importantly, connected the previously separated Pacific and Atlantic basins. The prospect of converging gas prices appeared on the horizon with the impending growth of LNG imports in the US and Europe, but did not materialise, illustrating that the natural gas industry has its own features and dynamics.

Setting the geopolitical agenda is the purview of important states, so called geostrategic players, which influence the working of the international political system, but also determine the mores of the system. The structure of the international political system is dynamic influencing states' relative positions. The strength of a state depends on its structural powers, which include economy, finance, knowledge and the military. Natural gas contributes to these structural powers. States' relative strengths play an important role in geopolitics. They also feature prominently in regional politics, because some states – the so-called rule setters – can shape relations, while others are rule-followers, explaining the continuous formation of coalitions around certain political and economic principles and interests promoted by the geostrategic players. Powerful states are not only active in shaping international political relations; they also shape the way in which national economies interact through trade and investment. Geostrategic states thus play on the geopolitical as well as the geoeconomic board.

In past decades, international economic relations were shaped by the rapid liberalisation of economies around the world. The expansion of the liberal economy is often referred to as the Washington Consensus. The growing integration of large countries such as China, India and Brazil into the world economy led to new centres of growth and power. Their rapid economic growth translated in a buoyant demand for energy, while in traditional consumer markets, growth in demand for gas came in large part from the power sector.

With the prospect of growth in international gas markets, and perhaps in reaction to the rapid expansion of foreign direct investments in the 1990s, producer states became increasingly keen to manage and reap the benefits of their underground resources. They often opted for partial state company participation in sector development. This phenomenon is often referred to as resource nationalism. Producing governments became increasingly concerned about the use of their gas resources as part of the socio-economic needs of the domestic economy, making exports dependent on those needs.

The value of natural gas, as a low-carbon fuel, seemed until recently to have been lost on certain governments and analysts. In some low-carbon emission scenarios, gas – along with other fossil fuels -- plays a significantly reduced role. Although many countries see the advantages of increasing the role of natural gas in the fossil fuel mix, other governments take a dimmer view and find it difficult to include natural gas in their long-term energy vision. For some, this is due to the import dependency involved. Here, both security of supply concerns and climate change policies have worked against the popularity of natural gas. The availability of a much larger resource base, as a result of unconventional gas developments, has not yet structurally changed their view.

The uncertainties over future demand and the place of gas in the energy mix (as a result of climate change, among other factors) are affecting the gas business.

Recent advocacy efforts and the IEA special report “Are We Entering a Golden Age of Gas?” have addressed part of this issue. It illustrates that this effort can make a difference and that this form of “advocacy” needs to be continued and, if possible, institutionalized. The true value of the low-carbon properties of gas is still insufficiently reflected in national and business economics. This may also have an impact on future long-term investments in supplies and infrastructure.

Apart from uncertainties arising from low-carbon economy policies, evolving market regulations, and low economic growth, changes in rent distribution in international supplies could have geopolitical implications. These could arise from subsidies on other energy sources and taxes on fossil fuels, but also from a changing relationship between natural gas prices and those of oil. International and domestic gas prices are diverging. The gap in heating value between oil prices and gas prices may well widen. The wide variety of ownership models of both the economy at large and companies, the mix of national and international supplies, the role of natural gas in the domestic economy and the perception exporting governments have of the value of their national resource, could all play a part in how future price and trade models unfold.

The emergence of unconventional gas in other parts of the world as an indigenous source of supply (and potentially later also gas hydrates, given the programmes of Japan and Korea) could reduce international gas trade potential and temper any concerns of geopolitical leverage around gas imports, but could also deprive gas-exporting countries of an important source of income.

Today, energy, and certainly natural gas, plays an important role on the international geopolitical stage, and its role is likely to become even more intense. A more demanding international governance model is needed if there is to be effective co-operation between a wide variety of ownership models – including those in the natural gas sector – created by differences in domestic, regional, and global organisation of the state and the economy. The current governance model is a patchwork of different institutions, with mixed constituencies, often dealing with one fuel, sector, or a single interest. They have come about in response to past events or shared interests and although they have developed along with international energy markets, their mandates are weak compared to those of states, state companies or international energy companies. Most international institutions rely on voluntary co-operation and information sharing, while their ability to set or re-adjust rules is limited.

The rise of more state capitalist structures in the international economy and the debate surrounding the success or failure of the liberal economic model pose both a geopolitical and a geoeconomic challenge to current multilateral institutions. Not all geostrategic players share the same vision of the role of state in the economy, as a regulator of private interests or owner of crucial sectors. The model that comes out trumps will dominate the mores of the system for several decades to come.

The international organisations explicitly dealing with natural gas are few. The GECF organises the natural gas producing and exporting countries, while the IGU is a non-governmental organisation, representing the companies and branch organisations of both producing and consuming countries. These include companies with every type of ownership structure and also domestic and international operating firms. Other organisations, such as the IEF and the IEA, also explicitly discuss gas issues. Both the internationalisation of natural gas beyond national and regional borders and the growing concern with the decarbonisation of the energy mix indicate that more organisations and states are directly or indirectly involved in shaping the context in which natural gas is produced, transported and consumed.

Geopolitical issues will no doubt also present themselves to the international gas business more often.

