

## 6. Energy and security: regional and global dimensions

KAMILA PRONIŃSKA

### I. Introduction

The recent surge of debate about energy security and its place in international strategy and politics has often been compared to the impact of the first oil crisis in the 1970s. In reality, it has a different and more varied set of origins. Since the 1970s there have been changes in the structure of the energy market, the nature of energy security and the challenges to it, and the geopolitical environment. These changes all affect the understanding of what energy security is and what are the best national, regional and global methods of ensuring it. At the same time, states differ in their starting positions regarding energy security, and their energy strategies and policies are chosen under the influence of broader economic, geopolitical and ideological calculations than was the case in the 1970s. This leads some of them to take a nationalistic approach to energy security, often including a readiness to use force (military or economic) to protect their energy interests. Other countries show more understanding of the need for collective, institutional measures to ensure energy security.

All these factors shape contemporary international relations in ways that go beyond the direct strategic and geopolitical dimensions of energy security as such. On the one hand, they may lead to new strategic alliances and cooperation between states that are major energy market players; on the other hand, they provide sources of international tension and conflict. Such conflicts in turn may include 'resource conflicts', where the ownership and supply of energy is itself the key factor, or they may be conflicts in which resources provide one of many catalysts without taking the central role. Only during the two world wars of the 20th century did these diverse links between energy and the traditional or military security agenda become as obvious and visible as they are today. They are now illustrated not only by the military presence of major energy consumers in the regions abundant in oil and gas, but also by terrorist attacks on the energy sector and by the growing concern with providing military protection for energy infrastructure around the world.

This chapter concentrates primarily on one small aspect of the energy security conundrum—the link between energy and the traditional security agenda. It focuses for the most part on concerns related to the production, use and supply of oil and gas, and on the external dimensions of energy policy. Energy security clearly cannot be reduced to oil and gas: the use of other energy sources

such as coal, nuclear energy or renewable sources<sup>1</sup> is equally relevant to enhancing a country's energy security, and may also trigger energy security concerns. Nevertheless, the significance of oil and gas to the world economy and the fact that they are traded over long distances from a few major production centres to consumers scattered literally worldwide make them the main source of security-relevant competition, tensions, policy dilemmas and even conflicts.

Section II of this chapter clarifies the meaning of energy security and the main components and processes that have affected analytical and political visions of the link between energy and security at different times. Section III looks in more detail at the evolving structure of, and trends within, the world market for oil and gas. Section IV considers the links between energy and international conflict, and section V reviews policy responses to energy security challenges that have been considered by states, groups of states and international organizations up to the present. The conclusions are presented in section VI.

## II. A geostrategic approach to the security of energy supply

Energy security—the availability of energy in sufficient quantities and at affordable prices at all times—is a complex issue. It brings together a variety of economic, geopolitical, geological, ecological and institutional factors, but also breaks down into multiple (global, regional, national and individual consumer) levels of reference and analysis. Analysts' attempts to define energy security, and governments' anxiety to ensure it, are both made more difficult as a result. In addition, one's perspective on energy security depends on one's position in the energy supply chain. For exporters the most important part of the concept is security of demand for their energy resources or, in other words, security of revenues from the energy market. Earning petrodollars is very often a prerequisite for producers' economic security—and hence also for their own energy security. Most consumers, in contrast, focus their security concerns on the challenge of import dependency and the risk of supply disruption. In major energy-consuming countries, accordingly, the key security issues debated include diversity of supply, access to energy resources (often entailing competition with other major energy consumers), stable oil prices, security margins for emergencies and the introduction of alternative energy sources. Other elements of the energy supply chain also interpret energy security differently: for commercial companies a main component of security is a stable legal investment regime in producer countries.

