The Dolphin Project:
The Development of a Gulf Gas Initiative

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CONTENTS

TABLES

FIGURES

Preface

Middle East gas is one of the great fossil fuel energy resources in the world. Yet there is very little published literature on any aspect of this resource aside from LNG export projects. For some years the OIES Natural Gas Research Programme has been seeking to publish on the domestic and regional aspects of Middle East gas. But it has proved impossible to find interested and suitably qualified researchers, because of the need to have both the languages and first hand knowledge of the relevant countries.

For these reasons I am delighted with this paper on the Dolphin Gas Project which illuminates both domestic and regional economic and political aspects of Middle East gas development. As far as I know, this is the first publicly available study of the Dolphin Project which is extraordinary given its regional importance. I am very grateful to Justin Dargin for coming to Oxford and writing this study for us. Justin was an intern at the Institute during the summer of 2008, during a break from his graduate legal studies. He has done an outstanding job in producing this study in a very short time and seeing it through to publication after his return to the US.

Jonathan Stern January 2008

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Biography

With a specialty in International law and Energy Law, Justin Dargin has worked at Owens Corning Global Headquarters in the international legal department, and served a legal internship at OPEC, where he advised senior staff on the implications of EU and American Law on international petroleum resource sustainability. Fluent in Arabic and Spanish, he studied International Petroleum Law and Sharia Law at the American University at Cairo, Egypt. Mr Dargin also served an internship at the Oxford Institute of Energy Studies, where he specialized in Middle Eastern energy issues, specifically working on the Dolphin gas pipeline project, which was one of the first major studies of this important project.

Not only has he contributed scholarly articles for leading legal and policy journals, he is the author of 'Rebuilding the Iraqi oil industry: legal and constitutional strategies for sustainable, post-Saddam development' featured in *Rebuilding Sustainable Communities in Iraq: Policies, Programs and Projects* (Cambridge Scholars Press, forthcoming, May 2008) which draws heavily upon his recognized expertise in Middle Eastern and International energy issues.

A regular on the lecture circuit, Mr. Dargin has been a presenter at professional organizations, where he addressed the implications of rapidly changing energy law, geopolitical issues, and financial regulations, which may significantly impact investment opportunities. He is co-founder, and head of legal services at InterIntel, a student-run consultation institute bridging the divide between academia and business.

1. Introduction

Qatar is positioning itself to take advantage of the worldwide increase in gas demand. The small nation is strategically placed in the Gulf, at the tip of Saudi Arabia, where it straddles Bahrain and the UAE. Although among the leaders in natural gas production, Qatar arrived relatively late on the natural gas scene, in part, because it has a population of 744,000 and of that only 20 per cent are Qatari nationals. (2006 figures), thus human capital is in great demand.[1]

Qatar was the force behind the creation of the Dolphin Project (Dolphin),[2] a much reduced form of the pan-GCC pipeline, envisioned at the November 1989 Gulf Cooperation Council (GCC) summit meeting as the most ambitious domestic Middle Eastern gas project ever undertaken.[3] As originally conceived, a transnational pipeline was to weld the national gas grids of Saudi Arabia, Kuwait, Bahrain, and the UAE into a single integrated bloc. Qatar's enormous North Field, the largest associated natural gas field in the world, became the centrepiece of this vision.

Shell Oil discovered the North Field, which covers a majestic 6,000 sq. km, off Qatar's coast in 1971, and it was later recognized as the largest non-associated gas field in the world. The North Field has allowed Qatar to become both a major regional exporter and a major international gas player through liquefied natural gas (LNG) exports. It is also the keystone to Qatar's quest to establish an independent foreign policy beyond Saudi Arabian

[1] For a detailed analysis of Qatari demographics see 'Qatar: population disparity', *APS Review Gas Market Trends* (17 Sept. 2007). Available at http://www.thefreelibrary.com/QATAR+-+Population+Disparity.-a0168747715
The expatriate work force is made up generally of South Asians who perform menial tasks and the hands-on work in the oil and gas sector, while the Westerners generally hold higher level management or engineering positions. Furthermore, foreigners comprise 80 per cent of the workforce. See 'Qatar Country Information', *CIA – The World Fact Book*. Available at https://www.cia.gov/library/publications/the-world-factbook/print/qa.html

[2] The academic literature on the Dolphin Project is sparse, and lags behind the most pertinent current events. However, when possible, I have cited from academic literature throughout the paper. Much of the information has come from the trade press, industry news, Middle Eastern newspapers, and websites.

[3] The Cooperation Council for the Arab States of the Gulf, also known as the Gulf Cooperation Council (GCC) is a trade bloc that was initially formed in 1981 to act as a bulwark against attempted Iraqi or Iranian aggression. The group is composed of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. See 'Cooperation for the Arab States of the Gulf' official website available at http://gcc-sg.org/index_e.html

gravitational pull, and to create increased economic and political ties with the USA, Europe, and Asia.[4]

Multifaceted in every sense of the word, Dolphin anticipates the:[5]

- development of gas wells and installation of two platforms in Qatar's North Field gas structure
- construction of two multiphase undersea sea lines from the gas wellheads to the processing plant in Ras Laffan
- offshore pipeline shipping dry gas from Ras Laffan to Al-Taweelah in the UAE;
- gas receiving terminals located in Al-Taweelah
- export of 2 bcf/d of North field gas to UAE and Oman in the first phase.

Qatar's Emir, Hamad bin Khalifa Al-Thani,[6] is the visionary who foresaw Qatar's vast natural gas resources as central to its security and economic development. His father, Khalifa bin Hamad Al-Thani, was far less aggressive in promoting the country's resource development. Not only might natural gas help Qatar avoid the impending collapse of oil production and the resultant foreign policy concerns, this resource could enhance Qatar's global importance. As the far-sighted Hamad understood, Qatar's wealth was also its vulnerability, a fact that required reliance on the international community, and particularly on the USA, for security needs.[7]

Qatar has made much progress in hoisting itself from an undeveloped Emirate to one of the most progressive and advanced of the Gulf States. Its progress is integral to the peace and stability of the region, as well as to the future security of the global natural gas supply. An understanding of the Dolphin Project is therefore not only essential for regional

[4] For a nuanced discussion of the interconnection between Qatar's energy resources and foreign policy see Simon Romero, 'Natural Gas Powering Qatar Economic Boom', *International Herald Tribune* (22 Dec. 2005). However, not all in Qatar are pleased about its pro-USA stance; in 2002 Qatar, with the assistance of US military personnel, foiled an attempted high-level coup that was formed of disaffected members of the ruling Al-Thani family and military officers. See 'Qatar Coup Plot May Thwart US War Plans', *Stratfor* (24 Oct. 2002). Available at http://www.stratfor.com/

[5] See complete project description at 'Dolphin Gas Project, Ras Laffan, Qatar', *Hydrocarbons-Technology*. Available at http://www.hydrocarbons-technology.com/projects/dolphin-gas/

[6] Khalifa bin Hamad Al-Thani was deposed in 1995 by his son, Crown Prince Hamad bin Khalifa Al-Thani in a bloodless coup.

[7] See Damien McElroy and Neil Tweedie, 'Welcome to Qatar, the UK's Best Friend', *Daily Telegraph* (24 July 2007).

development, but is also an essential tool for understanding the future of regional political integration.

Section 1 supplies an introduction to the North Field, and discusses the gas reserves and the domestic pricing regimes of the Dolphin stakeholders. Section 2 summarizes the history of the development of the North Field and the economic and political reasons that drove Qatar to begin the monetization of its reserves. Section 3 discusses the difficulty that Qatar faced in garnering regional support for a pan-GCC gas pipeline. Section 4 considers how the lack of political support for a pan-GCC pipeline pushed forth the creation of the Dolphin Project, a scaled back project that mimicked the initial idea of a regional pipeline, and how Dolphin also served to ignite the large scale growth of Islamic financing for oil and gas projects.

Section 5 concerns potential problems that face Dolphin's future, such as Iranian concerns of Qatar exploitation of the North Field, as well as increasing domestic demand in Qatar, which could compete for Dolphin gas. Section 6 analyses the future potential impact of Dolphin, and whether it could serve as a template for an overall GCC gas pipeline. Finally Section 7 discusses the future political and economic challenges to Dolphin's success, as well as the importance of Dolphin as a benchmark for regional gas sales in the Gulf.

1.1 Reserves of the Gulf region and the North Field

The Gulf region, which includes among other nations, Saudi Arabia, Iran, Iraq, Qatar, UAE, Kuwait, and Bahrain, contains huge reserves of natural gas that represent over 40 per cent of the world's total.[8] Although Russia has the largest natural gas reserves, Iran, Qatar, Saudi Arabia, United Arab Emirates, and Oman respectively, hold the world's second, third, fourth, fifth, and tenth largest reserves.[9] Moreover, in 2006, 18 per cent of the world's LNG originated in this region.[10]

Gulf gas will become more important because of an anticipated increase in domestic usage and increased regional demand, in part due to Dolphin, but also because the region will significantly increase LNG exports in the near future. Despite these impressive reserves, the region's share of global production remains a fraction of its potential.

The meaning of these statistics is that the Gulf States' natural gas resources are not only underdeveloped, but under-utilized. However, this paradigm may soon shift, as in 2006, Qatar became the world's foremost LNG exporter.

Table 1 Gulf countries natural gas statistics

Country	Reserves (Natural Gas Tcf) 2006	Production (Dry Natural Gas Tcf) 2005	Consumption (Tcf) 2005	LNG Exports (Tcf) 2005
Saudi Arabia	240	2.5	2.5	-
Iran	974	3.6	3.6	-
Iraq	112	>0.1	>0.1	-
Qatar	910	1.6	0.7	1.0
UAE	214	1.7	1.5	0.3
Kuwait	55	0.4	0.4	-
Bahrain	3	0.4	0.4	-
Total	2,509	10.3	9.1	1.3

Source: Cedigaz (Energy Information Administration)

1.2 North Field reserves

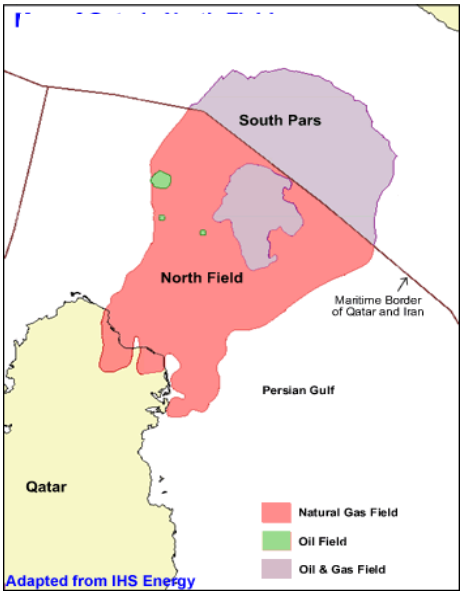
The South Pars/North Field is a combined gas condensate field located in the Gulf, straddling the Iranian and Qatari maritime border. South Pars is the name of the Northern

[8] See 'Persian Gulf Region: Natural Gas', *Energy Information Administration*. Available at http://www.eia.doe.gov/emeu/cabs/Persian_Gulf/NaturalGas.html
[9] Ibid.
[10] Ibid.

portion of the joint field that sits in Iranian territory (see Figure 1 below), while the southern portion named the North Field is located in Qatari waters. It is estimated that Qatar's portion of the joint North Field/South Pars geological structure comprises 62 per cent of the reservoir, while the Iranian South Pars contains 38 per cent.[11] Iran's share of gas from the field is estimated to be 436 tcf in place and 325 tcf of recoverable gas, which is approximately 8 per cent of the world's total and 50 per cent of Iran's total reserves.[12]

Initially each nation asserted that the field held 100 tcf of gas, but soon thereafter Qatar raised its reserve estimate to 200 tcf, and Iran followed suit.[13] Both nations later increased the estimates to 400 tcf, and then to 500 tcf.[14] Although Qatar ultimately raised the estimate of its portion to 900 tcf, Iran declined to raise its estimate.[15] Many of these estimates were rendered without the benefit of more detailed reservoir studies.

Figure 1. Map of Qatar's North Field



Source: Energy Information Administration

[11] See 'South Pars, Qatar North Field, Iran', *Offshore Technology*. Available at http://www.offshore-technology.com/projects/southpars/

[12] See 'Assaluyeh at Crossroads of Change', *Iran Daily* (15 Dec. 2004). Available at http://www.iran-daily.com/1383/2164/html/focus.htm
Also *Qatar: Background*, Energy Information Administration (May 2007), 4.

[13] Ibid. *Qatar*
[14] Ibid.
[15] Ibid.

Shell discovered South Pars in 1966, as well as the North Field on the Qatari side of the boundary in 1971.[16] The National Iranian Oil Company (NIOC) announced the public offering of the South Pars in December of 1991, after another major gas discovery was located there.[17]

Qatar initially viewed the North Field as a 'disappointment', because of the difficulties in finding export markets for (what were then regarded as) 'stranded' natural gas reserves. Even though Qatar nationalized the field in the late 1970s, the handover was so amicable that Shell remained as a contractor to provide technical and support expertise.[18] Qatar failed to pursue an aggressive production policy, largely because the governmental approval process was so arduous that it required the Emir's personal involvement.[19]

In 2006, 19 per cent of the world's total gas reserves was assumed to rest in the North Field/South Pars structure.[20] However, there is profound uncertainty as to the volumes of gas the North Field contains. Qatar's planned 320 per cent expansion of North Field gas projects over the next five to six years leaves little room for error if the field contains anything less than (the widely cited) 900 tcf.[21]

The only North Field studies conducted, were the partial Shell study at the time of the North Field's inception, and the moratorium feasibility assessment. Since its founding in 1971, the North Field estimated capacity has been characterized by a lack of independent studies. However, there are concerns in the Qatar governing circles that the country may

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[16] See 'Iran-South Pars Oilfield', *APS Review Gas Market Trends* (2 Apr. 2001).
[17] Ibid.
[18] Qatar law 13-2000 art. 8 states 1) Foreign investment shall neither directly nor indirectly be subject to expropriation, unless such measures are for the public welfare and implemented in a non-discriminatory way, against a prompt and reasonable compensation. 2) Compensation shall be equal to the market value of the investment at time of expropriation, and shall be paid without undue delay.
In the turnover of the North Field, it is widely referred to as negotiation, not expropriation or sequestration as occurred in some of the more radical Middle Eastern countries during the heady 1970s. See '2007 Investment Climate – Qatar', US Department of State. Available at http://www.state.gov/e/eeb/ifd/2007/80765.htm

[19] The New York Times reported that as late as 1983 the Emir personally signed any checks over $50,000. See *New York Times* p. A5 (30 Sept. 1991).

[20] See *Qatar: Background*, Energy Information Administration (May 2007). Available at http://www.eia.doe.gov/emeu/cabs/Qatar/Background.html

[21] See John W. McCurry, 'Energy City is Qatar's Great Leap Forward', *Site Selection Magazine* (May 2006).

not be able to increase its exports levels beyond 2011.[22] 'If I were to start a new [LNG] train now I would think again' asserted Faisal Al-Suwaidi, Chairman and CEO of QatarGas, a joint venture between Qatar Petroleum, ExxonMobil, Total, Mitsui, and Marubeni.[23] He stated that any new projects beyond those already commissioned would necessitate technologically advanced and expensive compression methods to squeeze out additional gas from the North Field. [24] Mr Suwaidi also suggested that the compression methods could render further monetization of the field uneconomic, although he feels that the moratorium (see Section 5.2) is useful because it can grant Qatar additional time to develop the need for compression technology.[25]

Although only 50 per cent of the appraisal wells have been sunk so far in the North Field appraisal study, the economic advisor to the Emir, Ibrahim Ibrahim has insisted that 'reservoir availability is not in question'.[26] However, a senior Qatari official who wished to remain anonymous, stated that the 'North Field is overproducing because the multinationals want to cash it in today'.[27]

Qatar may also face production issues from the North Field because of gas industry shortages of material and manpower globally.[28] Qatari officials however, remain bullish on their LNG project completion schedules, that industry-wide cost inflation in 2007 will not seriously impact plans.[29]

1.3 Economics and pricing of Gulf gas: The story of perverse incentives

The trade press speaks about the 'gas crisis' or the 'demand crisis' that is imminent in many Gulf countries, most notably the UAE and Kuwait. These countries are actually facing 'a pricing crisis', where countries with massive gas reserves (see Table 1) such as UAE and Iran, are facing substantial gas deficits. Many of the Gulf countries have no incentives to invest in new gas production for their domestic markets due to the official

[22] Dino Mahtani, 'Concern Rises over Health of Qatari Gas Reserves', *Financial Times* (16 Oct. 2007).