The IGU correctly involved itself with other international organisations to become part of the institutional community shaping the context of international natural gas. Moreover, more explicit official contact with governments and other policymakers is increasingly placing the IGU at the centre of discussions shaping the context for natural gas. Other organisations need to be considered for inclusion in this effort. The IGU's varied membership has something to offer to these policymakers, while at the same time, IGU members are forced to discuss natural gas matters outside their internal comfort zone. The gas advocacy programme is a start, but needs to be strengthened and carried forward into the deeper structures of geopolitics and geoeconomics to remain meaningful. Geopolitics and natural gas is not a fleeting issue, particularly not for the IGU.

Appendix A
Theoretical framework: geopolitics and natural gas

A.1 INTRODUCTION

Important strategic players may have domestic, geopolitical and geoeconomic motives when becoming involved with the workings of the international political system. They can exert power at an extra-regional level and at an intra-regional level to pursue their national interests. These may concern a variety of political and economic interests. Geopolitical powers can also aim for governance over natural gas flows as part of their strategic agenda when these flows are important for their own or their allies' energy mix.

Only a limited number of strategic players can truly affect extra-regional developments, including natural gas flows. Apart from issues such as investment climate and availability of capital, the behaviour of these geostrategic players can also determine the level of internationalisation of the natural gas sector of a producing country, withholding or stimulating investors to develop export capacities, as the cases of Iran and Qatar show.

At both an extra- and intra-regional level, states can influence the direction and size of gas flows, and ultimately also influence developments in gas markets. Conversely, developments in the gas industry can affect the playing field for governments. The current "unconventional" energy boom in North America, for instance, has geopolitical implications that will be addressed in this study.

A.2 GEOPOLITICS

There is no broad, internationally used or commonly accepted definition of geopolitics, either in policy or academic circles. All matters "geopolitical" are often, and in general, referred to as such in an ad hoc manner. Roughly speaking, geopolitics covers the relationship between territory and/or geography and the pursuit of power at the state level.[52] Gray, a modern scholar on geopolitics, succinctly noted, "geopolitics refers to the relation of international political power to the geographical setting."[53] He further argues that geopolitics "is an attempt to draw attention to the importance of certain geographical patterns in political history […] geopolitics combines historical knowledge with a sophisticated capacity for theorising. The result has been a powerful analytical tool". Barnes et al. (2006) describe geopolitics in the context of their study on natural gas as "the influence of geographic, cultural, demographic, economic, and technological factors on the political discourse among international actors." They openly recognise the importance in their definition of relative gains amongst actors (states and firms).[54] Such a versatile and wide definition of geopolitics helps us study both

[52] It is the scientific field of study belonging to both political geography as well as international relations, which seeks to investigate the relationship between political behaviour of man and his territorial surroundings D. Criekemans, *Geopolitiek: 'Geografisch geweten' van de buitenlandse politiek? (Geopolitics: 'Geographic conscience' of foreign policy?)*, (Antwerp: Garant Publishers, 2007). Napoleon, a geopolitical contender of old, once claimed that to know a nation's geography is to know its foreign policy: "la politique de toutes les puissances est dans leur géographie". MacKinder, an early 20th century British admiral and geostrategist refers to geopolitics as the "usage of territorial determined comparative advantages in the balance of powers between states". Both Napoleon and MacKinder were individuals who applied what would later come to be known amongst international relations' scholars as geopolitics. MacKinder, H. J. (1904), The Geographical Pivot of History, *The Geographical Journal*, vol. 23, no. 4, pp. 421-437.

[53] C. Gray, *The Geopolitics of Superpower*, (Kentucky, University Press of Kentucky, 1988). In the study of international relations, notions like 'heart' and 'rim' land, 'centre' and 'periphery' are often alluded to. Such terms often refer to the Eurasian continent and its outer rim, with implicit references to the concentration of all types of resources on that continent and its impact on state power. Other noted geopolitical thinkers include Spykman, Kissinger and Brzezinski as well as Lacoste, all coming from different geopolitical schools of thought.

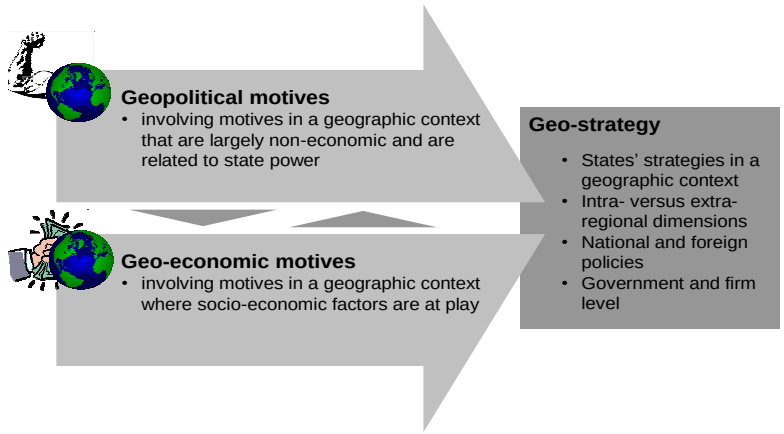
[54] With their concept of the 'geopolitics of gas', Victor et al. refer mostly to political forces affecting gas at the project level: "not simply an endless jockeying for global position, but also other key actors who decide which gas trade projects will be built, how the gains will be allocated, and how the risks of dependence on international gas trading

the (regional) political and, as will be argued below, the economic dimensions that we are looking for in a study on geopolitics and natural gas.