Furthermore, the perception of energy security is in constant flux depending on the structure of the energy market, the state of consumer–producer rela-

<sup>1</sup> Renewable sources of energy are those that can regenerate over time or cannot be physically depleted. Most renewable energy is ultimately obtained from the sun, either directly or indirectly in the form of wind power, hydropower or photosynthetic energy stored in biomass, known as a bioenergy or biofuel. Non-solar renewable energy is geothermal power generated from the earth's heat.

tions, demand and supply trends, technological changes, and—not least—the fact or fear of energy crises, supply disruptions or price shocks. In practice, changes in perception can significantly affect both theoretical and practical approaches to energy security. Thus, energy analysts have not always perceived the significance of the geostrategic component in the same way.<sup>2</sup> For example, during the 1970s the concept of energy security focused on geostrategic aspects—reducing import dependency and the vulnerability of imported supplies to disruption—and was narrowly viewed through the prism of high dependency on Middle East oil suppliers and the threat of supply disruptions. In contrast, in the 1990s, when suppliers did not use energy as a weapon and oil supplies were plentiful at moderate prices, consuming countries became more confident about oil and gas abundance and more aware of their own strength as consumers. Since the 1980s importers have felt able, for instance, to impose sanctions on some oil-exporting countries and to build multilateral response mechanisms for energy crisis situations. Analysts have turned accordingly to other aspects of energy security. Prime issues have included, first, ensuring greater economic efficiency through liberalization and deregulation in the gas and electricity sectors, and second, enhancing the protection of the environment against threats generated by the production and use of energy, such as carbon dioxide emissions.

At state policy level, changes in the content of the energy security agenda have also been reflected in changes in its relative priority among national and international concerns. The decisions taken by the Organization of the Petroleum Exporting Countries (OPEC) in 1973—to impose an oil embargo on those consumer countries that favoured Israel and to raise oil prices drastically—provide perhaps the most spectacular example of an incident that lifted energy security to the top of political agendas.<sup>3</sup> These steps had a truly shocking impact on Western countries that were highly dependent on hitherto relatively cheap and easily obtainable imported oil. On the one hand, they showed the vulnerability of the importers' economies to disruption of physical oil supplies and to rapid price increases; on the other hand, the political character of the Arab countries' decisions crystallized the notion of energy as a weapon, with its potentially asymmetrical impact on highly developed economies. One result was to force major importers to consider multilateral measures to safeguard the future security of supply. For the first time in modern history energy security became an important issue of international debate, with results that included the creation of the International Energy Agency (IEA) and of multilateral response mechanisms to deal with potentially serious energy supply

<sup>2</sup> For further discussion on this see Skinner, R. and Arnott, R., *The Oil Supply and Demand Context for Security of Oil Supply to the EU from the GCC Countries*, Working Paper/Monograph no. 29 (Oxford Institute for Energy Studies: Oxford, 2 Apr. 2005), URL <<http://www.oxfordenergy.org/books.php>>, pp. 22–31; and Skinner, R., 'Energy security and producer–consumer dialogue: avoiding a Maginot mentality', Background Paper for Government of Canada Energy Symposium, Ottawa, 28 Oct. 2005, URL <<http://www.oxfordenergy.org/presentations.php?1#>>.

<sup>3</sup> OPEC was established in 1960. Its members are Algeria, Angola (since Dec. 2006), Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates and Venezuela.

disruptions.<sup>4</sup> In the long-term perspective, the events of the 1970s gave a certain advantage to consumer countries by enriching their knowledge of how to protect themselves against similar future threats, and by prompting them to develop a wide range of methods and strategies to strengthen energy security at both the national and multilateral levels.

Nonetheless, the origins of strategic thinking about the security of energy supplies go back at least to World War I. One pivotal point for the emergence of energy security as an issue of national strategy was the decision of Winston Churchill, as cabinet minister responsible for the British Navy in the run-up to World War I, to switch from using indigenous coal to imported oil as fuel.<sup>5</sup> During World War II the significance of the energy factor was even more apparent. As the war effort was totally dependent on liquid fuels, both sides had two major strategic objectives—to defend their own sources and routes of oil supply, and to attack those of the enemy.<sup>6</sup>

Both these older and the more recent historical examples highlight the centrality of the issue of import dependency, which arises at two levels: the dependency of individual economies on energy, particularly on oil, and the dependency of highly developed countries on foreign producers. The second type of dependency results both from developed countries' larger appetites for energy and from the fact that energy resources (above all, oil and gas) are unevenly distributed across the world. In both contexts, the security of supply becomes one of the most important terms to be used in identifying and solving energy security challenges.