[23] Ibid. QatarGas was established in 1984 to operate three LNG trains from its offshore gas fields. See the equity make-up at the QatarGas company website; available at http://www.qatargas.com/AboutUs.aspx
[24] Ibid.
[25] Ibid.
[26] Ibid.
[27] Ibid.
[28] See Dino Mahtani, 'First Signs of Tightness amid North Field Bonanza', *Financial Times* (23 Oct. 2007).
[29] Ibid.

pricing policy. This disincentive to invest has only become apparent with the rapid economic growth in the region and increases in world oil prices, which led to maximization of oil exports and pressure to substitute gas for oil in the domestic economy.

1.3.1 The Gulf gas market

Because the gas market is capital intensive, there may be a substantial lead time before projects come online. However, natural gas requires regular investment in exploration, development, production, and maintenance. The funding requirements of the GCC countries are generally met in three ways: (1) from internal resources derived from the national oil companies (NOCs); (2) from investments through the international capital markets (as exemplified in Qatar's LNG projects); (3) and occasionally from foreign direct investment. While most GCC nations prohibit foreign equity participation in the upstream oil sector, they allow limited production sharing arrangements as in the North Field).[30]

Domestic requirements for power generation, gas-based industry, or oil field reinjection divert gas that could otherwise be sold on international markets. Gas consumption in the Middle East and North Africa is expanding at a rate of 7.4 per cent a year, which is more than double the global rate of 2.6 per cent. This region had an 11 per cent share of the global demand in 2005, compared with 6 per cent in 1990.[31] Rising domestic demand is likely to become an increasingly important limitation on exports in the midterm (2008–2015).[32] Local usage is entirely appropriate in relation to national economic development. However, domestic prices, at levels which do not remunerate investments and render domestic sales unattractive in relation to exports, may trigger 'crises' in even the most richly endowed natural gas countries.

[30] See Bright E. Okogu, *The Middle East and North Africa in the Changing Oil Market*, International Monetary Fund (2003).

[31] See *Natural Gas Market Review 2007: Security in a Globalizing Market to 2015*, International Energy Agency (2007).
[32] Ibid.

Table 2 Reported domestic Gulf feedstock prices[33]

Country	Domestic Price
Egypt	US$ 1.19/Mmbtu
Iran	US$ 0.35/Mmbtu
Oman	US$ 0.90/Mmbtu
Qatar	US$ $0.87/Mmbtu
Saudi Arabia	US$ 0.75/Mmbtu
UAE	US$ 0.75/Mmbtu

1.3.2 The UAE pricing regime

Considering the amount of gas reserves that the Gulf holds, no one can doubt that the myriad of local energy crises are almost entirely self-induced. A 'crisis' is illustrated by a country such as the UAE, which has the fifth largest natural gas reserves, but is predicted to face a gas deficit of 1.5 bcf/d by 2017.[34] As illustrated in Table 2, the UAE supplies the domestic market at close to the wellhead price of $1/Mmbtu.[35] Artificially low domestic prices mean that it is more attractive for the UAE to import gas through Dolphin rather than develop its own gas. Selling North Field gas at $1.30/Mmbtu while international prices range from $6–10/Mmbtu, Qatar incurs a significant opportunity cost which indirectly cross-subsidizes the UAE's industrialization.[36]

While the UAE is importing gas through Dolphin in order to feed the rapidly increasing consumption of its fast growing Emirate, Dubai, Abu Dhabi is positioning itself to become a major regional and international supplier of liquefied natural gas and gas liquids. Abu Dhabi is utilizing its large gas reserves to export large volumes of LNG to Japan, with

[33] Ibid. Table supplied by Natural Gas Market Review 2007.
[34] See 'Greater Supply Deficits Force Middle East to Focus on Domestic Needs', *Alexander's Gas and Oil Connections*,. Vol. 12, Issue 9 (10 May 2007).

[35] Abu Dhabi gas is slightly much more expensive than Qatari gas due to its higher sulphur content, by about 20 cents (US) / mmbtu.

[36] Natural gas prices for mid-August 2007 were around $6 Henry Hub. See weekly price updates at 'Natural Gas Weekly Update', *Energy Information Agency*. Available at http://tonto.eia.doe.gov/oog/info/ngw/ngupdate.asp

some gas being shipped to the West on a short-term basis.[37] The UAE was the first Gulf country to set up LNG infrastructure, with its first exports in 1977 from Das Island.[38] As reported by the Energy Information Administration, annual exports of LNG to Japan by the UAE are approximately 260 bcf, to Spain 11 bcf, and approximately 2.8 bcf to South Korea.[39] As will be discussed below, the situation in the UAE mirrors the situation in Oman where a Gulf country with large reserves of natural gas is utilizing it for LNG export, while importing pipeline gas to service its domestic market.

1.3.3 Oman and perverse incentives

Oman, as the third leg of the Dolphin Project, offers the clearest example of the pricing inefficiencies when domestic prices are kept artificially below international market rates. As was the case with the UAE, Oman provides its domestic market with gas at prices below the market price, at $0.80/Mmbtu (Table 2), based on the same policy that seeks to diversify from the oil-centric economy.[40] For Oman, diversification has meant greatly expanded natural-gas-based industries such as petrochemicals, power generation, and the use of natural gas as a feedstock for enhanced oil recovery projects. Undergirding the industrialization drive are proven natural gas reserves standing at 30 tcf, with annual production at 607 bcf. Oman has successfully expanded its gas production, a three-fold increase from 1999 figures, while domestic consumption stood at 239 bcf annually.[41]

Like the UAE, Oman is a net natural gas exporter, exporting approximately 324 bcf annually, primarily to South Korea, but also to Japan, Taiwan, Spain, France, and the USA.[42] Oman has contracted with Dolphin Energy Limited (DEL) (see section 4. below for discussion on the Dolphin stakeholders) to buy 200 MMcf/d of North Field natural gas

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[37] See 'Abu Dhabi gas exports, imports from Qatar and supply from Dubai', *APS Review Gas Market Trends* (17 Jan. 2005).
[38] Ibid.
[39] See *UAE: Natural Gas*, Energy Information Administration. Available at: http://www.eia.doe.gov/cabs/UAE/NaturalGas.html

[40] See supra note 31. *Natural Gas Market Review 2007.*

[41] See: *Oman: Background*, Energy Information Administration. Available at http://www.eia.doe.gov/emeu/cabs/Oman/Background.html
[42] Ibid.

in 2008, primarily for use as a feedstock at Occidental's enhanced oil recovery project in the Mukhaizna field. [43]

Oman's future natural gas development depends on production of 'tight' natural gas reservoirs, which are geologically complex reservoir structures much more difficult to access than conventional natural gas reserves.[44] Oman, which saw its production decrease in the early 2000s, signed a production sharing contract with BP in 2007 for development of the Khazzan/Makarem tight natural gas fields. [45] Although this project has the potential to almost double Oman's reserve figures, it is considered to be too costly at the domestic price levels.

1.4 The gas social contract

Gas producing nations outside the OECD generally utilize a type of dual-part tariff mechanism that heavily subsidizes domestic markets, but exports gas at market rates. The Gulf governments used inexpensive gas associated with oil production—which, given that it had traditionally been flared, was deemed to have little value—to underwrite domestic industrialization, and to fulfil the social contract with the citizenry. Over the years, this social contract developed a sense of entitlement to low-priced gas with the predictable result that the domestic gas prices remain divorced from modern investment criteria and certainly from international market prices. Low prices have created 'perverse incentives', warping investment, the environment, and gas utilization. Low prices discourage investments in domestic development, while encouraging inefficient use of gas, and of the electricity which is generated from it.

Gulf countries utilize different strategies to escape these inefficient mechanisms and encourage investment. One of these strategies has been the 'cost-plus' approach; another allows companies to exercise export rights for the valuable condensate as an offset for low domestic prices. A possible solution would entail raising domestic prices to some kind of alignment with international prices but given the figures in Table 2, most prices would

[43] Ibid.
[44] Ultra tight gas fields are fields where the gas does not flow easily. Ibid.

[45] BP representatives have stated that the two fields could potentially yield between 20 and 30 Tcf. See 'Unlocking tight gas', *BP*, available at http://www.bp.com/sectiongenericarticle.do?categoryId=9019302&contentId=7035200

need to be raised at least threefold to reach even 50 per cent of international levels. The domestic political repercussions of such actions would be severe.

2. Foreign and domestic policy initiatives for gas development

2.1 The domestic reason: the initial development of the North Field

Prior to 1980, Qatar gave little serious thought to exploiting its natural gas reserves. After the 1983 oil price decline, Qatari officials reasoned that natural gas production might bolster plummeting government funds.[46] The political impetus to exploit the gas reserves arose from Qatar's wish to continue welfare state benefits and domestic support for an essentially feudal society run along autocratic lines.

Oil production peaked in Qatar around the late 1970s, when disillusioned international oil companies (IOCs), which believed that the small sheikhdom offered little promise for profitable exploitation of ageing oil fields, also concluded that Qatar's service contracts made prospects even less attractive. The Qatari social contract, written and signed in oil, was the glue that kept the government and society together.[47] This revenue decline was the domestic cause for a *volte-face* from oil, and the catalyst for natural gas exploitation.

2.2 Natural gas development

The raging 'Tanker Wars' of the 1980s was a clarion call for Qatar, because Iran and Iraq targeted oil tankers and merchant ships, even those flagged by neutral Gulf nations, to

[46] *See* generally Hassan Hamdan Al-Akim, 'The Arabian Gulf at the New Millennium: Security Challenges', in *Iran, Iraq and the Gulf States*. Ed. Joseph Kechichian (New York: Palgrave 2001). It is estimated that Qatar's oil supplies will depleted by 2023. See *Qatar: Background*, Energy Information Administration, available at http://www.eia.doe.gov/emeu/cabs/Qatar/Background.html

[47] Qatar has a very extensive welfare system, with free health care and schooling for citizens. It evolved out of a co-operative strategy, where in exchange for political largesse, the emirs (traditional rulers) were able to secure political quiescence from the then (pre-independent) politically powerful merchant class. Thus, as the merchant class rose in power economically, their actual political power declined. As long as they received the benefits of the extractive industries, the merchant class, renounced its historical claim to participate in decision making. The ruling emirs of Qatar found it much more expedient to buy them out, rather than repressing any potential dissent. However, this fragile system lasts as long as the State can continue to provide benefits. Thus, states like Qatar, thoroughly dependent on its energy resources, find that when revenues decline, not only does it impact on their budget, but also on their very survival. *See* Jill Chrystal, 'Coalitions in Oil Monarchies: Kuwait and Qatar', *Comparative Politics Journal* (1989).

deprive the opposing nation of maritime trade.[48] Largely dependent on dwindling oil reserves, Qatar believed it necessary to reach beyond the orbit of its mammoth neighbour, Saudi Arabia, which lacked the means to protect Gulf shipping lanes.[49]

Although conceived in part to protect themselves from the potential depredations of Iran and Iraq, the Gulf Cooperation Council (GCC) as an organization was even less able than Saudi Arabia to protect the Gulf shipping lanes, which are functionally the life blood of the small, regional sheikhdoms.[50] The GCC was compelled to ask the assistance of the United States for protection of the maritime routes. Under the mantle of Operation Earnest Will (1987–88),[51] the USA reflagged Gulf oil tankers and provided naval escorts.[52] The Qatari State saw, in this episode, that its survival was dependent on its ability forge its own foreign policy relationships with the great powers in general, and the United States in particular.[53] This recognition underscored the strategic value of its gas deposits.

2.3 The development of the North Field

Qatar believed that its economic and political future lay in exploiting gas resources from the significant North Field deposits.[54] A telescopic view would see Qatari natural gas in an

[48] Lloyd's of London, a British Insurance company, conservatively estimated that the 'Tanker War' damaged 546 commercial vessels and killed approximately 430 civilian mariners. The war caused insurance companies to increase the war risk premium on tankers headed to the Gulf by 50 per cent. See Michael S. Serrill, 'The Gulf Back to the Bullets', *Time* (14 Sept. 1987).

[49] See Mohamed Riad, 'Geopolitics and Politics in the Arab Gulf States (GCC)', *Geojournal*, Vol.13 No. 3 (Oct. 1986).

[50] See Nadia El-Sayed El-Shazly, *The Gulf Tanker War: Iran and Iraq's Maritime Swordplay* (New York: St. Martin's Press, 1998).

[51] Operation Earnest Will (July 1987–Dec. 1988) also coincided with Operation Prime Chance (Aug. 1987–June 1989), a United States Special Operations Command effort to protect US flagged oil tankers from Iranian attack. See Harold Lee Wise, *Inside the Danger Zone: The US Military in the Persian Gulf 1987–88*, (Annapolis, MD: Naval Institute Press, 2007).

[52] Tankers were reflagged with an American flag because US law would not allow the Navy to escort foreign civilian ships flying a non US flag.

[53] The increasingly warm relationship between the USA and Qatar comes as part of a confluence of events. As part and parcel of the US decision to reduce its dependence on Saudi Arabia, particularly after the terrorist attacks on New York on 11 September 2001, as well as the drive of the Qatari Emir Sheikh Hamid Al-Thani to diversify Qatar's foreign policy relationships and to openly engage the USA. See Alfred B. Prados, *Saudi Arabia, Current Issues and US Relations*. Issue Brief for Congress (3 Oct. 2002).

[54] Qatar's Minister of Energy and Industry, Abdullah bin Hamad Al-Attiya, stated that Qatar had been allocating about one billion dollars from its revenues into developing its natural gas and LNG production for

ever-expanding global role in four different markets: gas-to-liquid (GTL), pipeline gas exports, i.e. principally Dolphin, LNG, and domestic markets,[55] the North Field is the trump card in Qatar's international policy gambits.

Like most gas exporting nations before the increase in global gas demand, Qatar previously viewed natural gas as largely valueless. In the early 1970s Qatar flared almost all of its associated natural gas, approximately 593 bcf annually.[56] By 1974, flaring had been reduced to 66 per cent of associated gas production, and further reduced to less than 5 per cent by 1979.[57]

Tensions with Iran over the North Field's maritime boundary which impeded later development, may yet lead to political conflict (discussed in detail below, Section 5.1). When it first discovered the North Field, Shell suggested that the field might overlap into Iranian maritime territory. The Qatari government ordered that the official map should exclude the portion that overlaps Iranian territory.[58] With the 1991 discovery of South Pars, Qatar's policies triggered tensions with Iran, which threatened[59] 'other ways and means of resolving the issue', unless Qatar addressed the equitable exploitation of the field.[60] The Iranian threats caused uneasiness among oil companies since the dimensions of the North Field/South Pars field and therefore its capacity to produce and export volumes in excess of Iranian and Qatari requirements for domestic use, were unknown.[61]

Tensions eased after Qatar and Iran reached a late 1980s agreement to define the North Field/South Pars structure. In early 2002, Qatar and Iran conducted joint feasibility studies for possible joint ventures in which the two nations could utilize gas reserves and engage

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more than 14 years. See Yadullah Ijtehadi, 'North Field Holds Key to Qatar's future riches', *Gulf Business* (20 Nov. 2002).

[55] As related by Qatar Petroleum's Paul Manders. Ibid.

[56] See 'Qatar Natural Gas', in 'Countries of the World', available at www.geographic.org

[57] Ibid.

[58] See supra note 16, 'Iran-South Pars oilfield'.