We propose to use the aforementioned definition by Barnes et al. (2006), broad as it is, in combination with the notions of geoeconomics and geostrategies, which are discussed below. We hereby aim to come to an exact and consistent approach to analyse issues in the gas industry from a geopolitical perspective. Just as geopolitics is about territory and power, geoeconomics is about economic flows and how, just like political forces, they are influenced by geographic factors. Geoeconomics pertains to the relationship between territory or spatial relationships and economics.[55] From the moment governments become involved with attempts, in our case, to influence international natural gas flows for greater power, they are confronted with the geographic features around them and their actions, including rent-seeking[56], become *geo*political. States can become involved in the international gas sector for:

1) geopolitical purposes, with motives that are largely non-economic in a geographic context, i.e., geopolitics as described above;
2) geoeconomic purposes, where the opposite is the case, because states are motivated by socio-economic factors, also in a geographic context;
3) domestic political or economic purposes with geopolitical or geoeconomic impacts.

Figure 1 Geopolitics, geoeconomics and geostrategies



To pursue any of these three motives, states take into account the geographical context and are involved in *geostrategies*, and the control of geographical features becomes *geostrategic* (see also Figure 1). Geostrategies include the preservation of resources for domestic (strategic) purposes, and the limitation of access to recourses and markets and comprise those actions of states that further their relative political and economic position in the international system. A simple chess analogy illustrates these arguably vague concepts: The movement of chess pieces across a chessboard is in itself strategic within the confines and

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will be managed," where our study aims to discover what geopolitical motives are present at the level of the state, before moving to the issue of the impact of these motives on gas flows and development. J. Barnes et. al., 'Introduction,' in *Natural Gas and Geopolitics: From 1970 to 2040*, D.G. Victor et. al., (eds.), (Cambridge, MA: Cambridge University Press, 2006), pp. 3 - 26..

[55] Certain decisions based on economic factors can have geographical constraints and underpinnings and *vice versa*. Geoeconomics is about flows and exchanges and the constraints set by national borders to those flows. A. Hudson, 'Beyond the Borders: Globalisation, Sovereignty and Extra-Territoriality,' *Geopolitics*, vol. 3, no.1, (1998), pp. 89 - 105.

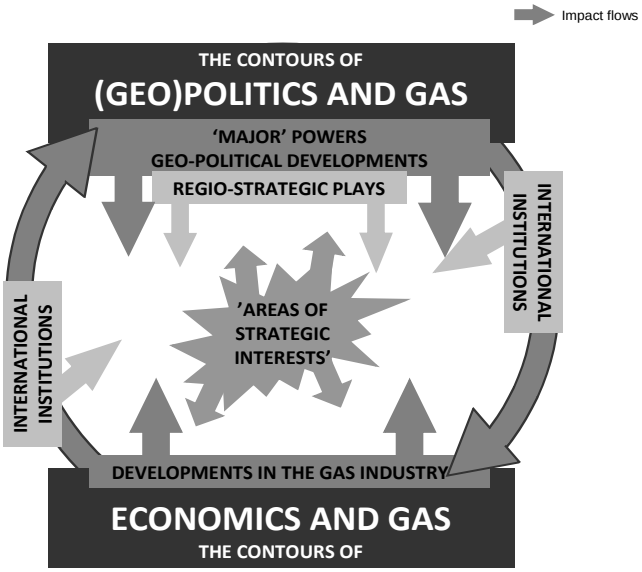
[56] Formally, the economic rent from the production of a natural resource can be defined as "any payment made to a production factor above the amount necessary to keep that factor of production in its present employment" Baumol, W. J. and Blinder, A. S. (2000), *Economics Principles and Policy*, Mason, OH: South Western College. 753.

context of the chessboard, whatever the goal. The impact of geostrategies of states on the international system or region depends on the development of their structural powers and their strategic political and economic importance for other states in the system.

Interaction between geopolitics and natural gas
The process of geopolitical balancing and the relevant value drivers impacting regional and interregional gas flows require two levels of analysis. On the first level, geopolitics is practiced by actors able to affect the entire global political and economic system, so-called rule-setters, followed by other powers that are able to resist these actors to one extent or another (see Figure 2). These include powers that can cause international ripples with their geostrategies. On the second level are regional situations and actors that are not rule-setters on a global level but practice geopolitics, where regional disputes can eventually spill over beyond the regional dimension, so as to draw in the rule-setters from the first level. In this study we focus on those powers and issues with the potential to impact the natural gas industry.

A certain degree of overlap may be possible because geopolitical concerns are usually multifaceted. In due course, action, starting in one domain, may well move up or down the ladder, by design or because of unforeseen effects. Developments of a bilateral nature may have the potential of wider regional and even extra-regional geopolitical ramifications, perhaps at a later stage, are an indication of the dynamic nature of geopolitics. Therefore, we included certain issues that are of a *potentially* geopolitical or geoeconomic nature, and can influence the strategic behaviour of states. In particular, we need to look at regional situations and how the geopolitical relations involved in such situations can spill over into a dimension involving superpowers.