Richard Ullman, in an article which became a classic study on redefinition of security, distinguishes two types of constraints on energy resource supplies.<sup>7</sup> The first is when a non-renewable resource is becoming scarce through normal depletion; the second is when supplies are constrained through artificial government efforts to restrict supplies by means of boycotts, embargoes or cartel agreements. Paul Horsnell makes further distinctions between energy supply constraints.<sup>8</sup> He distinguishes between swings in oil prices that arise from 'policy discontinuity'—that is, changes in the producers' policy—and those caused by 'fundamental discontinuity', when the available supply within

<sup>4</sup> The IEA was established in 1974. Its members are Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, South Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Commission also participates in the IEA's work. The IEA's emergency response mechanisms were set up under the Agreement on an International Energy Program, signed on 18 Nov. 1974. The text of the agreement is available at URL <<http://www.iea.org/Textbase/about/>>.

<sup>5</sup> Yergin, D., 'Ensuring energy security', *Foreign Affairs*, vol. 85, no. 2 (Mar./Apr. 2006), p. 69.

<sup>6</sup> For more on this subject see Jensen, W. G., 'The importance of energy in the First and Second World Wars', *Historical Journal*, vol. 11, no. 3 (1968), pp. 538–54; Spaight, J. M., 'The war of oil', *Military Affairs*, vol. 13, no. 3 (autumn 1949), pp. 138–41; and Kinnear, J., 'Oil and the military: the challenge of leadership', *Vital Speeches of the Day*, vol. 59, no. 14 (1993), pp. 429–33.

<sup>7</sup> Ullman, R. H., 'Redefining security', *International Security*, vol. 8, no. 1 (summer 1983), p. 144.

<sup>8</sup> Horsnell, P., 'The probability of oil market disruption: with an emphasis on the Middle East', Prepared for the study Japanese Energy Security and Changing Global Energy Markets, Rice University, James Baker Institute for Public Policy, May 2000, URL <<http://www.rice.edu/energy/publications/japaneseenergysecurity.html>>.

the system is unable to meet the aggregate demand. He further identifies three types of sudden disruption of supply: ‘*force majeure* disruption’ is the inability of a producer to export resources owing to internal or external conditions, such as war; ‘export restriction disruption’ arises when a producer or group of producers decides to restrict export for political or strategic reasons; and ‘embargo disruption’ occurs when a consuming country blocks imports from certain exporters.<sup>9</sup>

Regardless of the source of disruption, if the shock to supply cannot be immediately accommodated by the market, the energy (and economic) security of states can be at risk. Different countries, however, will be differently damaged as a function of the flexibility of their particular energy system. This makes it a matter of primary importance for policymakers to increase their own country’s potential for flexible response and thereby decrease their vulnerability to disruptions. In general, as vulnerability decreases, energy security increases;<sup>10</sup> and only a country that can safeguard the supply of energy to its economy and citizens in a time of crisis can feel real energy security.

Today’s anxieties about this issue are driven by a more complicated set of factors than in the 1970s. Key elements of these concerns have included: (a) a drastic increase in global energy demand; (b) the tight oil market and high oil prices; (c) an increase in the average level of national and regional import dependencies; (d) technical problems with electric power supply resulting in several temporary power blackouts; (e) weaknesses in the energy infrastructure along the whole supply chain; and (f) the liberalization and deregulation of internal energy markets. Non-economic factors leading to more or less significant disruptions in the oil market have included the impact of hurricanes in the Gulf of Mexico, terrorist attacks on strategic energy infrastructure in the Middle East, the ups and downs of the Iraq conflict following the US-led invasion of March 2003, and other conflicts and instabilities in some oil-producing countries and regions.

The concern about terrorist attacks deserves special mention as an addition to the traditional links between energy and traditional security. The terrorist attacks on the United States of 11 September 2001 underlined first and foremost that the developed world offers many appealing targets to terrorists, and the energy infrastructure may well be among them. In the aftermath of the attacks most countries moved their energy installations to a higher state of alert. Since the 2003 invasion of Iraq, the world has seen an increasing number of direct terrorist attacks on the energy sector in the world’s major zone of production—the Middle East. Energy may now become not only an instrument of war (as in the oil embargo of 1973), but also its direct target, and the vulnerability of the whole energy sector can be described as the Achilles heel of the developed world. Terrorist attacks (including cyber-attacks) could be aimed not just at infrastructural elements in the oil and gas supply chain, such

<sup>9</sup> Horsnell (note 8), p. 6.