[59] The South Pars portion contains approximately 280–500 Tcf of gas reserves. See *Country Analysis Briefs: Iran*, Energy Information Administration. Available at http://www.eia.doe.gov/emeu/cabs/Iran/Full.html

[60] See Kohei Hashimoto, Jareer Elass, and Stacy Eller, *Liquefied Natural Gas from Qatar: The QatarGas Project, Geopolitics of Gas*: Working Paper Series (Dec. 2004). Available at http://www.rice.edu/energy/publications/docs/GAS_QatarGasProject.pdf

[61] See Judy Clark, 'Gas use at issue in Iran as oil production sags', *Oil and Gas Journal* (2007). Available at http://www.ogj.com/articles/save_screen.cfm?ARTICLE_ID=226732

in downstream cooperation.[62] Qatari Minister of Energy, Al-Attiyah assured that, '[W]ith more than 40 per cent of the world's natural gas reserves, Qatar and Iran will emerge as major players in the international natural gas industry'.[63]

When Emir Hamad bin Khalifa Al-Thani assumed the reins of Qatari governance in 1995, he incorporated the North Field into a grand strategy for enhanced development. His predecessor had initiated a strategy that included; inviting Shell, BP, and Compagnie Française des Pétroles (CFP)—now Total—to participate in a competitive process for a 7.5 per cent equity stake in a joint venture with Qatar General Petroleum Company (QGPC) to develop the North Field.[64]

The withdrawal of Shell from the North Field project (to concentrate on Australia's North West Shelf development) temporarily delayed development.[65] Qatar persisted, however, and signed a joint venture agreement with QGPC, BP, and Total, to establish Qatargas—Qatar Liquefied Natural Gas Company Limited.[66]

With loans secured by future oil sales,[67] Qatar funded North Field development to pursue Phase One—domestic gas supply infrastructure—and Phase Two—a pan-GCC gas pipeline. Qatar began gas production on 3 September, 1991, the twentieth anniversary of Qatari independence.[68]

2.4 Qatar's investment model: the monetization of the North Field

To expedite North Field development, Qatar sought financial assistance from a myriad of sources, rather than pursue the now fashionable model of 'resource nationalism'.[69] Qatar's

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[62] See Kaveh Afrasaibi 'China rocks the geopolitical boat', *Asia Times* (6 Nov. 2004).
[63] See 'Qatar and Iran gas deals', *US–Qatar Journal*, No. 33 (6 Dec. 2002).
[64] See supra note 60, *Liquefied Natural Gas from Qatar: The QatarGas Project, Geopolitics of Gas.*
[65] Ibid.
[66] Ibid.
[67] For more information on this technique, see generally, *Assessing Public Sector Borrowing Collateralized on Future Flow Receivables*, International Monetary Fund (June 2003).
[68] Ibid.

[69] Resource nationalism generally relies upon expanded state control over its natural resources, for political, increased economic rents, or international political influence. PFC Energy reported that resource nationalism was a primary cause for the limited capacity expansion of some of the world's longest producing oil fields. Venezuela's threatened expropriation in the Orinoco belt, as well as Russia's action in Sakhalin Two integrated oil and gas project are two of the most high profile instances of resource nationalism. Venezuelan

monetization strategy was almost necessitated by its small population. Qatar Petroleum (QP) not only lacked the expertise, but also lacked the diverse skills and training required for oil and gas development on a substantial scale. The success of this monetization approach is demonstrated by the fact that even though the Emir, Sheikh Hamad bin Khalifa Al-Thani, launched the investment boom in the mid-1990s, Qatar's development shows no sign of stopping. Qatar has an [A+] investment grade rating with a positive outlook, on the same level with approximately 30 OECD countries.[70]

Aware that it did not have the technical capacity to develop gas reserves, Qatar offered equity shares to IOCs for North Field development, including[71] extensive opportunities for energy companies, project financiers, engineering, procurement, and construction contractors, equity funds, and consultants. The success of Qatar's monetization strategy stands in stark contrast to that of other major energy producing nations, such as Iran and Venezuela, which have experienced difficulty in developing their natural gas production for export.

Although IOCs and international markets are understandably concerned about resource nationalism in oil-producing states, and the ability of these states to honour their contractual duties, Qatari Minister of Energy Abdullah Al-Attiyah, boasted, that '[P]remier lenders all over the world now quickly respond to Qatar's funding requirements, which is a sign of the confidence they have in Qatar. Our prudent fiscal management attracts financial institutions that do not hesitate to lend money for projects, mainly in the energy sector. '[72]

President Hugo Chavez, probably the most iconic symbol of resource nationalism, proclaimed that, '[T]he nation should recover its ownership of strategic sectors, all of that which was privatized, let it be nationalized' and he concluded 'all of those sectors in an area as important and strategic for all of us as electricity'.

[70] See 'Qatar—A Hub for Gas-Fuelled Mega Projects', *Alexander's Gas and Oil Connections*, Vol. 10, No. 5 (10 Mar. 2005).

[71] This is generally the case for gas producing nations, where they lack the technical expertise, and often the financial means to develop these resources. As a result, many of them, despite official rhetoric against the involvement of foreign IOCs (not in Qatar's case), have invited IOCs in to develop their gas fields under very attractive terms. For a case study see Miranda Wainberg, *From 'Apertura Petrolera' to 'Apertura Gas Natural'? The Case of Venezuela*, Center for Energy Economics. Available at http://www.beg.utexas.edu/energyecon/new-era/case_studies/Apertura_in_Venezuela.pdf

[72] See Supra note 70 'Qatar—A Hub for Gas-Fuelled Mega Projects'

3. The proposed GCC regional gas grid: the collapse of an ideal

While Phase 1 of the North Field development was to supply natural gas for domestic consumption, Phase 2 was designed to establish pipelines for export to the neighbouring GCC countries of Saudi Arabia, Kuwait, Bahrain, and UAE (Dubai). The estimated $2 billion price tag was to be equally divided between the participating nations. In the late 1980s, Qatar considered the gas export pipeline a more meaningful undertaking than LNG exports.[73] When the GCC oil ministers first discussed a regional GCC gas grid in 1988, they agreed in principle to initiate development immediately.[74] At the November 1989 GCC summit meeting Saudi Arabia, Kuwait, Bahrain, and UAE (Dubai) expressed interest in a GCC pipeline to import up to 2 bcf/d of dry North Field gas. At the December 1990 summit, the GCC nations agreed to nearly all the essentials for the regional pipeline, except for the price.[75]

In spite of that initial optimism, political tensions, minor diplomatic squabbles, and border disputes[76] derailed the proposed project.[77] Some GCC countries expressed dismay at Qatar's increasingly close relationship with Israel.[78] Kuwait's participation lagged because

[73] See Neil Barnett, 'Dolphin project surges ahead', *The Middle East* (Feb. 2000).
[74] Ibid.
[75] Ibid.
[76] The Arabian Peninsula has started to resolve its long standing boundary disputes, replacing them with recognized borders. Although the GCC has been set up in part to resolve disputes between members, this goal has been achieved not through the GCC, but through a combination of mediation, bilateral treaties, or international forums such as the International Court of Justice.

[77] One such diplomatic squabble was Saudi Arabia's objection to an Al Jezeera broadcast it felt was insulting to the Saudi royal family. See N Janardhan, 'Al Jazeera: Qatar's Secret Weapon', *Asia Times* (15 Aug. 2002).

[78] In 1993, Qatar was the first Gulf country to have open diplomatic ties with Israel, and then in 1995 initiated an economic relationship agreeing to supply Israel with natural gas. This caused some consternation with Qatar's neighbours, until Qatar eventually froze ties in 2001. Qatar's decision to seek a *rapprochment* with Israel had led to considerably strained relations with other Gulf countries, and caused Egypt to send a diplomatic message to Qatari officials stating that it feared its extreme stance with Israel might lead to assassination attempts against Qatari leadership. See 'Threats against Qatar', *Arabic News* (21 June 2001). Available at http://www.arabicnews.com/

of reconstruction efforts after Operation Desert Storm, and Saudi Arabia found its own significant domestic gas discoveries.[79]

During the colonial era, Gulf States paid little attention to national boundaries, since a person's primary loyalty was based on lineage or tribal affiliation.[80] However, once a proposal for a regional pipeline network had been advanced, border disputes became a major issue. [81] The vision for a regional grid was also influenced by the easy availability of low priced petroleum products, and the image of gas as a by-product of oil production, in the GCC countries.[82] Because most GCC states are net oil exporters, they had illusions of energy self-sufficiency, not recognising that their oil and gas positions were not necessarily synonymous.[83]

3.1 Reality hits and Saudi Arabia disengages

Formerly an ardent supporter of the proposed project, Saudi Arabia not only withdrew from the GCC pipeline negotiations in 1992, but denied transit rights for the pipeline to pass overland to Kuwait.[84] This problem was only one issue in a chain of political problems between Qatar and Saudi Arabia that impeded further pipeline development. A 1992 dispute between Bedouins in the border hinterlands escalated into state involvement

[79] Over the last decade, Saudi Aramco has added 72 Tcf of non-associated reserves. See *Saudi Arabia: Natural Gas*, Energy Information Administration. Available at http://www.eia.doe.gov/emeu/cabs/Saudi_Arabia/NaturalGas.html

[80] Until 1971, the British maintained regional peace and acted as arbitrators for disputes. Many of the borders delineated by the British were never properly demarcated, and once oil was found, contention became rife. After the withdrawal of British forces, old territorial claims and tribal antipathy increased. The sudden importance of defining oil and gas deposits, while setting transit rights, encouraged these territorial disputes. See J.C. Wilkinson, *Arabia's Frontiers: The Story of Britain's Boundary Drawing in the Desert* (London: I. B. Tauris, 1991).

[81] See Supra note 60, *Liquefied Natural Gas from Qatar: The QatarGas Project, Geopolitics of Gas.*

[82] This is crucial because the gas deficit is widening and the region is expected to reach a staggering 77bn cm by 2008–2010. See 'The GCC grid is still a pipe dream', *Alexander's Gas and Oil Connections*, Vol. 10, No. 6 (23 Mar. 2005).

[83] Dubai was reported as being willing to only pay $1 (US) per Mmbtu in the early 1990s; a price that Qatar did not think was realistic. Abu Dhabi was also difficult on transit rights of the undersea pipeline to Dubai as it wanted to sell its own gas to the neighbouring Emirate. See supra note 60, *Liquefied Natural Gas from Qatar: The QatarGas Project, Geopolitics of Gas.*

[84] 'Delays don't deter Dolphin', *Upstreamonline* (12 Sept. 2006). Available at www.upstreamonline.com

and caused the deaths of two Qataris, and the kidnapping of a third.[85] A Saudi Arabian retaliatory attack on Qatari border post killed two border police.[86] While reports implicated Saudi Arabia in an attempted countercoup in 1996 to return Khalifa bin Hamad Al-Thani to the throne,[87] Western intelligence agencies may have played key roles in successfully thwarting the attempt.[88] Although violence between the two nations created a significant amount of hostility, they began tentative steps towards normalized relations in 1996, and completed border negotiations in 1999.[89] Smaller Gulf countries resent the influence of Saudi Arabia, which some view as seeking regional hegemony.[90] The Saudis are understandably inclined to view any efforts at regional security/economic/energy consolidation outside their influence, as inherently threatening.[91]

3.1.1 Other factors behind Saudi opposition

To develop gas reserves that potentially range up to 232 tcf, functionally speaking the fourth largest in the world,[92] Saudi Arabia initiated its own Gas Initiative in 1998.

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[85] See Ramin Seddiq, 'Policy Watch/Peace Watch: Border Disputes on the Arabian Peninsula', *Washington Institute for Near East Policy* (15 Mar. 2001).
http://www.washingtoninstitute.org/templateC05.php?CID=1403

[86] See 'Background note: Qatar', US Department of State: Available at.
http://www.state.gov/r/pa/ei/bgn/5437.htm

[87] See 'Gulf Neighbours Hope to Heal Rift', *BBC News* (11 June 2004).

[88] See 'Life sentences for Qatari coup plotters', *BBC News* (29 Feb. 2000). Available at
http://news.bbc.co.uk/1/hi/world/middle_east/660887.stm

[89] See supra note 80, *Arabia's Frontiers: The Story of Britain's Boundary Drawing in the Desert*

[90] Saudi Arabia has an immense political weight in the GCC, holding the majority of both oil and population. The smaller Gulf nations have viewed Saudi Arabian leadership as being heavy handed, and the Gulf nations (in particular Oman and Qatar), have followed policies seemingly meant solely to antagonize Saudi Arabia. See Phebe Marr, 'US–GCC Security Relations, I: Differing Threat Perceptions', Strategic Forum 39, *Institute for National Strategic Studies* (August 1995).

[91] An example of this is Bahrain's bilateral 2004 Free Trade agreement with the USA, even though Saudi Arabia explicitly rejected Bahrain's independent stance, alleging it conflicted with the GCC legal mechanisms which do not allow members to sign independent bilateral agreements outside the body. Even though there were certain economic benefits for Bahrain, as in most things in the Gulf, politics played a significant, if not the major role. This is also true for the other Gulf countries; attempting to deepen military–political–economic ties to the USA and forming independent strategic initiatives causes dismay in the Kingdom, which views itself as the gatekeeper to the region. See N. Janardhan, and Emilie Rutledge, 'US Bahrain Trade Deal Exposes GCC Chinks', *Daily Star* (Beirut) (28 Dec. 2004).

[92] See *Saudi Arabia: Natural Gas*, Energy Information Administration. Available at
http://www.eia.doe.gov/emeu/cabs/Saudi_Arabia/NaturalGas.html

Although Saudi Arabia, effectively added 72 tcf of dry gas to its portfolio[93] within the last decade, the Gas Initiative marked a departure from the traditional Saudi stance that viewed natural gas production so negatively that instead of producing it for domestic use, they imported it for domestic consumption (in power generation, desalinization and reinjection into oil fields) merely on the premise that more oil could be exported.[94]

The change in the Saudi stance on natural gas *vis-a-vis* oil is reflected by the fact that while natural gas flaring resulted in 85 per cent of Saudi Arabia's 1974 fossil fuel emissions, by 2005 that figure had fallen to less than 1 per cent.[95] Saudi gas reserves are split, 60 per cent are associated with oil reserves, with the remaining 40 per cent nonassociated.[96] Saudi policy not only opposed the export of natural gas as a fuel source that might reduce international demand for Saudi oil, but also for the purely psychological reason that the Saudis never saw themselves as 'gas producer[s]', viewing themselves instead through the perhaps limited moniker 'oil producer'.[97] However, three factors precipitated a change in Saudi natural gas policy:

- The Kingdom created a Master Gas System[98] in the early 1980s as a first step that would mitigate gas flaring and encourage a domestic gas disbursement network
- The Kingdom wanted to diversify its narrow economic dependence on crude oil supplies[99]
- The Kingdom found the 'Gas Initiative' a useful means of enticing wavering American interest in long term, bilateral partnerships. Through the Gas Initiative,

[93] According to the Energy Information Administration, Saudi Arabia is believed to have significant gas deposits in the Rub'a Al Khali, (the Empty Quarter) although this has not been verified, as the Kingdom remains significantly under-explored. Saudi Arabia remains at a dismal tenth amongst the gas producing countries. See *Saudi Arabia: Natural Gas*, Energy Information Administration. Available at http://www.eia.doe.gov/emeu/cabs/Saudi_Arabia/NaturalGas.html

[94] Ibid.

[95] G. Marland, T. A. Boden, and R. J. Andres, 'Global, Regional, and National CO_2 Emissions' in *Trends: A Compendium of Data on Global Change* (Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, US Department of Energy, 2005).

[96] See supra note 80 *Arabia's Frontiers: The story of Britain's boundary drawing in the desert.*

[97] See Philip Robins, 'Slow, Slow, Quick, Quick, Slow: Saudi Arabia's "Gas Initiative"', *Energy Policy* 32 (2004), 321–333.

[98] The Saudi Master gas System is a collection of gas gathering facilities and pipelines both associated and non-associated natural gas.

[99] Supra at note 97 'Slow, Slow, Quick, Quick, Slow: Saudi Arabia's "Gas Initiative"' at 323.

> Saudi Arabia intended to provide stable energy, or in this case natural gas, with the USA providing security guarantees.[100]

The Gas Initiative reflected Saudi fear that it could it could lose importance in American strategic planning, and its recognition that American security guarantees are critical to the Saudi mindset.[101] The Saudis provided American companies attractive terms under the Gas Initiative to retain pre-eminence in American strategic thinking, after the USA began to woo other Gulf States.[102] The Saudi Gas Initiative ultimately collapsed, as the IOCs were unhappy with the modified terms that the Saudi government was offering. After the American IOCs expressed their dissatisfaction over the modified terms, Saudi officials began to present these shares to non-American companies. However, the initial Saudi impetus for promulgation of the Gas Initiative resembled Qatar's use of natural gas reserves as leverage for security guarantees.[103] Not only did these factors drive Saudi objection to a regional GCC pipeline, they underlie some of the Kingdom's objections to Dolphin.