Figure 2 Interaction of Geopolitics and Gas Developments



A.3 STRATEGIC MANOEUVRING OF GOVERNMENTS AND GAS FIRMS

States and firms, often but not always in conjunction, strategically manoeuvre to affect economic flows, among which gas. Different motives or value drivers exist for investments in gas production and transport projects and energy projects in general, ranging from purely

commercial to economic-strategic and to geopolitical. Just as much as corn-based biofuels would not be part of the energy mix in a purely commercial setting, the Chinese gas pipeline from Turkmenistan illustrates that criteria other than or beyond the conventional, commercial benchmarks may be used to develop new energy systems. These two examples show that other value drivers besides purely commercial motives may be in place, and that performance in the short- and longer-term can lead to different investment decisions. Conversely, commercial activities at the firm level can have an impact on market developments and (geo)political relations and vice versa.[57] For example, the recent development of unconventional gas in the US has changed its gas market structure radically, because fewer imports were necessary (in 2008, the LNG imports of 10 bcm were less than half the 2007 level).[58] This development feeds into government policies, and in turn these feed into (geo)political relations, which may then also change course (see also Chapter 3).[59]

Because natural gas often involves long-term relations between states, even commercial issues can very quickly escalate to a (geo)political rather than merely an economic-strategic domain. The passage of gas transport routes through difficult transit countries has created areas of strategic interest for commercial gas trade, directly elevating these gas flows to the economic-strategic and at times even (geo)political level. The size and direction of gas flows through Ukraine's pipelines exemplify how a state can exert "nuisance power" for Russian gas to reach its main export markets in Europe.

The challenge is then to develop a toolbox with which to position the issues, and its moves over time, in the different spaces of value drivers to identify the areas of strategic interest in geopolitics, but more importantly to identify in how far natural gas is a subject of these movements or *vice versa*.[60] According to the toolbox, the relevant (geo)political and gas issues can be positioned in different spaces (see Figure 3):

- **A** a (geo)political space;
- **B** a (geo)economic space; and
- **C** a commercial space.

As mentioned before, a space or action can be considered "geopolitical" or "geoeconomic" when a geographical area is supplemented with power plays. The value components are based on different motives, or value drivers, on the state and market level. The framework can identify value drivers concerning (geo)political developments and actions, which can have an effect on the gas market structure and a gas firm's room to manoeuvre (from the upper layer, A, to the lower layers, B and C). In addition, it can identify value drivers at the firm level that can have an effect on market structure and (geo)political relations (from the lower layer, C, to the upper layers, B and A and *vice versa*). In Figure 3b these drivers have been connected to the theories of international relations, economics and locate important players and institution feature in the framework of analysis.

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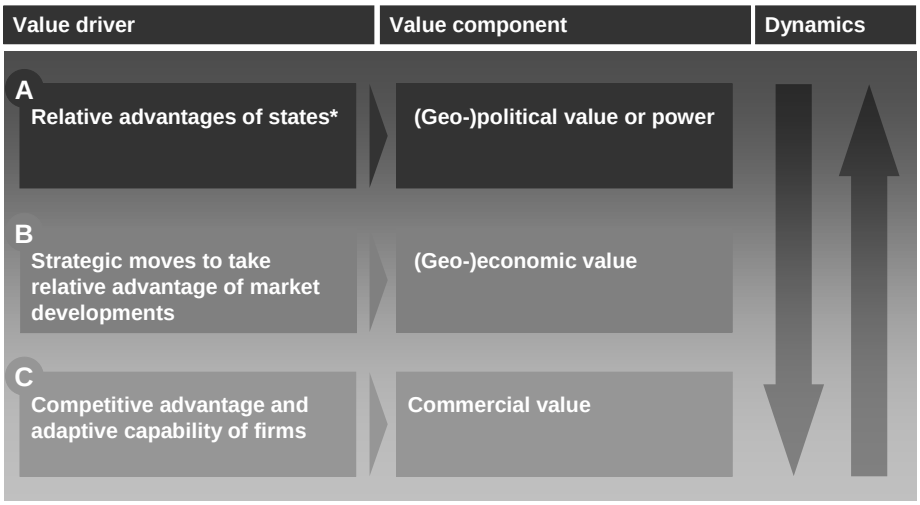
[57] See also J. Stern, *Geopolitics and Natural Gas in the Europe-CIS Region*, a discussion paper for the International Gas Union's Task Force on Geopolitics and Natural Gas, 14 November 2011, p.3.

[58] IEA, *Natural Gas Information 2009*, (Paris: International Energy Agency, 2009). North America maintains its position as a marginal net importer in the IEA GAS scenario due to Mexico. IEA, *World Energy Outlook (WEO) 2011, Special Report, Are We Entering a Golden Age of Gas*, June 2011, p. 33

[59] While China and Russia can still make great improvements in energy efficiency, the trend of a widening gap in total energy costs as a percentage of GDP with the US also points towards the availability of cheaper oil and gas in the US than on international oil and gas markets. The impact on the competitive position of US manufacturing in the current economic crisis, despite the strengthening of the dollar, should not be underestimated. See also IEA, WEO 2011, p. 257.