<sup>10</sup> Ullman (note 7), p. 146.

as terminals, tankers or long-distance pipelines, but also at installations in consuming countries, such as generating plants, energy grids or refineries. The difficulty of providing military-style protection or even surveillance for all of these is evident, but the physical security of the energy infrastructure is now more universally recognized as an important part of the energy security concept.

### III. Patterns of energy supply and demand

#### **The world energy balance and trends in the energy market**

From the economic perspective, trends in energy supply and demand are the key factors influencing perceptions of energy security. Present security concerns owe much to the fact that demand for energy from all sources has steadily risen through the past decade. The fact that world production of oil and gas has also increased has not been enough to dispose of the problem. One significant factor has been the high rate of economic growth in the developing world, especially in China and India.

The latest projections from agencies monitoring energy data—the US Energy Information Administration (EIA) and the International Energy Agency—indicate continued strong growth in world energy consumption. For instance, the EIA forecasts that between 2003 and 2030 energy demand will grow by 71 per cent (see table 6.1). As for particular energy resources, worldwide oil demand will increase by 48 per cent over the same period. Natural gas and coal will be the fastest growing energy sources—gas use will grow by 92 per cent and coal use by 96 per cent. Higher fossil fuel prices, especially for oil and gas, are expected to promote the wider use of nuclear energy, which the EIA expects to rise by 31 per cent up to 2030, and of renewable sources, which is expected to grow at a rate similar to those for natural gas and coal.<sup>11</sup>

The rise in demand would not in itself have far-reaching implications for energy security if it were not for the increasingly tight supply situation in the oil market. A few elements are of key importance here. More than half of the extra oil output that has helped meet increasing demand during the past few years has come from Russia, which managed an impressive boost in output thanks to the recovery of its oil industry in the late 1990s.<sup>12</sup> At the same time some OPEC members were constrained from building spare capacity, initially by low oil prices and later—when prices went up—by other factors. Political conflicts in producing countries such as Nigeria and Venezuela not only made it impossible to expand production but also disrupted significant proportions of the oil supply to the world market. A similar effect on US production and

<sup>11</sup> US Energy Information Administration (EIA), *International Energy Outlook 2006* (EIA: Washington, DC, June 2006), URL <<http://www.eia.doe.gov/oiaf/ieo/>>, pp. 7–10.

<sup>12</sup> See e.g. Leijonhielm, J. and Larsson, R. L., 'Russia's strategic commodities: energy and metals as security levers', Swedish Defence Research Agency (FOI) User Report FOI-R--1346--SE, Stockholm, Nov. 2004, URL <[http://www.foi.se/FOI/templates/Page\\_4356.aspx](http://www.foi.se/FOI/templates/Page_4356.aspx)>, pp. 33–35.

supplies was caused by the impact of hurricanes in 2005 in the Gulf of Mexico and from instability in Iraq, including terrorist attacks on its energy infrastructure. In addition, a significant role in constraining growth in production was played by regulatory factors such as statutory restrictions on exploration in environmentally sensitive areas, investment sanctions, the taxation policies of producing countries, obstacles placed in the way of access to transport, refinery or storage facilities, unrealistically tight oil product specifications, and not least by market speculation.<sup>13</sup>

Given the expected strong rise in worldwide demand and the general drop in spare oil production capacity, developing additional oil production capacity in all the major producing regions will be one of the biggest challenges for the future. The Russian oil sector cannot carry as much of this burden as it has in the past. According to data from the oil company BP, OPEC countries accounted for nearly all of the net increase in global production in 2005.<sup>14</sup> Russian production is likely to be constrained in the future because investment in the country's energy sector is far below the required levels. Such under-investment is a real risk in all producer countries. The IEA estimates that governments and companies need to invest more than \$20 trillion in energy infrastructure over the next 25 years to meet demand.<sup>15</sup> Since most of these investment needs are in developing countries, it is, unfortunately, far from certain that all of them will be met.