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[100] Ibid.
[101] Ibid. at 324

[102] In Saudi circles, the 'Gas Initiative' was the brain child of the well known pro-American Saudi Ambassador to the USA, Prince Bandar bin Sultan, who overcame the royals' resistance by pressing the national security angle. *Id.* However, the Gas Initiative collapsed under the sustained pressure by ARAMCO and the Oil Minister Ali Naimi, with the gradual restriction of the offered blocks to more and more marginal fields. See 'Western group optimistic on gas find in Saudi Arabia', *Alexander's Gas and Oil Connections*, Vol. 9, No. 1 (15 Jan. 2004). However, as the Gas Initiative collapsed, and as a counter movement to the USA shifting its military emphasis to the smaller Gulf states, Saudi Arabia may have structured its reduced tenders for natural gas development in a way to favour non-USA companies. As one energy observer stated, the Saudis seem to desire to cement their ties with Russia, China, and other third countries. One energy expert noted that '[t]he Saudis are clearly shifting around looking to different parts of the worlds'. See Karen Matusic, 'Saudis extend geopolitical base with gas deals', *Oil Daily* (2 Feb. 2004). Also, see, Alfred B. Prados and Christopher M. Blanchard, *Saudi Arabia: Current Issues and US Relations*, CRS Report for Congress (2 Aug. 2006). This is especially important as post-11 September saw a distinct cooling in USA–Saudi relations, and a marked lessening of interest from the Saudi side to do whatever it takes to placate Western energy demands, and security guarantees. However, as there is no viable alternative to the US military, Riyadh will be forced by necessity to rely on the USA, at least for the foreseeable future. As Omar Bahlaiwa, secretary general of the influential Saudi Committee for International Trade stated 'We are in a Catholic marriage with America' emphasizing that 'divorce was unthinkable. But we are also Muslims—we can have more than one wife'. See Hassan M. Fattah, 'Hu's Saudi visit signals a change in the Gulf', *International Herald Tribune* (24 Apr. 2006).

[103] The Qatar and Saudi mindset encompassed security guarantees in two ways. Firstly, active involvement of the US energy sector in the production of natural gas will naturally lead to American concern and protection for the country involved. Secondly, through outright bilateral security treaties, of course through using the increased production and shipments of natural gas to the USA as the *causa prima*.

3.1.2 Saudi opposition to Dolphin

The Kingdom sees the Dolphin Project as a preliminary step for a political union which the Kingdom opposes *in toto*.[104] In 2005, Saudi Arabia also refused to agree an extension of the Dolphin Project to Kuwait, which would have required transit across Saudi territory. Based on these objections, Qatar and Kuwait were forced to abandon this project for which they had finalized negotiations, including a gas price.[105] In July 2006, the head of corporate banking at the National Bank of Abu Dhabi, which finances the Dolphin Project, announced that Saudi Arabia had insisted that all Dolphin related activity cease immediately. The Saudi Embassy insisted that the undersea line from Qatar to the UAE would cross Saudi Territory and 'cannot be constructed without the agreement of the Kingdom'.[106]

On the other hand, DEL (see below, section 4.), which denied receipt of a formal Saudi protest, declared that it would ship gas, because the undersea pipeline runs through the maritime areas of Qatar and the UAE.[107] To complicate the situation, Qatar's oil minister, Abdullah Al-Attiyah, proclaimed that Doha had not received Saudi objections, and that the pipeline was on schedule.[108]

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[104] This greater integration is being conducted in the face of the weakening of the GCC as a collective body to achieve the aims of its members, and the distancing of the UAE, and Bahrain from the Kingdom, as well as Oman developing closer ties with the triumvirate. For example, in anticipation of the memorandums of understanding signings, UAE and Oman signed a treaty to demarcate the boundary at Umm Zummul, where Saudi Arabia, Oman, and the UAE connect. Kuwait is keeping on the sidelines to see how things develop before committing itself. See 'Saudi Arabia says it will impose legal measures against unilateral free trade agreements', *Bilaterals* (Jan. 2005). Available at http://www.bilaterals.org/article.php3?id_article=1154

[105] There were no technological difficulties with the Qatar–Kuwait pipeline, seeing that the most feasible route was a sub-sea pipeline that required only one compressor to pump the gas to Kuwait. The main difficulty was Saudi Arabian intransigence, and the fact that the pipeline would have to run under the sea of the twelve mile territorial waters of Bahrain and Saudi Arabia. *See* Andy Critchlow, 'Saudi Arabia, UAE clash over Gulf pipeline route' (Update 7), *Bloomberg News*. Available at www.bloomberg.com

[106] The memo continued stating that 'no construction may be undertaken' in Saudi-controlled territory. 'The Kingdom will take all actions necessary to protect its sovereign rights and jurisdiction', in reference to the portion of the pipeline that passes under the disputed territory. Ibid.

[107] See 'Saudi Arabia lodges protest to dolphin project-Qatar', *International Oil Letter*, Vol. 22, issue 28 (17 July 2006).

[108] See Reuters, 'Qatar unaware of Saudi objection to gas project', *Gulf Oil & Gas* (13 July 2006). Available at http://www.gulfoilandgas.com/webpro1/MAIN/Mainnews.asp?id=3204

Saudi objections could carry sufficient force to derail ideas for an integrated pipeline, which would significantly impact the UAE's ability to supply its rapidly expanding economy.[109] A spokeswoman for Total expressed astonishment at the letter, particularly after the initial pipeline had been laid.[110] One of the original lenders brushed aside Saudi objections, which he declared would not hinder Dolphin, because the project owners, who are also the equity partners, had guaranteed the financing.[111]

3.2 Qatar and Bahrain

GCC multilateral pipeline negotiations had collapsed, in part because of an unresolved Qatar–Bahraini border dispute over the ill-defined boundaries for the islands of Zubara and Hawar. Not only have these disputes brought the involved nations to the very precipice of outright conflict, but they impacted negotiations on the GCC gas pipeline.[112] The disputants eventually brought the issue to the International Court of Justice (ICJ) in 1991, over Bahrain's protest. This dispute, which continued from 1991 until 2001, was the longest case in ICJ history.[113]

The court divided the territory between the two states and stirred a renewed optimism over GCC relations. Although the dispute induced Bahrain to rescind support for the GCC grid, the largely amicable resolution created an orbit for enhanced future cooperation on gas exports. Qatari Foreign Minister, Sheikh Hamad bin Jassem bin Jabar al-Thani asserted that, 'We [Qatar and Bahrain] must mull over how to race against time to make up for the lost time'.[114] The ICJ resolution encouraged these countries to renew talks on the joint

[109] TotalFinaElf's (in charge of the upstream development of Dolphin) President for the Middle East, stated that the main impediments to successful completion of pipelines were contractual and political difficulties, as opposed to technical issues. *See* Gerald Butt, 'Qatar to break new ground as regional gas supplier and new technology developer', *Middle East Economic Survey*, Vol. XLIV, No. 12 (19 Mar. 2001).
[110] Ibid.
[111] See 'Emirates will start pumping gas from Qatar despite Saudi objections', *International Herald Tribune* (27 June 2007).

[112] See 'The Bahrain–Qatar border dispute: The World Court decision: Part 2', *The Estimate*, Vol. XIII, No. 7 (April 2006).

[113] Some critics averred that the court avoided settling the issue by holding supreme a British protectorate ruling, as opposed to utilizing the principles of territorial law. Nonetheless, both parties appeared relived that the dispute reached resolution. See *Maritime Delimitation and Territorial Questions between Qatar and Bahrain* (Qatar v. Bahrain), International Court of Justice (1991).

[114] See 'Hawar Island Decision Brings Optimism for Future', *US–Qatar Journal*, Vol. 1, Issue XI (29 Mar. 2001).

GCC gas pipeline that included expanding Dolphin, and to consider other development projects. Qatar declared that Bahrain's gas demand will be the first priority as soon as any decision to expand exports beyond the pre-moratorium agreed contracts is taken.[115]

3.3 UAE difficulties

The UAE and Saudi Arabia have had strained relationships since the border disputes in the 1970s. While it seemed the disputes had been fully resolved, the advent of the GCC pipeline proved otherwise. UAE free trade agreements with the USA, and a proposal for a bridge linking Qatar and the UAE across Saudi maritime waters aggravated the old wounds between these nations.[116] This dispute arose from Saudi Arabia's accusation that the Dolphin pipeline extends across territory the UAE granted to Saudi Arabia under the terms of the 1974 'Riyadh Treaty'. [117] The UAE contends that the border issue is still unresolved, and that the Dolphin pipeline passes under joint UAE–Saudi maritime waters in a manner consistent with the Treaty.

As a signatory to the 1974 Riyadh Treaty, Saudi Arabia agreed to forego its longstanding claim to the Buraimi oasis region, in return for the UAE's withdrawal of claims to the Khour Al-Adeed, a 25 km long coastal land bridge that separated Abu Dhabi and Qatar.[118] Al Adeed is isolated and surrounded by Saudi Arabian territory.

The UAE also relinquished 80 per cent of the oil in the Shaybah oilfield in the Saudi Arabian Rub al-Khali or 'Empty Quarter' desert, which contains 15 billion barrels of proven oil reserves and unexploited gas reserves of 25 tcf.[119] Saudi diplomats made official Saudi recognition of the newly found Emirate conditional upon the resolution of the territorial issues. Faced with Dolphin's imminent start in the third quarter of 2007, the UAE argued the treaty did not govern this dispute, because of a change of material circumstances.[120]

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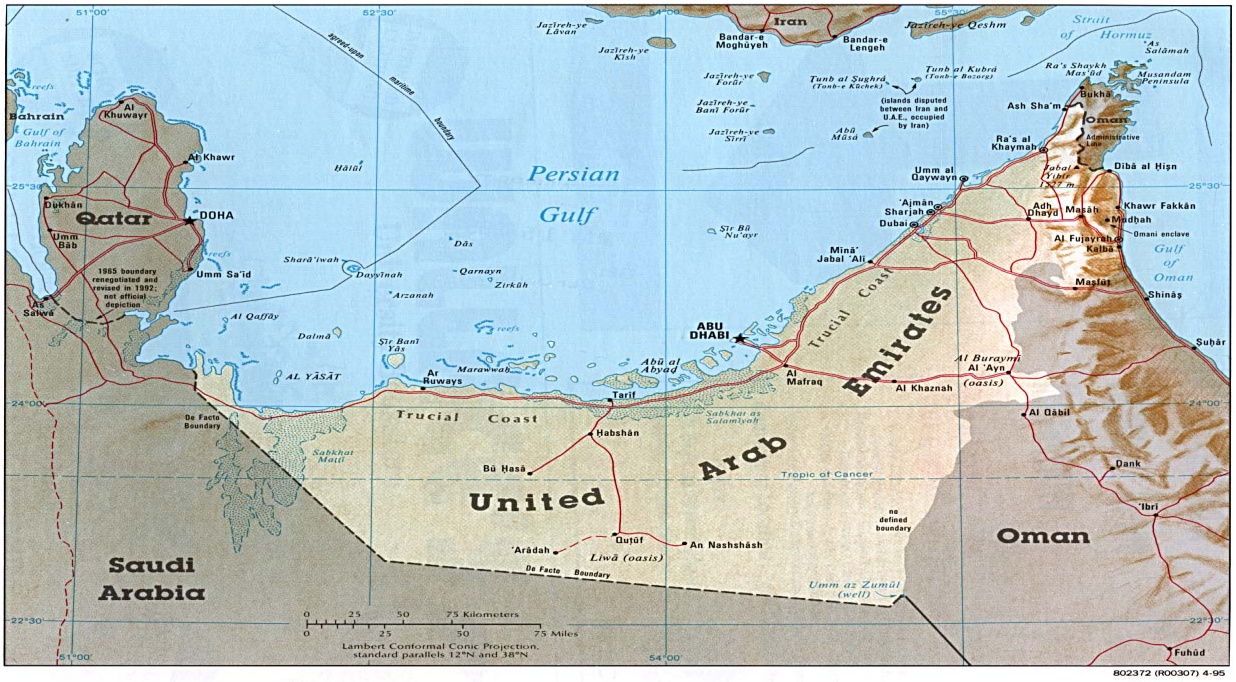
[115] Ibid.
[116] See 'Saudi–UAE Disputes', *Arab Media Watch*. Available at www.arabmediawatch.com
[117] Ibid.
[118] Ibid.
[119] See Energy Information Administration. Available at www.eia.gov

[120] The Riyadh Treaty has an uncertain status under international law; it was secret (only published in 1995), and was not formally ratified by the UAE Federal National Council, which would be crucial for the

The official UAE Yearbook of 2006 shows the UAE extending westward to form a common border with Qatar (the Khour-Al Adeed), and across territory which the UAE had purportedly relinquished under the Riyadh Treaty to Saudi Arabia (see North Eastern border of UAE in Figure 2).[121] The official UAE Yearbook map (see Figure 3) also shows that the southern UAE border encompasses the majority of the Shaybah Oil field, which the UAE yielded to Saudi Arabia's under the terms of Riyadh.[122]

Figure 2. Official map showing 'Riyadh' borders



Source: Central Intelligence Agency 2003

agreement to be binding on both parties. Qatar, although it shared a land border with UAE, was not a party to the negotiations.

[121] See Simon Henderson,: 'Map Wars: The UAE Reclaims Lost Territory from Saudi Arabia', *Policy Watch No. 1069.* Washington Institute (19 Jan. 2006). Available at www.washingtoninstitute.org
To see the disputed UAE map see http://www.uaeinteract.com/uaeint_misc/pdf_2006/English_2006/eyb3.pdf

[122] The Shaybah oil field contains an estimated 14.3 billion of sweet, light crude. It is the largest oil field that has been developed in the past two decades. See *Saudi Arabia: Oil*, Energy Information Administration. Available at http://www.eia.doe.gov/emeu/cabs/Saudi_Arabia/Oil.html

Figure 3. UAE Map of 2006

Source: UAE Official Yearbook 2006

The 2006 Yearbook map (Figure 3) differs from previous official maps (compare with Figure 2) which seemed to recognize Saudi territorial claims, and is supportive of the UAE's contention that, due to changing circumstances, the Riyadh agreement no longer determines the UAE's boundaries.[123]

The UAE's decision to resurrect this dispute emerged from the realization that Saudi Arabia's claim to exclusive maritime rights posed obstacles to the Dolphin Project.[124] With exclusive maritime rights, the Kingdom could make financial claims on gas transiting from the North Field to the UAE. Saudi Arabian opposition became highly vociferous at the announcement that Qatar and the UAE intended to construct a sea bridge between the countries, similar to the bridge that links Saudi Arabia and Bahrain. A source close to the

[123] See 'UAE firm on sovereignty over waters of Al Adeed', *Khaleej Times online* (1 July 2005). Available at http://www.khaleejtimes.com/displayArticle.asp?col=&section=theuae&xfile=data/theuae/2005/July/theuae_July4.xml

[124] UAE is also irked because the newly developed Shaybah Oil field (known as Zarrara in the UAE) in the contended area is producing 550,000 bpd of light crude, with Riyadh taking all the revenues, estimated at more than $10 billion (US) annually at a crude oil price of $50/bbl. See Julian Lee, *The Oil and Gas Sector in Transition: Challenges and the Role of EBRD—Energy Operations Policy*, Centre for Global Energy Studies (May 2005).

negotiation affirmed Saudi Arabia's aversion to any land contact between Qatar and the UAE.[125]

Riyadh feared that land contacts may enhance regional integration outside the Saudi orbit, and bring the smaller members of the GCC under the influence of Qatar.[126] The Saudis fear that Dolphin will serve as the touchstone for an independent 'Southern Gulf Bloc', that could point the way to defence and economic treaties independent of Saudi Arabia.

Since the revolutionary era of Arab politics in the 1950s and 1960s, which produced Egypt's Nasser, and the Comintern-inspired Yemeni civil war, Saudi Arabian politics have been plagued by the suspicion of '*Einkreisung*'—the myth of threatening encirclement.[127] These fears are not mere paranoia, since there has been some southern Gulf multilateral dialogue concerning reviving the 'Union Project' which would unify the seven emirates of the UAE, Qatar, and Bahrain into an integrated economic and political bloc.[128]

3.4 Abandoned extensions: Pakistan, India, and Israel

When GCC pipeline optimism was at its peak, members envisioned a GCC pipeline that would extend to Pakistan, India, and Israel. Because of a significant projected gas shortfall, Pakistan was amenable to gas imports from Qatar *via* an extended 1,830 km sub-sea extension from the proposed GCC pipeline, from Oman, as illustrated in Figure 4 below, to Gwadar on Pakistan's western coast. The estimated cost of this extension was $4.5–5 billion dollars.[129]

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[125] Ibid.