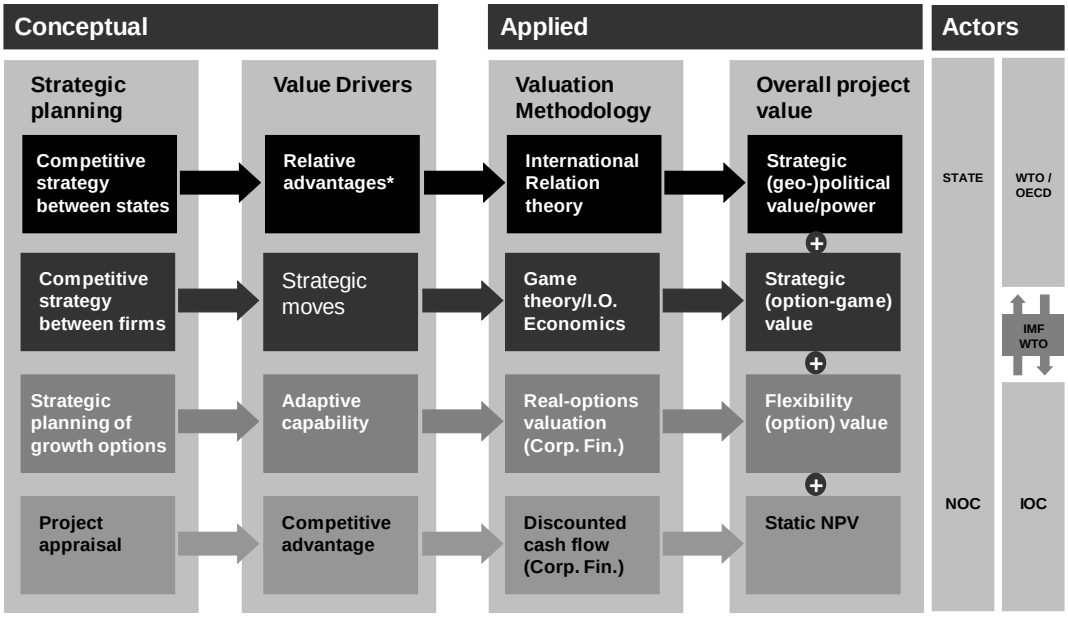
[60] T. Boon von Ochssée *The Dynamics of Gas Supply Coordination in a New World*, CIEP Energy Publication, July 2010 and T. Smeenk, *Russian Gas for Europe: Creating Access and Choice*, CIEP Energy Publication, July 2010.

Figure 3a Connecting (geo)economic and (geo)political value drivers and components



* Defined via structural relative advantages in finance, production, knowledge and security.
Source: CIEP analysis, based on Smit and Trigeorgis (2004), Strange (1996), Waltz (1959).

Figure 3b Connecting (geo)economic and (geo)political value drivers, theories, players and institutions



Source: adapted from Smit & Trigeorgis (2004), Strange (1996), Waltz (1959),
* Strange (1996): Structural power: finance, production, knowledge and security.

Sources of geopolitical power

Looking in more detail at the different value components, (geo)political power can be obtained from a relative advantage of a state. Here we will focus on those aspects in which the gas business is used as one of the instruments to generate relative advantages and which have a wider regional or interregional impact or potential future impact. Just as gas wealth has offered the Russian, Qatari and Australian states, a means to develop a relative advantage with respect to other states, China can obtain a relative advantage (and thus

power) in exporting industrial and consumer goods on the back of its abundance of relatively cheap labour. The economic wealth generated can be translated into geopolitical power over the longer run.

In today's world, and even since before the collapse of the Soviet Union, relative economic power gradually displaced absolute military power as a key determinant of influence in the international political system. Military power is but one of several sources of power. States seek to attain various forms of power. Strange (1989; 1994) uses a concept of structural power to explain how state power can vary in relative terms through financial, military and production means, as well as through intellectual capital (knowledge). The structural power of nations defines a state's place and role in the international system and determines its ability or capacity to advance its national interests. Each form of power can spill over or affect other forms for each state. That means, for example, that a country's knowledge and production can lead to financial wealth, which can be used to further boost production, develop the intellectual capital base and (further) develop the means to defend itself.

(Geo)economic value

The (geo)economic value is driven by strategic moves of governments to enhance market circumstances to their advantage. The involvement of a government in a (national) gas firm's strategy, either directly or indirectly (e.g., through taxation, ownership, governance), leads to an economic-strategic dimension. This dimension pertains to the economic-strategic interests of states, which are often of a geoeconomic nature. The pursuit of economic-strategic interests, involving flows that are geoeconomic, can eventually be translated into geopolitical power.

The commercial value

The commercial value that can be achieved directly from a gas activity depends on the general investment attractiveness of the industry in which the firm operates and on the competitive advantage of a specific firm over its competitor(s). Such advantage may, for example, be related to a cost advantage or technological know-how.[61]

Here we focus on the first two components of value or power. The different value drivers are not mutually exclusive *per se* and the definitions are potentially overlapping. They can be of an "interlocking" nature, for example, when in the first instance a project leads to a competitive advantage for a firm and also serves a strategic purpose at a higher level. Thus, action, starting in one domain, may well in time move up or down the ladder, by design or because of unforeseen effects. Moreover, the motives or value drivers in the different spaces can change over time, which means that it is a dynamic process.

Strategic behaviour

The room for strategic manoeuvring differs for the actors involved. Generally, publicly listed gas firms are driven by profit maximisation. For states, however, profits may only be part of value optimisation. They may include other value considerations such as security of supply, employment, domestic economy and state income. The interplay between the state and the market and strategies to improve wealth and its relative importance in international affairs can often not be explained by economic theories alone.

Governments, both in producing and consuming countries, employ a wide array of subsidies, taxes and other (political) instruments and policies to manipulate one (national) firm's competitive advantage over another (i.e. in a strategic-commercial space). Such practises are commonplace in all economies, despite the efforts of international organisations such as the WTO, the International Monetary Fund (IMF), and lately the G8 and G20 to remove them. In the energy sectors, the International Energy Agency (IEA) has repeatedly reported about

[61] Shapiro, A.C. (1991), *Modern Corporate Finance*, London: Macmillan.

these practises and the false signals they produce from an end-user market point of view.[62] Conversely, these and other international organisations, such as the World Bank and the European Investment Bank (EIB), have taken part in strategic manoeuvring as proxies for strategic-economic or even (geo)political motives. Many countries' institutions employ strategies to position their national champions in other markets. Subsidies, taxes and other forms of government policy and support also play a role in other parts of the value chain and in inter-fuel competition.

States also matter in the gas industry because government-controlled companies dominate large parts of the gas value chain, or are in charge of licenses and permits. The policies resulting from a state-level desire to affect gas flows is a function of the surrounding political and economic geography. States that do so can be referred to as *geostrategic* players, who pursue *geostrategies*. Geographic features become geostrategically important, and largely as a function of these features and value drivers, geostrategic players try to affect the geopolitical and geoeconomic playing field by means of gas flows.

A.4 GEOSTRATEGIC PLAYERS AND THE CHANGING INTERNATIONAL POLITICAL SYSTEM

Not all states can equally affect the geopolitical and geoeconomic playing field around them. As discussed in 2.1, there are rule-setting geostrategic players who are able to affect their surrounding environment at a global– and by extension regional – level, and there are those who may be regional rule-setters but are largely rule-followers at a global level. Each have a different position regarding gas and gas flows and each can have different impact on them.

Obviously the US, Russia and China are important geostrategic players, although they have different positions with regard to natural gas, and have different structural powers. They play an important role in shaping the current and future international system. These geostrategic players are important for their nuclear capability, hold a permanent seat on the UN Security Council and are crucial regional players with interregional impacts. Although the security powers are national powers in Europe rather than EU powers, the continued elevation of sovereignty to the EU level, and the size of its natural gas market and demand for imports warrant inclusion here. Yet, the completion of this process is uncertain and therefore also represents a geostrategic weakness. Brazil and India will not be discussed in detail here, because it seems they do not have a big impact on international governance issues (yet) and their impact on international natural gas markets is still relatively small. However, they are important regional players.

The importance of connecting the drivers of the international political and economic system – both empirically and theoretically – is that it can provide more insight in understanding the (perceived) space for nations to protect and/or preserve their sovereignty over their domestic affairs and the potential for co-operation, formation of coalitions and rivalry. In the economic sphere, rivalry or competition in theory produces an optimal equilibrium and an efficient employment of factors of production (capital, labour and land) when markets are perfect. The level of market imperfections, such as natural monopolies, state intervention, and government imperfections can produce (theoretical) suboptimal outcomes for the world economy as a whole. Yet, from the perspective of one state or a coalition of states/economies, this outcome can give a strategic advantage over another (others), when argued from the national interest of one or a group of states alone.

[62] IEA, *World Energy Outlook 2011, Chapter 14*, (Paris: International Energy Agency, 2011). For instance, the estimated subsidies on natural gas consumption in the world developed from $74 billion in 2007, to $135 in 2008, $85 in 2009 and $91 in 2010 (p. 508).

Changes within the international system take place continuously[63], and are driven for example by the change in the means of transportation, communication, and the way war is fought, but also by changing dependencies, such as on imported energy, and new governance structures, such as the European Union (EU), the Association of Southeast Asian Nations (ASEAN), the World Trade Organisation (WTO) or security organisations. Also the integration or disintegration of states in the international system influences the relations of nations, as we have seen with the emergence of China, Brazil and India as significant economic powers. Although these developments can have a large impact on relations among the states and the interaction among other actors in the system, they leave the structure of the international political system intact. These changes do however affect the relative structural power of the various actors in the system (including non-state actors such as companies and/or non-governmental organisations).[64] The fact that after the 2008 financial and economic crisis, important international governance issues are no longer the exclusive remit of the G8 but rather have been transferred to the G20 acknowledges a relative shift in economic and political power. The position of the different players in the system can influence the gas sector as well.

The bipolar system of the Cold War period ended in 1989 and was replaced, by default, by a short period of unipolarity in which the US remained the sole superpower. This brief period was characterised by advancing market liberalisation, also known as globalisation, and the western expectation that liberal democracy would automatically follow.

The notion that unipolar systems appear the least durable was proven correct at the beginning of the 21st century. Such systems may raise concerns about unbalanced power with weaker states, who as a consequence will then build up their own power to increase their strength.[65] It does not always matters what the unipolar power actually does; what matters is what other players in the international system perceive the unipolar power does or may do in the future.[66] Even among like-minded states, this perception can lead to the weakening of a coalition that was considered very strong. For instance, the US invasion of Iraq divided the US coalition partners in Europe because it was deemed their national interests were not served by the US approach. Recently, Australia and some South Asian states strengthened their strategic ties with the US, to balance their expanding economic ties with China. The balancing of powers has become more complicated in the current, more multipolar world.