[126] For a detailed historical perspective of Saudi Arabia's historical expansion over the Southern Gulf States see Robert R. Sullivan, 'Saudi Arabia in international politics', *Review of Politics* (1970), 436–60.

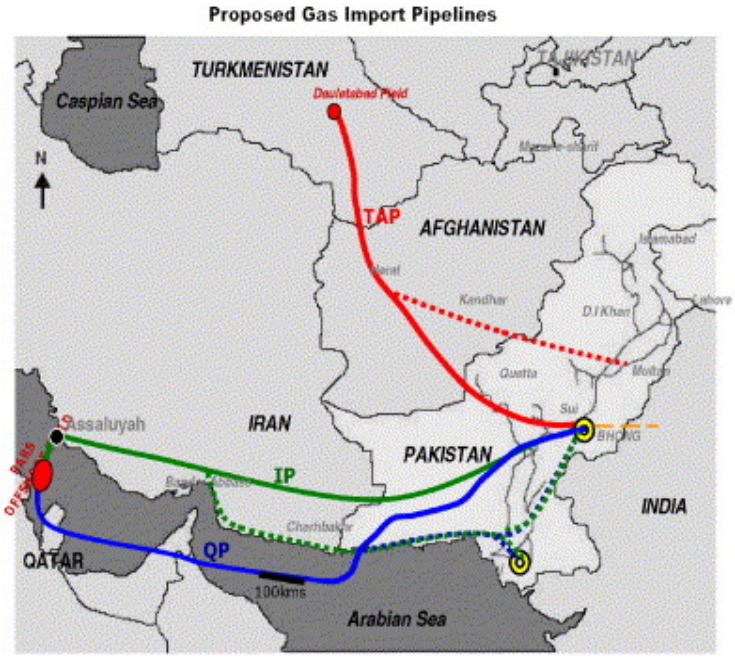
[127] See Tom Owen, *Qatar leads the Way*, The Middle East (Sept. 2000). Available at http://www.africasia.com/archive/me/00_09/coverstory.htm

[128] This was the initial plan when Britain disengaged from the region in 1971. Such a regional bloc would have the third largest gas reserves globally, the fourth largest oil reserves, and one of the highest per-capita wealth demographics.

[129] For information dealing with cost and political risks estimates of using Pakistan as a termination and transit point for natural gas pipelines, see S. Pandian, 'The political economy of the trans-Pakistan gas pipeline project: assessing the economic and political risks for India', *Energy Policy Journal*, Vol. 33, Issue 5, 659–70 (March 2005).

This extension was tentatively named the Gulf–South Asian Pipeline (PGSAP).[130] As negotiations progressed, India expressed interest in joining this pipeline, and extending it to India's western coast.[131]

Figure 4. Proposed extension to Pakistan and India



Source: Pakistan Energy[132]

Before the realities of politics and finance set in, Sharjah-based Crescent Petroleum in 1995 suggested that North Field gas be exported to Pakistan through the GCC pipeline, but negotiations failed because the parties could not agree on a mutually acceptable price.[133] The proposal resurrected with Dolphin in 2000, when Crescent Petroleum signed a new heads-of-state agreement for exclusive export rights with the Qatari government to ship gas to Pakistan.[134]

[130] Pakistan's gas shortfalls hover around 300–350 mm cfdp, and will increase by 2009–10, rising to more than 778 mm cfpd, and finally by 11,000 mm cfpd by 2025. See 'Pakistan shelves plan to import natural gas from Qatar', *.Alexander's Gas and Oil Connections*, Vol. 12, No. 10 (2007).

[131] Indian Petroleum Minister, Mani Shankar Aiyar, proposed in 2005, to send a delegation to Qatar to discuss the proposal in more depth. See 'India seeks permission to join Qatar-Pakistan gas pipeline', *Alexander's Gas and Oil Connections*, Vol. 10, No. 13 (6 July 2005).

[132] Map supplied from Pakistan Energy. Available at http://www.wn.com/s/pakistanenergy_old1/

[133] Ibid.

[134] See 'Pakistan shelves plan to import natural gas from Qatar', *Alexander's Gas and Oil Connections*, Vol. 12, No. 10 (31 May 2007).

Pakistan withdrew from negotiations, as did India, because of the relatively higher cost and technical complexity of the deep-sea route, as opposed to other competitive options, as the long-stalled Iran–Pakistan–India pipeline (IPI) (the green line in Figure 4), and the problematic Turkmenistan–Afghanistan–Pakistan–India pipeline (TAPI)[135] (the red line in Figure 4).[136] 'It [the PGSAP] is not on the forefront', declared Secretary of the Ministry of Petroleum, Ahmed Waqar, in March, 2007, who added 'we are concentrating on the IPI pipeline project at the moment'.[137] Irony abounds however, since the IPI pipeline was hobbled by major international problems due to Iranian nuclear ambitions, and American sanctions on Iran.[138] Because the political situation is evolving quite rapidly, international compromise or opposition to IPI may change.

Another proposal was to have Qatari gas dovetail with Iranian gas on a common user highway for transport to Pakistan and India. This proposal, however, never got off the ground.[139] Pakistan believes that it urgently needs imported gas, because gas shortfalls (2006) hover around 300–350 mcf/d and are likely to deepen to 778 mcf/d by 2009–10, and widen to more than 11 bcf/d by 2025.[140]

However, similar to the UAE 'gas crisis' (discussed above), Pakistan had 28 tcf of proven natural gas reserves in 2006 which should be quite sufficient to meet its projected deficit

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[135] Pakistan faces numerous obstacles with this option, which include the security situation in Afghanistan, and the Northern Pakistan Tribal region, as well as the price Turkmenistan would charge for the natural gas. Additionally, when feasibility studies were completed on the project, funded by the Asian Development Bank (ADB), it indicated that the Turkmenistan field of Daulatabad will only be able to supply a portion of the natural gas needed by Pakistan. See *Pakistan: Natural Gas*, Energy Information Administration. Available at http://www.eia.doe.gov/emeu/cabs/Pakistan/NaturalGas.html

[136] Ibid.
[137] See 'Pakistan shelves Qatar pipeline project', *Alexander's Gas and Oil Connections*, Vol. 12, No. 7 (11 Apr. 2007).

[138] However, Teresita Schaffer, former US ambassador to Sri Lanka, asserted that US opposition to the IPI pipeline hinges more upon the Iran and Libya sanctions Act, as opposed to Iranian nuclear ambitions. She added further that, in fact, the IPI is actually a good idea, as it would bring two former belligerents, Indian and Pakistan, together. See 'US opposition to Iran-Pakistan-India pipeline based on legal issues', *The Hindu* (15 Mar. 2005). Available at http://www.hindu.com/2005/03/15/stories/2005031507961200.htm
In contrast to the opposition to the IPI, President Bush stated in his 2006 visit to Pakistan that the US 'beef with Iran is not the pipeline…[but that] they want to develop nuclear weapons'. In discussing IPI with Pakistani President Perez Musharraf, Bush said that 'he understood the need to get natural gas in the region, and that is fine'. See 'Bush U-Turn on Iranian pipeline', *BBC News* (4 Mar. 2006). Available at http://news.bbc.co.uk/1/hi/world/south_asia/4774312.stm

[139] Ibid.
[140] See Supra 134 'Pakistan shelves plan to import natural gas from Qatar'.

for at least the next decade. [141] The Pakistani government anticipates only minor demand increases, but natural gas production is expected to decline over the next 15–20 years despite known proven reserves. Pakistan, which depends on natural gas for 50 per cent of its energy mix, faces a similar investment crisis to the Gulf gas producing countries.[142] The perverse result is that Pakistan, which faces severe gas shortages, may import gas at higher prices than would be required for domestic production. Consistent with its own priorities, Qatar explained that it would need to abandon pipeline extension plans because of its substantial LNG export commitments and because of doubts regarding Pakistan's (and India's) ability to pay competitive prices for future gas deliveries.[143]

Although one of the most progressive countries in the region, Qatar may have been overly bold when it suggested a 'Peace Pipeline', to Israel. Born in the heady days of improved GCC–Israeli relations, during the early 1990s, this idea presumed a lasting Israeli–Palestinian accord. [144] Israel and Qatar even signed the letter of intent in November 1995, in a process designed to enhance relations between the two countries.[145]

When the letter of intent expired the following year, Qatar predicated further cooperation on the pipeline in a comprehensive Palestinian–Israel peace agreement.[146] Progress stalled when Qatar joined the other Arab League members in a March 1997 demand for termination of efforts at political/trade normalization with Israel. After Israeli–Palestinian relations deteriorated massively, Qatar closed its trade and representative offices in Israel.[147] The death knell for any collaborative project sounded with the Second Intifada—the 2000 'uprising'—in the Palestinian territories. Proposals to extend this letter of intent

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[141] See *Pakistan: Natural Gas*, Energy Information Agency. Available at http://www.eia.doe.gov/emeu/cabs/Pakistan/NaturalGas.html

[142] Ibid.

[143] It should be noted that although Pakistan would have difficulty in paying for any gas terminating in Pakistan, if Pakistan were a transit country for gas terminating in India, its commercial position becomes much better. See S. Pandian, 'The political economy of trans-Pakistan gas pipeline project: assessing the political and economic risks for India', *Energy Policy* 33 (2005), 659–70. Also, India's ability to pay for gas from IPI may prove to be a not insignificant blockage to a successful conclusion of IPI, as Iran and India haggle over Iran's ability to periodically review price, and India argue that Iran should take into consideration 'India's ability to pay'. See Kaveh L. Afrasiabi, 'A blockage in the peace pipeline', *Asia Times* (10 Jul. 2007).

[144] Late September 1994, Qatar, and the other GCC members, revoked many aspects of the Israeli economic boycott. And in April 1996, Israeli Prime Minister, Shimon Peres, made the first ever visit by an Israeli leader to Qatar. Available at http://www.arab.de/arabinfo/qatar-government.htm

[145] See Supra 60 'Liquefied natural gas from Qatar: The QatarGas Project'.

[146] Ibid.

[147] Ibid. At 30

were largely window dressing, since its viability rested almost exclusively on a solid peace agreement between the Israelis and the Palestinians.

3.5 The opportunity cost of regional gas supplies

An economist would truly wonder at Qatar's enthusiasm for regional gas sales given that Qatari exports of LNG both reduced the geopolitical uncertainties inherent in reliance on transit countries, and yielded substantially higher financial netbacks. Unlike pipelines, tankers can be diverted to alternative markets depending on day-to-day market conditions. Based on economic self-interest, Qatar had every reason to discourage pipeline extensions to India, Pakistan, and Israel after it had signed new LNG export contracts.[148]

Qatar's LNG export terminals had an annual capacity of 1.5 tcf in 2006, which will increase to 3.8 tcf/y by 2012 (see Table 3); the days of regional pipelines may therefore be over. Through its two LNG export companies, Qatar LNG Company (QatarGas) and Ras Laffan LNG Company (RasGas), Qatar has contracts to ship LNG worldwide on a spot and long-term basis that avoids both political and commercial risks raised by pipelines.

Table 3 Qatar's LNG Infrastructure, May 2007

Unit	Liquefaction Capacity	Start-up	Primary Market(s)
RasGas Facilities			
Trains 1 & 2	2 x 3.2 MMt (320 Bcf)	Aug. 1999	South Korea
Train 3	4.7 MMt (230 Bcf)	Feb. 2004	India
Train 4	4.7 MMt (230 Bcf)	Aug. 2005	Europe
Train 5	4.7 MMt (230 Bcf)	Mar. 2007	Europe & Asia
Train 6	7.6 MMt (380 Bcf)	2008	USA
Train 7	7.6 MMt (380 Bcf)	2009	USA
Qatargas Facilities			
Trains 1–3	3 x 3.2 MMt (468 Bcf)	Dec. 1996	Japan & Spain
Trains 4 & 5	2 x 7.8 MMt (760 Bcf)	2008	UK
Train 6	7.8 MMt (380 Bcf)	2009	USA
Train 7	7.8 MMt (380 Bcf)	2010	USA, Europe

Source: RasGas, Qatargas, media reports

[148] See 'Gas from Iran may cost India dear', *REDIFF Business* (21 Mar. 2005).

Qatar already exports LNG to India, and is considering exports to Pakistan. India, which is becoming discouraged with Iran over both IPI pipeline and LNG negotiations, may view Qatari LNG as a valuable alternative to Iranian gas, if the Qatar moratorium is lifted (as explained in Section 5.2).[149] Given uncertainty about the IPI, Pakistan may also look to import Qatari LNG as early as 2010.[150] Qatar's Minister of Energy stated, during the International Middle East Gas Summit in 2006, that, although Qatar views Japan and South Korea as its major LNG markets, its focus had somewhat shifted towards south Asia. He added that, '[H]opefully, Qatar would be part of Pakistan's future planning for gas imports.'[151]

[149] India pays approximately 20 per cent ($2.97 mm btu) more for Iranian LNG, than it pays for LNG imports from Qatar (2.5 mm Btu) under its existing five year contract. Further, Iran does not have the track record of exporting large quantities of gas from multi-billion dollars projects, so insurance premiums are also likely to be quite high. See supra note 148 'Gas from Iran may cost India dear'.

[150] See 'Pakistan Looks to LNG as Option to Meet Gas Shortfalls', *Alexander's Gas and Oil Connections*, Vol. 10, No. 7 (6 Apr. 2005).

[151] See Staff Report, 'Pakistan at the forefront at ME Gas Summit', *Daily Times* (23 Feb. 2006).

4. The birth of Dolphin: the phoenix rises

From the debris of the GCC pipeline, a shared vision arose for the Dolphin Project to supply Qatari North Field gas to the UAE, and Oman. The building blocks for Dolphin were laid by the UAE Offsets Group (UOG), which is a branch of the UAE Ministry of Defence.[152] Dolphin Energy Limited (DEL) was created in 1999 to administer the project.[153] The shareholders of DEL are the Mubadala Development Company (51 per cent) (which is a wholly-owned subsidiary of the Abu Dhabi government), Total (24.5 per cent), and Occidental Petroleum (24.5 per cent).[154]

Qatar Petroleum processes the natural gas at the industrial city of Ras Laffan, for shipment to power and desalinization centres in Oman and the UAE. [155] The UOG agreed in 1998 that Qatar would serve as the exclusive supplier and marketer of Qatari gas in the UAE and Oman. With QP as the negotiating partner, the UOG completed initial memorandums of understanding (MOUs) with Qatar, Oman, and Pakistan, in June 1999.[156]

While much of the impetus behind Dolphin was to improve political integration of the GCC nations, the project also had its bedrock commercial aspects. As noted above, if conditions continue, Oman and the UAE (Dubai and Abu Dhabi) face a significant gas shortage that will not be satisfied, even with increased imports from Qatar.[157]

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[152] It is interesting to see the involvement of a defence corporation in the development of a natural gas pipeline; to a certain extent it shows the importance that the Gulf pipeline has to the countries involved. Further, one of the driving forces behind the Dolphin project is reputedly Sheikh Mohammed bin Zayed Al Nahayan, the chief of staff of the UAE armed forces. Oil and gas issues generally fall under the province of the crown prince, so seeing the active involvement and oversight by Sheikh Mohammed may indicate the wider security/regional interest that the project holds. *See* the UOG mission statement available at *the Offset Program Bureau* http://www.offsets.ae/ And, see generally, Neil Barnett, 'Dolphin Project surges ahead', *The Middle East* (Feb. 2000).

[153] See the corporate website for general information at *Dolphin Energy* available at http://www.dolphinenergy.com/

[154] The now infamous Enron had the initial (24.5%) stake that Occidental now holds, but after its implosion, Occidental acquired it.

[155] Map supplied available at *energy manager online* http://energymanager-online.com/pages/ltsa_dolphin.htm

[156] Ibid.

[157] The International Energy Agency stated that 'Shortages of natural gas—hitherto the fuel of choice for electricity generation—have become a regular feature, forcing governments to consider alternatives such as coal, fuel oil, nuclear, and even imported gas'. See 'Gulf states face power shortages amid lack of gas', *Gulfnews* (13 June 2007).