The emerging powers have all tried to further the relative strength of their structural powers (security, production, finance, knowledge) to counterbalance the strengths of the US and lately also China.[67] In a short time, China became the factory of the world, with a very positive balance of trade and swelling monetary reserves, adding both to its structural power in production and finance. This position could be developed further. Increased defence spending, however modest compared to US defence spending, and improving the technological base of the economy support the view that China is on its way to become a geopolitical challenger to the US. This is most directly felt in the South East Asian region and Central Asia.

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[63] Ferguson compares the world system to other complex systems, functioning between order and disorder and claims that rather than a slow decline, complex systems can 'go critical' with a relatively small event. Moreover, predicting change or disruption in a complex systems is very difficult. Niall Ferguson, Complexity and Collapse, Empires on the Edge of Chaos, in *Foreign Affairs*, March/April 2010, p. 22-26.

[64] Susan Strange, *States and Markets, an introduction to International Political Economy*, Pinter Publishers, London, 1989, p. 37.

[65] K.N. Waltz, 'Structural Realism after the Cold War,' *International Security*, vol. 25, no.1, (2000), pp. 5 - 41.

[66] A. Wendt, *Social Theory of International Politics*, (Cambridge: Cambridge University Press, 1999).

[67] Stewart Patrick, Prix Fixe *and* à la Carte: Avoiding False Multilateral Choices, *The Washington Quarterly*, volume 32, no. 4, pp. 79.

Both Russia and Brazil have advanced their strength in (resource) production and finance and have formed alliances outside the orbit of the US, as the recent BRIC-meetings show. Energy as a basic input in the economy is an important feature of the structural power in production (domestic resources viz. imported energy) and finance (trade balance and monetary reserves), while strength in the security domain also rests on access to energy resources to project and employ this power.

The rise in the past decade of some players' more nationalistic approaches, whether in the form of resource nationalism or active trade balance promotion or otherwise, invoked a more national interest oriented approach. The expectation that globalisation would actually reduce the role of the state in the international system and relations among nations would predominantly be played out in the commercial space proved to be unfounded. Instead, the role of the state, including in the economic domain, actually gained prominence, and has been further emphasised since the financial and economic crisis began in the US in 2007. In addition, the structure of trade and investment is changing with the advent of stronger state capitalism, bundling economic power strategically, and perhaps limiting access to flows of energy by (more atomised) market players.

The financial and economic crisis, which started in the US in 2007 and gripped the rest of the world in the fall of 2008, is an important turning point in geopolitical and economic relations. It questioned the validity of the western-led mores of the international system. Emerging markets, either those with their own political-economic model, such as China, and those who had been forced to restructure their economy in IMF programmes and were resisting the prescribed political and socio-economic organisation that came along with these programmes, also perceived the crisis as a sign of fundamental flaws in the Washington Consensus. Countries that had resisted fully opening up their capital markets or had built up large monetary reserves after the 1998 Asian financial crisis were less affected than those that were fully integrated into the world economy. Globalisation came with great benefits, but also with large risks to domestic stability, without effective instruments to address global imbalances. Countries with a large surplus in the balance of payments could not be forced to adjust their exchange rates; witness the discussion about China's exchange rate in the years leading up to the crisis, while the US and others with access to international capital markets could not be forced to address their structural deficits. The same flaws that had undermined the Bretton Woods System, and the arrangements after the 1970s, had been allowed to persist. In the aftermath of the financial crisis, the Eurozone was running into similar problems, implying a double crisis.

The flaws in the governance system, which undermined the moral leadership of the West, were the result of creating deep international economic integration without the political governance to support it because states, particularly the great powers, were unwilling to transfer and/or share sovereignty over domestic affairs. The crisis had actually reduced the willingness to redress these flaws. Trust among states was at a low point. Five years after the start of the problems, growth in emerging markets such as Brazil, China and India has been affected and fears of local bubbles bursting are increasing. Social and political unrest, epitomised by the Arab Spring, is not a recipe for more or deeper international co-operation. Instead, national interests and jockeying for the best possible position in the unstable international system is now the order of the day. Although some emerging market economies have gained tremendous strength, they are unwilling or unable to absorb the governance costs of the international system, while the West is unable to carry the cost alone.

Although many expect countries such as China and India to play a more important role in the international system, a default change to a "Beijing consensus", as often predicted, is also not a foregone conclusion. The energy boom in the US is creating a substantial competitive benefit for the US economy; energy costs as a percentage of GDP are much lower than those of other great powers. Moreover, demographically the US is much younger than China,

Russia and the EU. The current rebalancing of the international political and economic system has no clear direction yet, and the many uncertainties that surfaced after the financial crisis of 2007 will remain for several years to come.

Looking back, the past 20 years were very much years of transition, during which new competition among states emerged, not in the least over access to scarce resources, including energy. The first decade of the 21st century saw several emerging economies also gain political strength in addition to their rising economic importance. These emerging powers bring their own dynamic to the international system. This is particularly true in the way their states have taken the lead in the functioning of both their domestic (political and economic) systems and the way they interact in the international system.