As home to the fifth largest reserves of natural gas in the world, and the fourth in the Gulf region at 214.4 tcf, there is a measure of irony in the UAE's inability to meet domestic demand. In 2006 and 2007 the UAE has resorted to using small amounts of coal for domestic power generation, and is completing feasibility studies to determine if coal will become a larger part of the energy mix.[158] The UAE is engaged in plans to develop nuclear energy and to use renewable fuel sources as a mechanism to save oil and gas, but it is likely that they will soon realize that gas provides a more price and energy efficient means of producing power than alternative sources of energy.[159] The crux of the problem stems from the fact that low domestic gas prices discourage investment in upstream production.[160]

Dubai, Abu Dhabi, and Oman face substantial energy demands from oilfield reinjection, consumer and industrial power use, and small consumer use. While the 2 bcf/d natural gas shipments from Dolphin will allow Oman and the UAE breathing space, figures suggest this will relieve the demand pressure for only 2–3 years.[161] Dolphin Gas will increase gas availability in the UAE by nearly 50 per cent after 2006. The UAE leadership believes it is better to pipe gas from Qatar, rather than supply local gas from Abu Dhabi National Oil Company (ADNOC).[162] Abu Dhabi's 'sour' gas requires treatment and expensive corrosion-proof pipes.[163]

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[158] Cement makers have been especially hurt as coal is increasingly needed as gas becomes scarce, and the petrodollar-fuelled building boom is still raging. See 'Cement firms in UAE turn to coal due to lack of gas', *Gulf News* (24 June 2007). Available at www.Gulfnews.com

[159] The use of alternative energy sources to help offset rising domestic demand is a common theme in the Persian Gulf Countries; an Iranian oil official expressed the fear that 'our energy consumption is growing 7 per cent a year. We need nuclear and renewables. Otherwise we could become like Indonesia'. Referring of course to the only member country in OPEC that is a net oil importer. See Barbara Lewis, 'Middle East looks to nuclear energy to save oil and gas', *Gulf Times* (20 Apr. 2007).

[160] See 'UAE Sector Analysis', *Arab Data Net*. Available at http://www.arabdatanet.com/country/profiles/profile.asp?CtryName=UAE&CtryAbrv=ua&NavTitle=Sector%20Analysis

[161] Primary energy demand has been growing exponentially in UAE. Per capita energy consumption and energy intensity are much higher than the OECD averages, due primarily of the strong demand for air conditioning, water desalinization, and below average energy prices. Gas usage is projected to rise from approximately 30 Mtoe in 2005, to 68 Mtoe in 2030. The percentage share of gas in the energy mix is expected to increase to more than 80 per cent by 2030. From this, it is easy to see how imported energy (especially gas) is necessary to the basic survival of the state. See *World Energy Outlook: Middle East and North Africa Insights*, International Energy Agency (2005).

[162] A shortage in supplies in the UAE has caused Abu Dhabi to redirect gas that was earmarked for oil field reinjection, to power plants. The redirected gas will be available for oil field reinjection once Dolphin starts.

It is not feasible for the UAE to increase indigenous gas production with subsidized domestic gas prices. The fact that neither IOCs nor ADNOC view the development of domestic sour gas reserves as profitable, lends more weight to the case for domestic gas price increases.[164] Much like other Gulf countries, the UAE wants economic diversification through energy-intensive industries, such as fertilizer and aluminium, supplied with inexpensive, heavily subsidized fuel sources, including gas.[165] As illustrated in Table 1 above, domestic gas prices in the UAE are $1.00/Mmbtu. If the UAE wanted to increase domestic gas production and remain compliant with the WTO prohibition against 'unfair government subsidies', it will be compelled to make difficult choices about the development and funding of priority sectors.[166]

Dolphin gas will also serve as substitute fuel oil and gas oil which is fuelling certain UAE power plants. See 'Dolphin may start Qatar–UAE gas plant this month' (23 June 2007). Available at www.Gulf news.com

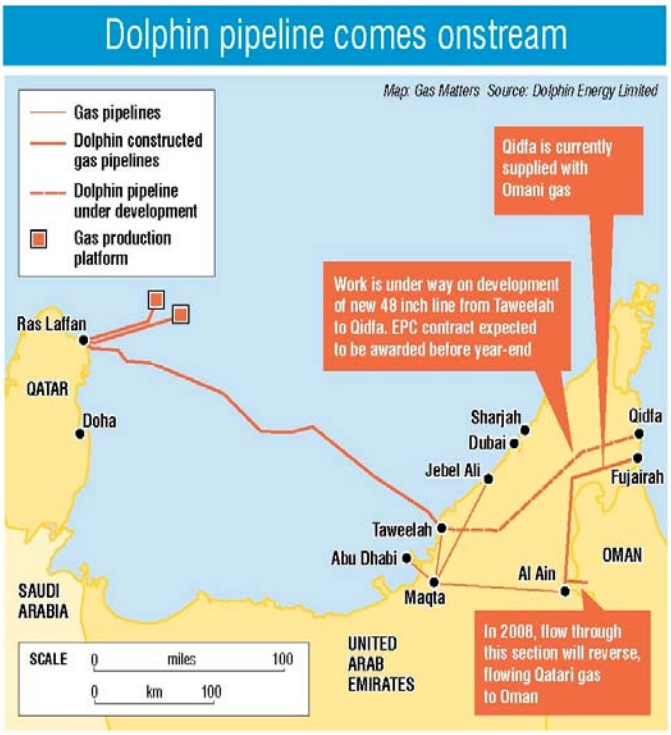
[163] 'Sour' gas has a high content of both carbon dioxide (CO_2) and hydrogen sulphide (H_2S). ADNOC's general policy is to use that gas for reinjection into oil and gas reserves to optimize oil recovery and increase sweet gas for domestic use and possible export. See 'ADNOC-Shell Study Produces Concept for Abu Dhabi's sour gas reserves', *Alexander's Oil and Gas Connections*, Vol. 7, No. 9 (5 Mar. 2002).

[164] See 'Gas crunch likely as Mideast races to meet local needs', *Gulf News* (4 July 2007). Available at http://archive.gulfnews.com/business/Oil_and_Gas/10116507.html

[165] See 'UAE Oil and Gas, The United Arab Emirates Government'. Available at http://www.uae.gov.ae/Government/oil_gas.htm

[166] However, UAE membership in the WTO may make it fall foul of the prohibition in certain government industrial subsides. While the UAE, in its 1995 ascension, promised to remove prohibited government industrial subsidies in eight years (2003), it has so far not done so. It is also possible that the industrialized countries will bring this issue before the WTO if they feel it is giving the Gulf countries an 'unfair advantage'. See 'Towards an Ideal Economy: World Trade Organization and Trade related Investment Measures', *UAE Department of Planning and Economy*. Available at http://adeconomy.ae/

Figure 5. Dolphin pipeline route



Source: Gas Matters

As shown in Figure 5, Dolphin joins Qatar's North Field to the national gas grids of the UAE, including those of Adu Dhabi, Dubai, and Oman. Dolphin is transporting gas from the North Field, 400 km via a 48-inch pipeline for processing at Qatar's Ras Laffan gas processing facility, where the gas is stripped of valuable condensates and liquefied petroleum gas and prepared for subsequent sale. Dry gas flows through a dedicated 370 km offshore pipeline from Ras Laffan to the Al-Taweelah power and desalinization plant in Abu Dhabi.[167]

From Al-Taweelah, gas flows through existing domestic landlines for a distance of 182 km through 24-inch pipelines that run from Al Ain to Fujairah on UAE's eastern coast. [168] Managed by Emirates General Petroleum Corporation (Emarat) from January 2004 until

[167] The Taweelah Power and desalinization plant is run by Abu Dhabi Water and Electricity Authority (ADWEA).
[168] See 'Dolphin energy project defines new era for gas', *Middle East Business and Financial News* (2 Jan. 2006). Available at http://www.ameinfo.com/

DEL assumed control in January 2006, this pipeline, delivered Omani gas directly to the desalinization plant of Union Water and Electricity Company (UWEC).[169] In 2008, the flow will be reversed with gas coming from Qatar. The cost of this proposal will be an estimated $3.5 billion: $2.5 Billion for the construction costs of the processing plant in the Ras Laffan industrial city, and $1 billion for the pipeline. [170]

In 1999, Mobil Oil and Qatar signed a Memorandum of Understanding with UOG as a prelude to a long-term supply and purchase agreement that would allow UOG to obtain gas and condensate by-products from existing concessions, and an option for gas from Mobil Oil Qatar's Enhanced Gas Utilization Project. A statement of principle signed between QP and UOG allowed DEL to obtain its own concession from two blocks in the North Field over the project's term.[171] DEL successfully negotiated a 25-year development and production sharing agreement with QP in 2001.[172]

DEL delivered its first pipeline shipment to Oman in January 2004, at the gas control station in Al Ain, a truly historic moment in that it was the first ever cross-border gas transmission in the history of GCC.[173] Dolphin which, starting in June 2007, is transporting 400 MMcf/d of natural gas to the UAE and Oman, anticipates that the volume will gradually increase until it reaches the full 2 bcf/d. Dolphin will also deliver 200 mcfd to Oman and 1.8 bcf/d for the UAE, specifically Abu Dhabi and Dubai, over a 25-year period.[174] At the time of writing, DEL was in talks with Qatar to increase deliveries to the full capacity of 2.2 bcf/d.[175]

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[169] See 'Dolphin gas project, Ras Laffan, Qatar', available at http://www.hydrocarbons-technology.com/

[170] See Al Yabhouni, Ali Obaid (2005), 'UAE oil and gas potential and capacity expansion', presentation at the 3rd Joint OPEC–IEA Workshop, Kuwait City (15 May 2005).

[171] See 'Mobil partner in Dolphin gas venture', *Alexander's Gas and Oil Connections*, Vol. 4, No. 15 (9 Aug. 1999).

[172] See 'Dolphin to refinance $3bn of debt early next year', *Gulf Times* (28 June 2007).Under the terms of the DPSA, DEL will drill around 16 wells in the North Field, and build a production platform linked to an onshore gas gathering and processing plant at Ras Laffan to strip out the condensate. See 'Dolphin officially announces CSFB as financial advisor', *Middle East Economic Survey*, Vol. XLV, No. 2. (14 Jan. 2002).

[173] See 'Initial Dolphin gas supplies received in Al Ain through Oman pipelines', Dolphin Energy Website, (25 Jan. 2004). Available at http://www.dolphinenergy.com/press_news_releases.html

[174] See *US$3.5 bn Dolphin Project First of its Kind in the Arab World*, Middle East–North Africa Financial Network, (7 Dec. 2007). Available at http://www.menafn.com/qn_news_story_s.asp?StoryId=1093159372

[175] See *Qatar: Background*, Energy Information Association. Available at http://www.eia.doe.gov/emeu/cabs/Qatar/Background.html

In August 2007, DEL shipped high-quality light condensate stripped from the gas at Ras Laffan.[176] Each cargo contains 500,000 barrels for delivery free on board (FOB) Ras Laffan. The first spot offers were received on 10 July 2007, in what is expected to be substantial international interest.[177] To maximize commercial returns, ethane, propane, and butane will be produced in commercial quantities by fourth quarter 2007.[178]

4.1 Is Dolphin profitable?

The financial details behind Dolphin are not only interesting, but also consistent with the rising market confidence that it engenders. This contradicts the initial scepticism that greeted Dolphin. When first announced, Dolphin was considered a failure in the making, principally because it involved stakeholders from neighbouring Gulf countries who often had regional squabbles.

There was initial concern about how prices would be negotiated, and concern that UOG, a defence procurement firm with little experience in the oil and gas sector, would find itself unable to negotiate Abu Dhabi's bureaucracy. Many IOCs were initially alarmed at the absence of a sovereign guarantee.[179] Many in the project finance sector also thought that a large undertaking such as Dolphin should have a state-backed loan guarantee.[180]

As soon as Qatar Petroleum signed the term sheet with UOG for the upstream portion of Dolphin at the fourth Doha Conference on Natural Gas on 14 March 2001, the energy industry quickly modified its view, as Dolphin had become a reality and the IOCs were

[176] See 'First cargoes of Dolphin Energy condensate go to tender for spot sale', *AME Info* (17 July 2007). Available at http://www.ameinfo.com/126802.html

[177] Ibid.
[178] Ibid.
[179] See Gerald Butt, 'The Gulf: in the pipeline', *Trends.*

[180] However, one banker asserted, in relation to Dolphin, that a sovereign guarantee is not a hindrance 'if it is a viable project and the economics work, the figures work, the forecast is quite good and it has been checked by a technical advisor'. See 'Dolphin officially announces CSFB as Financial Advisor', *Middle East Economic Survey*, Vol. XLV, No.2 (14 Jan. 2002).

eager to be involved.[181] However, there remained some obstacles: pricing and the ultimate question of who had ownership rights to the valuable condensates.[182]

4.2 A political price?

The two main sticking points for Dolphin stakeholders were the price Qatar would charge DEL for North Field gas, and the price DEL would charge Dubai. These issues were important beyond the immediacy of the Dolphin Project, because the parties believed that these prices would set the benchmark for any further intra-Gulf gas sales.

Additional difficulties arose upstream between QP and DEL, which failed to reach agreement on a sales price for North Field gas. The Emir of Qatar and the Abu Dhabi leadership intervened and concluded that commercial considerations could no longer delay Dolphin. QP was unhappy with this highly political resolution, because it considered both the FOB price of $0.87mn/BTU ex-Ras Laffan, and the delivered CIF (cost, insurance, freight) price of $1.30/mn BTU much too low[183]

In the initial term sheet the CIF price was set to escalate 2 per cent per annum. After further high level intergovernmental negotiations between the UAE and Qatar, the parties reduced the annual price escalation price to 1.5 per cent.[184] The negotiators mollified Qatar

[181] The term sheet sets out the mutual understanding of QP and Dolphin on certain commercial matters of the development and PSA. The term sheet although not legally binding in itself, provides later guidance to legal counsel the final terms of the agreement. The QP/Dolphin term sheet covered the BTU value of the total volume of the produced gas, the take-or-pay clause, and the maximum/minimum volumes of gas to be lifted in accordance with seasonal demand. The take-or-pay rate has been agreed upon at 85 per cent of the contracted volume. See supra 109 'Qatar to break new ground as regional gas supplier and new technology developer'.

[182] See 'UAE's offsets group seeks Dolphin agreements within five months', *Middle East Economic Survey*, (15 Nov. 1999).
Natural gas condensate is a low-density mixture of hydrocarbon liquids that are present as gaseous components in the raw natural gas produced from many (wet) natural gas fields. It condenses out of the raw gas if the temperature is reduced to below the hydrocarbon dew point temperature of the raw gas. The condensate can also be valuable in itself for sales. See Glossary *International Energy Administration*. Available at http://www.eia.doe.gov/glossary/index.html

[183] CIF is a sales transaction in which the seller pays for the transportation and insurance of the goods up to the port of destination specified by the buyer.

[184] See 'Dolphin will sell gas to customers at $1.30–$1.40/mn BTU, says Sayegh', *Middle East Economic Survey*, Vol. XLIX, No. 19 (8 May 2006).

with ownership of the extra volumes of the revenue-rich and highly valuable condensate stripped from the gas at the Ras Laffan processing plant.[185]

Even then the opportunity cost is high for the political price reached because Qatar could have sold the gas as LNG to customers in either the Pacific or Atlantic Basin.[186] The differentials between the price of $0.87/Mmbtu ex-Ras Laffan and the delivered price of $1.30/Mmbtu to $1.40/Mmbtu are quite attractive. As an intermediary, DEL also experienced a financial loss in end-user sales, because it was not 'making money in the marketing'.[187] While the pricing negotiations between DEL and Dubai began contentiously, the parties agreed that DEL would sell gas to Dubai at $1.30/Mmbtu (CIF Al-Taweelah) and add transport costs for gas from Al-Taweelah to end users in Dubai.

Even though DEL realistically argued that it could not provide gas to Dubai at less than $1.30/Mmbtu, Dubai pointed out that gas from Abu Dhabi cost only $1.00/Mmbtu through the Al-Taweelah/Jebal Ali pipeline. Dubai suggested that DEL's other customers, specifically Abu Dhabi and Oman, be required to subsidize the cost differential.[188] DEL committed itself to deliver gas at the price it obtained from Qatar, and to add a transportation tariff for the customers in the UAE and Oman, giving a price of $1.30–1.40/Mmbtu.[189]

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[185] Ibid.

[186] Qatar is proposing to supply additional LNG to Japan, from Qatargas 2, 3, and 4 projects that were originally designed to serve the European and American markets, at prices that are more strongly linked to crude oil prices. This is a departure from the past 'S-curve' contract between Qatar and Japan, which is used to even out volatility in natural gas prices that were linked to crude oil prices. Although with gas largely considered to be a seller's market, the S-curve contract is no longer in use. . See 'Japan gets LNG Pledge', *Oil and Gas News Worldwide*, Vol. 24, No. 21 (28 May–3 June 2007). Available at http://www.oilandgasnewsworldwide.com/bkArticlesF.asp?Article=22207&Section=3274&IssueID=468

[187] Paraphrasing Ahmad al-Sayegh CEO of Dolphin Energy Ltd in answer to a question regarding project profitability at the 14th annual Middle East Petroleum and Gas conference in Abu Dhabi ,1 May 2006.

[188] See 'Differences on price between DEL and Dubai await resolution', *Middle East Economic Survey*, Vol. XLIX, No. 33, 13, (Aug. 2001). ADNOC was supplying Dubai with 500mn cfd from the Thamama C gas reservoirs in the onshore Bab field for a CIF price of $1.00 mn/BTU for an annual supply of 500,000 cfd. See supra note 179 'The Gulf: in the pipeline'.

[189] Ibid.

4.2.1 A new cross-border benchmark price

Fears that the lower price would become a benchmark for subsequent intra-Gulf gas sales were unfounded. Pressure from Dubai to source additional gas volumes in the short term, and delays related to Japan's JGC (formerly Japan Gasoline Company) construction of an onshore gas plant delayed Dolphin's start from the first quarter of 2007 to the third quarter 2007.[190] During the interim, QP redirected 400mn cfd of its surplus gas from the temporarily delayed Oryx GTL project to Dubai.[191] When Dolphin received from Qatar gas destined for UAE customers; QP ceased its shipments to Dubai.[192] The short-term delivered price agreed upon for the gas was $4.00/Mmbtu, more than twice the price established under Dolphin, which demonstrated the potential market price for domestic gas in the region.[193]

4.3 Financing

Unlike revenue and profitability, financing played a large part in Dolphin's birth. In its embryonic stages, Dolphin had difficulty in securing outside financing. Because of the difficulty in locating appropriate funding, the equity partners assumed responsibility of funding the project's early expenditures.

DEL's partners, who wanted a better rate on equity holdings, knew that financing difficulties would plague Dolphin until the project fundamentals were in place. To facilitate funding, DEL entered into a $2.45 billion bridge loan in 2004[194] with a

[190] See 'Dolphin start up pushed back to third quarter on gas plant delays', *Middle East Economic Survey*, Vol. XLIX, No. 11 (12 Mar 2007).
[191] Ibid.
[192] Ibid.
[193] Ibid. Because DEL has already been locked into a rigid price structure with its customers, any new entrant that is willing and able to supply the tight demand in the UAE is in a position to capitalize on the exponential demand. CEO of DEL, Ahmad al-Seyegh stated that 'I think that our competition, if they have the supplies, is in a position to make a great deal of money'. See 'Dolphin will sell gas to customers At $1.30–1.40/Mn BTU, says Sayegh', *Middle East Economic Survey*, Vol. XLIX, No. 19 (8 May 2006).

[194] A Bridge loan is a short term loan in the financial industry, in order to finance major projects. The speed at which it is able to be disbursed tends to be the most sought after feature of these types of loan. Generally, companies request them when undergoing a period of rapid capital expenditure. The terms of a bridge loan can be arduous depending on the credit rating of the corporations requesting it, and the fundamentals of the

consortium of 20 local regional and international banks,[195] which structured the bridge loan as a classic multitranche[196] deal with non-recourse project financing, bonds, and Islamic financing, covering construction costs up to the 2006 completion date.

4.3.1 The growth of Islamic finance

The Dolphin Project was innovative on many different fronts. Most unique was the fact that Dolphin relied to a unique degree on Islamic financing.[197]

On 11 September 2005, Dolphin entered into an Islamic financing agreement with fourteen financial institutions to provide $1 billion to partially fund later construction.[198] As the Islamic financing is the largest ever Sharia-compliant oil and gas transaction, financial institutions believe that Dolphin could be a precedent for Islamically financed projects on the regional and global stage.[199] The Islamic loan allowed DEL to fund project functions that facilitated the production and processing of Qatar gas for utility customers in the UAE and Oman.

Not only were bankers initially sceptical that Dolphin could raise the full $1 billion from the Islamic market,[200] but Sharia scholars wondered if an advanced rental payment could

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project. However, in terms of DEL, the equity partners had extremely good credit ratings, and thus secured attractive terms.

[195] See 'Dolphin energy attracts US$ 4 billion in financing', *Dolphin Energy Website* (9 July 2005). Available at http://www.dolphinenergy.com/

[196] Tranche (fr. slice) refers to one of several related securitized bonds that in a sense is a slice or portion of the project's risk. All the tranches together make up what is referred to as the financial deal's capital structure or liability structure.

[197] Islamic finance rules are taken from the Muslim holy book—the Quran—and from the traditions associated with the Prophet Muhammad (called the Sunna or Hadith).

[198] See 'Dolphin Energy closes US$ 1 billion Islamic financing', *Dolphin Energy Press Releases*, (11 Sept. 2005). Available at http://www.dolphinenergy.com/

[199] Ibid. Dolphin also received the prestigious 'Islamic Finance Deal of the Year 2005' from Euromoney Group's authoritative Project Finance magazine. See 'Dolphin Energy wins "Islamic Finance Deal of 2005" From Project Finance Magazine', *Dolphin Energy Press Release*, (25 Mar. 2006). Available at http://www.dolphinenergy.com/

[200] One banker asserted that 'there were not many regional Islamic banks participating because the pricing was too tight…' He further pointed out that the participants in the Islamic Tranche are not Islamic banks, but the Islamic divisions of the major banking institutions. See 'Interim Financing complete with signing of Islamic Tranche', *Middle East Economic Survey*, Vol. XLVIII, No. 37 (12 Sept. 2005).

plausibly be linked to a floating rate, rather than a fixed one. The scholars eventually concluded that floating rates may be consistent with Sharia.[201]

Financing may be Sharia compliant if it is either Istisna'a—a forward lease of assets not yet in service—or Ijara, essentially the sale and leaseback of operational assets. Dolphin has the distinction of being the first use of Islamic financing for the upstream portion of project funding, which has traditionally been the most difficult to justify in the Sharia context.[202] The conventional and the Islamic tranche were secured for a period of four years terminating in 2009. DEL will pursue a refinance of three billion dollars of debt before early 2008.[203]

DEL CEO, Ahmed Ali Al Sayegh, assured the market that all refinancing packages will be considered, whether Islamic/conventional financing, or bonds for the 15-year-plus refinancing plans.[204] Although the vitriolic Saudi objection to Dolphin caused some lenders to publicly state that they will look 'more carefully' and consider all legal, economic, and technical issues before refinancing on a long-term basis,[205] other bankers treated Saudi objections almost dismissively, stating that given the project owners' guarantee, Saudi Arabian objections were not 'much of a concern'.[206]

[201] For an Islamic investment to be considered Halal (permissible) it must conform to several core principles:
1. the prohibition on the receipt and payment of risk-free or guaranteed investment returns (*riba*);
2. the avoidance of excessive uncertainty (*gharar*);
3. the discouragement of speculative behavior (*maisir*); and
4. the promotion of permissible (*halal*) commercial activities above and beyond forbidden (*haraam*) activities.

[202] For more about the growth of Islamic finance in the oil and gas sector see Christopher F. Richardson, *The Islamic Finance Opportunities in the Oil and Gas Sector: an Introduction to an Emerging Field*, 42 Texas International Law Journal 119 (2006).
[203] See 'Dolphin to refinance $3bn of debt early next year', *Gulf Times* (28 June 2007).
[204] Ibid.
[205] Ibid.
[206] Ibid.

5. Potential problems

5.1 Iranian threats

Iranian threats to Dolphin generally accuse Qatar of overproducing the Qatari side of the North Field or of hosting US military forces. In the event of Gulf hostilities, Qatar may be a direct target of Iranian wrath.[207] Iran has publicly stated that it will consider Qatar's oil and gas infrastructure, and specifically Dolphin, as worthy targets.[208] This threat should not be taken lightly, as when US naval forces attacked an Iranian oil platform in a punishment attack in 1988 in what the US military termed one of the most influential naval engagements in US history post-World War Two. In retaliation Iranian naval forces attacked an Abu Dhabi offshore oil platform.[209] However, the prospect of industrial sabotage may be greater than the military threat, since Iranian intelligence has reportedly focused its activities on Qatari plans to exploit the shared North Field.[210]

With substantially increased USA–Iranian tensions, Qatar and the Dolphin downstream countries are concerned that their respective oil and gas infrastructures will be targeted, as were their tankers during the Iran–Iraq war.[211] To reduce its vulnerability Qatar literally offered itself as a nation willing to have 'entangling alliances' as protection from the

[207] The other Dolphin downstream users are developing plans in the unlikely event war breaks out and the energy infrastructure in the region is targeted (straits of Hormuz, Dolphin). For instance Dubai is planning to build a $2 billion (US) LNG hub at Fujairah, to ensure that any potential gas disruption from Dolphin is minimized. See 'Dubai may build LNG Hub at Fujairah', *Alexander's Gas and Oil Connections*, Vol. 12, No. 13 (13 July 2007).

[208] It is estimated that Iran has thousands of spies and agent provocateurs embedded in the Southern Gulf countries to engage in sabotage activities in the event of hostilities. See 'GCC should fear Iran's industrial spies, not its agent provocateurs', *Gulf States Newsletter* (28 Apr. 2007).

[209] The US attack was called 'Operation Praying Mantis', which was initiated to avenge a US frigate which was damaged by an Iranian mine. See Lisa Margonelli, *Oil on the Brain*, (New York: Doubleday, 2007), 200–202.

[210] A US national working for QP was sentenced to life imprisonment for espionage, after being found guilty of threatening Qatari national security by selling information about North Field development to 'foreign embassy officials', (presumably Iranian). See supra note 208, 'GCC should fear Iran's industrial spies, not its agent provocateurs'.

[211] Ibid.

depredations of a (now neutered) Iraq or an envious Iran.[212] This offer may have made Qatar a convenient target, potentially placing Dolphin at risk.[213]

Mimicking the past Iraqi threats to Kuwait prior to the Iran/Kuwait war about alleged overproduction from a joint field, Iran has made threats of unspecified consequences if Qatar overproduces its side of the North Field/South Pars structure, and lowers the pressure on the Iranian side.[214] Iran's ambition as a future major natural gas exporter may hinge on its South Pars production.[215] Another stumbling block to peaceful Iran–Qatar relations arises from the fact that there is that there is reasonable doubt as to the actual reserves in the North Field/South Pars structure as discussed in Section 1.2 above, which could serve as a catalyst in a regional dispute.

Qatar and Iran seem determined to produce as much natural gas as possible to pre-empt the other side from unfairly taking 'their' gas.[216] Iran has become increasingly dependent on the South Pars field, which is at the forefront of Iran's ambitious economic development program.[217] In a worst case scenario, as Iran's economic situation worsens; it could resort to increasingly bellicose moves against Qatar for alleged over-production, since the Qatari economy will increasingly shift to natural gas.[218]

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[212] Qatar has an almost 'obsessive' concern about its security, as it has variously faced threats, from Saudi Arabia, Iran, domestic extremist elements, as well as palace intrigue. Qatar's military is quite small (302,873) and is 'mercenary' in nature, being made up largely of unprofessional foreign nationals. See 'The World Fact Book: Qatar', Central Intelligence Agency Website. Available at https://www.cia.gov/library/publications/the-world-factbook/print/qa.html

[213] Qatar has explicitly used its natural gas as a tool to deepen economic links, as well as security ones. In that, other countries will have a direct interest in its security situation. Qatar has done this through free trade agreements, defence pacts, and of course the Dolphin project. See Neil Barnett, 'The Dolphin project surges ahead', *The Middle East* (Feb. 2000).

[214] See supra note 61. 'Gas use at issue in Iran as oil production sags'

[215] After the election of Iranian President Mahmoud Ahmedinejad, two political factions developed in Iran attempting to influence natural gas policy. One group, seeks to produce natural gas for LNG export, however, that group is under attack by those that think Iran should utilize its gas for domestic consumption, as well as reinjection, in order to keep oil available for export to take advantage of the elevated petroleum prices. See supra note 61 'Gas use at issue in Iran as oil production sags'.

[216] Ibid.

[217] The Iranian side of the field, South Pars, contains 10 per cent of the world's global gas supply, and 60 per cent of Iran's. There is an estimated 280–500 tcf of gas reserves. According to the Iranian Oil Ministry, sales from South Pars could earn it as much as $11 billion over a period of 30 years. See *Iran: Natural Gas* Energy Information Administration. Available at http://www.eia.doe.gov/emeu/cabs/Iran/NaturalGas.html

[218] Iran's oil and gas development planners increasingly see development of the South Pars field as a zero-sum game with Qatar, arguing that unless they (Iran) move quickly to exploit it, they will lose out on the

Qatar may not be motivated to reach such an accord, since the presence of the American Fifth Fleet, and the USA CentCom (Central Command) nullifies to a great degree the danger of a direct Iranian attack.[219] International cooperative organizations, such as the still nascent Gas Exporting Countries Forum (GECF), could establish a forum for resolution of disputes between exporters if they view the necessity of collective action as being essential to their ultimate aims.[220]

If there are future difficulties, Qatar and Iran may present their differences to the ICJ for resolution, which has had success in resolving regional disputes, although, as pointed out earlier, Qatar may have limited incentive to do so.

5.2 Increasing domestic demand

The Gulf region has experienced runaway economic growth from record oil revenue. The statement by a Qatari official in 2001, that ecstatically proclaimed, 'we have [enough] gas in the world for everyone who wants it',[221] may have been a bit premature. It has been moderated by a statement from the Qatari Energy Minister, Abdullah Al Attiyah, who said,

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global gas trade, with the Qataris taking more than their share of the North Field/South Pars structure. See 'Iran has yet to fulfil its vast gas potential—but its only a matter of time', Atieh Bahar Consulting (May 2004). Available at
http://atiehbahar.com/InTheNews/GasPotential.htm
However, if the development of the Gas Exporting Countries Forum proceeds apace, that may serve as a forum for cooperation in joint development. See 'Promotion of gas cooperation between Russia, Iran, and Qatar promising', *Alexander's Gas and Oil Connections*, Vol. 12, No. 9 (10 May 2007).

[219] As the US military has increasingly abandoned an active visible presence in Saudi Arabia, it has been welcomed with open arms in Qatar, where there has not been any visible antipathy to its presence. At least not on the same level as in Saudi Arabia, where the presence was viewed as blasphemy due to the proximity of the holy cities Mecca and Medina. Many of the vital US military command centres have been shifted to Qatar which forms a part of Qatar's active strategy. For example, the US Central Command (CentCom), nerve centre for the American presence in the Middle East, Africa, and Asia, is now housed in the As-Saylilay air base upon the Emir's invitation. See 'Qatar Facilities' *GlobalSecurity.org Military*. Available at http://www.globalsecurity.org/military/facility/qatar.htm

[220] On this point it must be added that despite Iran and Iraq both being members of OPEC, common membership did not prevent them from engaging in a disastrous war, and neither did it prevent the subsequent Iraqi bellicosity toward Kuwait. Further, collective membership in the GCC has so far not opened up room for agreement between Saudi Arabia and Qatar on transit rights, and neither has common membership in OPEC. For a thorough study of the GECF see Hadi Hallouche, 'The Gas Exporting Countries Forum: is it really a gas OPEC in the Making?' *Oxford Institute for Energy Studies*, NG 13, (June 2006). Also see Professor Jonathan Stern, whereby he discusses the distracting nature of the media interest in the GECF, Jonathan Stern, 'Gas–OPEC: a distraction from important issues of Russian gas supply to Europe', *Oxford Energy Comment* (February 2007).

[221] See 'Qatar poised to dominate Gulf gas supply', *World Oil* (July 2001).