A.5 GEOPOLITICAL PROPERTIES OF NATURAL GAS

Up to this point, relative advantage has been described as a combination of different power dimensions. Of increasing importance is the role of access to energy (and gas), where energy-consuming countries are becoming more dependent on ever more scarce and steadily more concentrated natural resources.[68] In essence, countries with great endowments of energy resources have a natural absolute trade advantage.[69] As mentioned, this advantage can subsequently be translated into other dimensions of power in the long run.[70]

In the specific case of natural gas, this resource is gaining in importance as fuel that burns more cleanly than oil and coal. Due to the potential contribution of gas to a lower-carbon, and, for some economies, a more diversified energy mix, demand is projected to grow.[71] The applications of gas are becoming more numerous and the reserves for gas also exceed those of oil in terms of reserves-to-production ratio, offering long-term potential for future trade, while the global industry is still developing. Since gas exports depend more on rigidly interconnected infrastructure and long-term production arrangements that generate lower, but often longer lived, revenue streams than those derived from oil, gas sector arrangements carry an intrinsically long-term and strategic character. Therefore, geopolitical considerations tend to heavily influence gas infrastructure interconnections and long-term production arrangements. A gas-exporting country can use gas dependence and pipeline (and even LNG) flows to enhance its structural power.[72]

Nevertheless, it is clear that the natural gas sector, as a relatively young and still emerging true international sector compared to the coal or oil sectors, does not yet feature as prominently as oil on the international political agenda. However, the emerging importance of natural gas in more countries' energy mix, its potential role in a more sustainable energy mix, and the increasing internationalisation of the market will elevate its strategic importance. The emergence of the natural gas sector as an important sector with geopolitical properties takes place in a changing world system.

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[68] Before, Western countries used international energy firms to perform this function. The unconventional gas develops show, however, that scarcities can also be lifted by a combination of investment and technology change, changing the dependency outlook drastically. The development of renewable energy production is often also argued to reduce the dependence on scarce resources, although competition of some renewables with food and water resources suggests a mere shifting of dependencies and/or vulnerabilities.

[69] A. Smith, *The Wealth of Nations*, (Amhurst, NY: Prometheus Books, 1991).

[70] Strange (1989) sees the possession of energy as a secondary power structure. S. Strange, 'Toward a Theory of Transnational Empire,' in *Global Changes and Theoretical Challenges: Approaches to World Politics for the 1990s*, E.O. Czempiel and J.N. Rosenau (eds.), (Lexington: Lexington Books, 1989), pp. 161 - 193.

[71] IEA, *Op. Cit.*, June 2011.

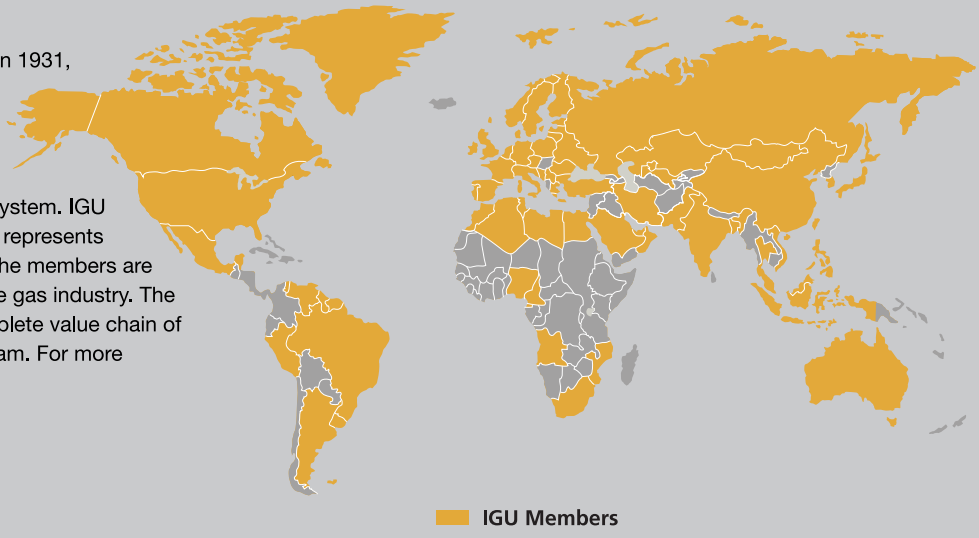
[72] F. Hill, *Energy Empire: Oil, Gas and Russia's Revival*, (London: The Foreign Policy Centre, April, 2004). However, this structural dependency works also reversed, i.e., a gas-exporting country is dependent on the income stream from a gas-importing country.

A.6 IN CONCLUSION

The exploits of the different actors on a state and government level are driven by motives of a commercial, economic-strategic and (geo)political nature. Not all players have the same international impact or scope. There are geostrategic players that act as rule-setters and others as rule-followers. Geostrategic players can exert force at an extra-and intra-regional level to pursue their national interests. States, both rule-setters and followers, seek to form coalitions to pursue their goals. The international system is dynamic, influencing the relative position of states, and balancing and re-balancing the power of other states. In their pursuit to strengthen power structures, states can use different timeframes to make investment decisions that fit their strategic positioning, also with regard to natural gas. Great powers consider access to resources and markets part of the remit. The development of natural gas as an important fuel in the energy mix of countries and the growth of gas trade has pushed it upward on the international political agenda.

IGU

The International Gas Union (IGU), founded in 1931, is a worldwide non-profit organisation promoting the political, technical and economic progress of the gas industry with the mission to advocate for gas as an integral part of a sustainable global energy system. IGU has more than 110 members worldwide and represents more than 95% of the world's gas market. The members are national associations and corporations of the gas industry. The working organization of IGU covers the complete value chain of the gas industry from upstream to downstream. For more information, please visit www.igu.org.



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