'[t]he country is one big workshop. We cannot just export gas when we need it ourselves. We have to give domestic supply priority'.[222] Natural gas consumption constitutes nearly 80 per cent of Qatar's energy mix.[223] When Qatar dropped its plans for a multi-billion dollar gas-to-liquids export plant in February of 2007, it cited rising costs, and admitted that rising domestic demand weighed heavily in the decision to terminate the project.[224]

Concerned that the rapid depletion of the North Field's reserves could prompt reduced pressure and damage to long-term productivity, Qatar issued the 2005 moratorium on further North Field projects.[225] In the interim, the government would like to study the effects of the field's rapid development. Qatari officials say that the Emir placed the moratorium out of concern that the structure is not as geologically homogenous as once thought.[226] The study was instituted to study the structures in depth to determine if any damage were being done to the field by the many competing calls.[227]

Although, originally the moratorium was to be concluded in 2009, it has been delayed with the assessment not expected to be completed until 2010–2012, which means that no new projects are expected to be signed before 2011.[228] The moratorium, however, did not affect projects that were approved or underway before the moratorium, which are expected to add significantly to Qatar's natural gas supply in the next five years.[229] A slowdown may occur on future projects, and Dolphin's expansion is unlikely. Qatar has indicted that domestic demand will take increasing precedence in any future gas allocation. [230]

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[222] See 'Greater supply deficits force Middle East to focus on domestic needs', *Alexander's Gas and Oil Connections*, Vol. 12, No. 9 (10 May 2007).
[223] Ibid.
[224] Ibid.
[225] See 'Energy profile of Qatar', *The Encyclopaedia of Earth*. Available at http://www.eoearth.org/article/Energy_profile_of_Qatar

[226] See supra note 28 'First signs of tightness amid North Field bonanza'.

[227] See *Country Analysis Brief: Qatar*, Energy Information Agency. Available at http://www.eia.doe.gov/emeu/cabs/Qatar/NaturalGas.html

[228] Ibid.
[229] Ibid.
[230] Ibid.

6. Is the GCC Pipeline Still Alive?

Even though the GCC pipeline languished for more than 20 years, a gas grid linking all the GCC members still captures the fascination of the collective GCC members. As stated earlier, the GCC nations must overcome considerable hurdles before concrete action can be taken. As the Victor, Jaffe, and Hayes study of natural gas pointed out, the central hindrances for regional pipeline construction globally have been political and institutional, not technological and economic.[231]

Appleman explains that the Pax Britannica never adequately resolved Gulf border antipathies. After the conclusion of that epoch, superpower polarization in the Gulf region pre-empted a common orientation that might have unified the Gulf into a collective energy/economic paradigm.[232] The implication this has for a collective GCC pipeline is sobering: if these States operate in an atmosphere of mistrust, common energy cooperation will be unachievable. The proposed GCC pipeline may have been an indirect casualty of the lack of firm borders after independence.[233]

After the British military withdrew its forces from its former colonies located west of the Suez Canal in 1971, American foreign policy strategy as enunciated by US President Richard Nixon concretized the policy of having a regional 'policeman',[234] in this case Iran, and to a lesser extent Saudi Arabia, to keep an expansionist Iraq at bay.[235] The Nixon

[231] See supra note 60. *Liquefied Natural Gas from Qatar: The QatarGas Project, Geopolitics of Gas.*

[232] See William Appleman Williams, *The Tragedy of American Diplomacy* (New York: W. W. Norton, 1972).

[233] The United States had considered the Gulf region vital for its interests since US President Franklin Roosevelt proclaimed on 16 Feb. 1943, that 'the defense of Saudi Arabia is vital to the defense of the United States'. And that interest was evident in the four Cold War US presidential doctrines, the Truman Doctrine, the Eisenhower Doctrine, the Nixon Doctrine, and the Carter Doctrine. See Zbigniew Brzezinski, *Power and Principle: Memoirs of the National Security Adviser, 1977–1981* (New York: Farrar, Strauss, Giroux, 1983).

[234] This strategy of a regional ally supported by the USA may be making a return as witnessed by the proposed massive $65 billion worth of weapons to Egypt, Saudi Arabia, and Israel. This could serve to destabilize the region even further. See Col. Daniel Smith (ret), 'Why Saudi Arabia, why now?' *Foreign Policy in Focus* (6 Aug. 2007).

[235] This doctrine was meant to limit the need to station American troops in faraway lands. However, according to Michael Klare, the Nixon doctrine helped open the floodgates of US military aid to the Persian Gulf thus militarizing an already unstable region. See Michael T. Klare, *Blood and Oil: The Dangers and Consequences of America's Growing Petroleum Dependency* (New York: Henry Holt, 2004).

doctrine, although ostensibly meant to keep the peace by having regional allies take care of their own security needs with American military and economic assistance, may have assured regional antipathy, and set the stage for the Iran/Iraq mini-arms race during the 1970s.[236] Because the USA supported Iraq with military advisors and Iran with arms for hostages, the war between these nations reduced the region to a swamp of conflicted interests.[237]

Not everyone assumes a dismissive attitude about the eventual development of a regional pipeline network. It is possible that the region's urgency to supply domestic demand, and the imminent gas deficit, will force the GCC into a gas grid, however uneasily.[238] Bahraini official, Mohamed Al-Jamea, urged the revival of the GCC grid because it would spread 'peace and prosperity' in its wake.[239] 'Its formation is [therefore] a must from an economic and social point of view.'[240] It appears that the success of Dolphin has given the Gulf States renewed confidence to move in a positive, mutually beneficial direction. However, in order to realize this dream, the GCC States may need to make substantive changes to their domestic pricing strategy of natural gas, and resolve Saudi objections.

6.1 Gulf pipelines outside the region

Over the past 30 years there have been a number of studies of possible Gulf–EU gas pipelines. The feasibility study in 2005 allowed Ioannis Samouilidis, the Director General of Energy and Transport of the European Commission, to assert that such a pipeline would be feasible and would create valuable diversification of gas supplies for the EU.[241] This can be construed as part of EU policy to diversify away from Russian supplies.[242]

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[236] See Howard Teicher and Gayle Radley Teicher, *Twin Pillars to Desert Storm: America's Flawed Vision in the Middle East from Nixon to Bush* (New York: Morrow, 1993).

[237] See Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, and Power* (New York: Simon & Schuster, 1991).

[238] See supra note 82, 'The GCC Grid is still a pipe dream'.

[239] Ibid.

[240] See 'Bahrain urges revival of regional gas Grid', *Alexander's Gas and Oil Connections,* Vol. 10, No 7 (6 Apr. 2005).

[241] See 'Study Finds GCC–EU gas pipeline a viable option', *Alexander's Gas and Oil Connections,* Vol. 10, No. 4 (24 Feb. 2005).

[242] European countries have been intensifying their contacts with Qatar to 'intensify relations with gas producing countries. [And] it is also due to security of supply reasons', as a spokesperson for the Dutch

Samouilidis explained that a GCC–Europe pipeline could become a reality by 2025, since an EU feasibility study indicated that a gas pipeline would be cost-competitive.[243] This statement is another in a long line of EU initiatives to develop a common energy security partnership with the GCC members.[244] Any progress would be dependent on the reduction of intra-Gulf tensions, the availability of North Field gas, and rising regional and domestic demand.

If the ill-fated PGSA Pipeline offers any precedent, proposals to ship long distance pipeline gas out of the region, assuming Qatar ends its moratorium, will have limited appeal for either Qatar or the buying party. Qatar has already invested billions in its LNG export infrastructure through RasGas and the QatarGas developments; it is unlikely that Qatar would subject itself to increased political and financial risk through the construction of long distance pipelines.

Qatar has signed bilateral agreements with several European governments for energy and infrastructure trade and development. A central component of these accords is the export of LNG to the EU. Qatar Petroleum, together with ExxonMobil, has worked to develop LNG import terminals in several European countries, such as the Qatargas II Project[245] in the UK, with deliveries of up to 756 bcf per year for 25 years starting in 2008, and the RasGas II terminal in Belgium comprising two liquefaction trains of 378 bcf each.[246]

Ministry of Economy stated. This corresponds with the general EU policy to increase gas imports from the Gulf, and North Africa. See 'The Netherlands seeks gas tie-up with Qatar', *Alexander's Gas and Oil Connections*, Vol. 12, No. 13 (13 July 2007).

[243] A further statement by Samoulidis pointed out that the EU 'thinks [a GCC-EU] pipeline has many advantages. It is cheaper, more reliable, and creates stronger links between suppliers and buyers'. See Barbara Bibbo, 'Qatar seeks Saudi approval to build pipeline to Kuwait', *Emirates Economy Forum* (9 Feb. 2005). Available at http://www.uaeec.net/vb/showthread.php?t=1957

[244] The EU and the GCC in 2006 formed a joint study team to analyse joint petroleum projects. This was the outcome of intensive talks held at the third Gulf European Oil and Gas Technologies Conference in Kuwait City 2006. This team will include twelve specialists and officials representing different petroleum phases. See 'GCC, EU Agree to Form Joint Team for Petroleum Projects', *People's Daily Online*. Available at http://English.people.com.cn/

[245] QP holds 70 per cent equity and ExxonMobil 30 per cent equity.

[246] See 'Qatar Petroleum and Exxon Mobil Announce Start of US$12.8 bn QatarGas II', *AME Info* (27 Feb. 2005). Available at http://www.ameinfo.com/54724.html

7. Future Gulf gas development: economic and political challenges

All Gulf countries face difficult gas challenges in the coming years. A combination of rising domestic demand due to surging economic growth, government sponsored industrialization, and low domestic gas prices have contributed to a crisis of gas availability. Despite huge reserves, in the majority of the Gulf countries low gas prices are constraining upstream investment for supply to the domestic market and, at the same time, hugely increasing domestic demand for gas. While different countries, including the three Dolphin partners, are in somewhat different positions, action or inaction on domestic gas prices will drive much of future development of gas in the Gulf, including the future of Dolphin.

7.1 Challenges facing the Dolphin partners

As the supplier of Dolphin's first 2 bcf/d phase at the price of $0.87/Mmbtu ex-Ras Laffan and a delivered price of $1.30–$1.40/Mmbtu, the Qatari State is, at a minimum losing substantial revenues from sales which could have been made on LNG international markets, and arguably subsidising industrial development in the UAE and Oman. Qatar's willingness to agree to such a low price reflected both an understanding of domestic gas prices in neighbouring countries, and its desire to form political and economic links with regional countries independent of the GCC; perhaps even extending to the idea of a Southern Gulf Union. In this sense, Dolphin reflects regional Qatari political and market access objectives.

However, it is not certain that the same commercial/political logic would be applied to a future expansion of Dolphin. Depending on the outcome of the North Field reservoir studies (see section 5.2) and the post-moratorium political environment, Qatar may be willing to consider either a Phase Two expansion or gas sales outside the Dolphin framework. But it must be doubtful that it will continue to allow neighbours to benefit from prices which are lower than those which could be obtained from additional LNG exports. Qatar has already advised Oman and the UAE that future North field gas through

Dolphin will be priced at a minimum of $4/Mmbtu.[247] This figure reflects the short-term bridging supply deal to Dubai in 2007, where Dubai was willing to pay more than double the long term contract price for Dolphin gas.[248]

Higher prices for intra-region gas trade may become the norm, as gas producers realize the competitive impact of the term 'sellers market.' As Dolphin's downstream partner, the UAE faces difficult policy choices because its domestic price of $1.00/Mmbtu is insufficient to profitably develop the sour gas reserves in Abu Dhabi. Rapidly rising gas domestic demand in UAE is centred on power/desalinization and oilfield re-injection. While Dolphin imports will give some breathing space, the UAE must increase imports from Qatar, attract new imports from Iran, or develop substantially more domestic gas. Qatar's decision to extend the moratorium until at least 2010–11 means that, even if available, additional long term contract Qatari gas cannot arrive prior to 2013–14, and at a minimum price of $4.00/Mmbtu.[249] The UAE in the interim must consider how to respond to its domestic 'gas crisis.' Whether from Dolphin or Iran's Salman pipeline, any short-term gas supply to the UAE will be at greatly increased prices. The UAE will most likely reconsider its objectives and develop its own indigenous gas resources, by increasing domestic prices to levels which gives incentives for such development.

Oman and Abu Dhabi perhaps represent the most glaring irony of gas exporting countries that simultaneously import gas for domestic use. Just as the UAE has juggled export commitments to Japan with domestic demand, Oman has begun to feel strains in the conflicting demands for its domestic gas, primarily between domestic demand, and LNG export commitments. Oman's ambitious 'Oman 2020' economic and industrialization drive is designed to use natural gas for economic diversification.[250] In February 2007, the Under Secretary of Oil and Gas, Nasir al Jashmi, confided that '[W]e have a lot of demand and there are projects in the pipeline that we cannot meet.'[251] He explained that domestic

[247] See supra note 31 'Natural Gas Market Review 2007: security in a globalizing market to 2015' .p.158.
[248] Ibid.
[249] Ibid. P. 153
[250] See Richard H, Curtiss, 'Oman: A model for all developing nations', *Washington Report on Middle East Affairs*, 49–52 (July/Aug. 1995).
[251] These were in comments to the Middle Eastern Economic Survey. See 'Bottom of the Barrel?', Middle East News: *Gulf Business* (10 June 2007).

gas demand in the Sultanate had increased an average of 7 per cent annually.[252] The increased demand has already caused Oman to reject several gas-intensive projects.[253]

Oman has embarked on a strategy that requires it to secure gas imports in order to extend the life of domestic gas reserves, while allowing it to fulfil its LNG export commitments. Because it cannot depend on Dolphin for future import needs above the initial Phase 1, 200 mcf/d, Oman may seek to source gas from Iran. Dr. Mohammed Bin Hamed Al Rumhy, Oman's Minister of Oil and Gas, asserted that '[Oman] is negotiating with Iran over all aspects of this project including technical issues, the role of the two countries and their interests in the project [a gas pipeline that would transfer Iranian gas to Oman through the Gulf], as well as the companies from both nations which will establish the pipeline'.[254] However, how Iran will view this trade considering that its supplies will be supporting higher priced LNG exports from Oman is uncertain.

While Oman believes it will face a gas crisis, it is difficult to accept that notion, as long as Oman is a net natural gas exporter. Dolphin gas will be used primarily for reinjection purposes at the Mukhaizna field. Because the era of gas priced at low levels for political reasons is rapidly drawing to a close, Oman will likely either have to adjust to higher import prices, or increasingly develop its own gas resources, underpinned by domestic market prices much closer to market realities. Failure to do so will either threaten domestic economic development or continued exports.

Thus the Dolphin partners face some difficult questions as to how they will pursue regional development. Substantial Qatari LNG or pipeline gas expansion in addition to the pre-moratorium contracts is unlikely. Indeed, even if the North Field study concludes that technical expansion of production and exports is viable, this may not be an automatic choice for a country with a small population, and GDP per capita which is already on par with the wealthier OECD countries. An unintended consequence of the Dolphin Project has been to highlight the problematic economics of regional gas development.

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[252] Ibid.
[253] Ibid.
[254] See Reuters, 'Iran to export natural gas to Oman', *The Peninsula* (27 June 2007). Available at http://www.thepeninsulaqatar.com/Display_news.asp?section=Business_News&subsection=market+news&month=June2007&file=Business_News2007062725424.xml

7.2 The Importance of the Dolphin project

Although a Dolphin conjures up the image of speed and wisdom, the implementation of the project has been anything but rapid. Dolphin has seen setbacks due to political squabbles, territorial disputes, and obstacles made by self-interested parties. Even though political disagreements—and specifically the objections of Saudi Arabia—spelled the end of the GCC Gulf gas pipeline concept, and hindered the implementation and proposed extension of Dolphin, politics also encouraged a settlement when rival parties might not otherwise have come to a mutually agreeable conclusion.

Dolphin's success will be a benchmark for gas projects in the region, and will also serve as a trial run for the emergence of Islamic finance in oil and gas projects. It may also spur intra-regional gas trade, depending on Qatar's future export policy (post-moratorium) and the pace of domestic price reform in Gulf countries. Dolphin may be considered the progenitor of intra-Gulf developments that could lead to greater economic and political integration, and even the development of a single currency.[255] If it reaches its vision, the image of a Dolphin rising from the deep will be an apt comparison after all.

[255] Dolphin intends to be the first step of many in forging a common bond between the Gulf countries. A further step in unification is the proposed creation of the common currency, the 'Khaliji', which will further bind the GCC nations. See generally, Muhammed Al-Jasser and Abdulrahman Al Hamidy, *A Common Currency Area for the Gulf Region*, Bank for International Settlements. Available at http://www.bis.org/publ/bppdf/bispap17k.pdf