As a consequence of the tight oil market and its increased vulnerability to problems in producing regions, there has been a gradual rise in oil prices since 2003. From the economic viewpoint a dramatic sudden increase in the price of crude oil can have more serious consequences than a slow increase, to which economies can adjust over time.<sup>16</sup> However, in either case the higher price will hit oil-intensive sectors and may also have an impact on a country's macro-economic indexes. Expensive oil may raise inflation, increase the trade deficit and harm economic growth in importing countries. As noted above, however, importing countries' vulnerability varies markedly. In present conditions higher oil prices are generally more harmful for oil-importing developing countries, which use more than twice as much oil to produce a unit of economic output as member countries of the Organisation for Economic Co-operation and Development (OECD).<sup>17</sup>

<sup>13</sup> World Economic Forum and Cambridge Energy Research Associates, 'The new energy security paradigm', *Energy Vision Update*, spring 2006, URL <<http://www.weforum.org/en/initiatives/energy/>>, p. 25. 'Product specifications' are the quality requirements of oil products such as petrol, gas oil, diesel or jet fuel. The quality standards differ across the world, although a general trend for tightening quality specifications can be observed. Product specifications influence choices of crude oils processed by regional refineries and, if tight, they can significantly limit import abilities, affecting oil supply security and final oil product prices.

<sup>14</sup> BP, *Quantifying Energy: BP Statistical Review of World Energy June 2006* (BP plc: London, 2006), URL <<http://www.bp.com/statisticalreview/>>, p. 8.

<sup>15</sup> International Energy Agency (IEA), *World Energy Outlook 2006* (Organisation for Economic Co-operation and Development/IEA: Paris, 2006), pp. 75–77.

<sup>16</sup> 'Oil in troubled waters: a survey of oil', Supplement, *The Economist*, 30 Apr. 2005, p. 4.

<sup>17</sup> International Energy Agency, 'Analysis of the impact of high oil prices on the global economy', Paris, May 2004, URL <<http://www.iea.org/textbase/publications/>>, p. 2.

**Table 6.1.** World primary energy source and demand, 2003 and predictions for 2030

Energy source	Demand		Proportion of total demand (%)	
	2003	2030	2003	2030
Oil	80 mbd (4.0 b. tonnes)	118 mbd (5.9 b. tonnes)	38	33
Gas	2.7 tr. m <sup>3</sup>	5.2 tr. m <sup>3</sup>	24	26
Coal	4.9 b. tonnes	9.6 b. tonnes	24	27
Renewable sources	..	..	8	9
<b>Total</b>	<b>444 EJ</b>	<b>762 EJ</b>		

EJ = exajoule ( $10^{18}$  joules); mbd = million barrels per day.

Source: US Energy Information Administration (EIA), *International Energy Outlook 2006* (EIA: Washington, DC, 2006), URL <<http://www.eia.doe.gov/oiaf/ieo/>>, pp. 7–10, 37, 51.

Oil is the world's single largest energy source and is expected to keep this position, although its share in world primary energy consumption in 2003 will reduce (see table 6.1). Together, the three fossil fuels make up 86 per cent of total world energy consumption. As a more environmentally attractive energy source, world consumption of natural gas is projected to almost double by 2030.<sup>18</sup> As use of natural gas increases and spreads, its geopolitical significance and influence on international relations will further increase.

### Structural changes in the world oil and gas market

Over more than a decade the structure of the world oil and gas market has changed significantly. One factor is the increasing number of major oil and gas exporters. The collapse of the Soviet Union enabled Russia, Azerbaijan and the Central Asian countries to break the stagnation of oil and gas exports to world markets, while at the same time South American and West African countries were building new oil production capabilities. Simultaneously, there has been a wider diversification of world consuming centres.

Russia is now the world's second largest oil producer, after Saudi Arabia, and the largest gas producer and exporter.<sup>19</sup> Its opening up to the world economy has brought significant changes to the oil and gas supply structure. After the collapse of the Soviet Union, a long period of decreasing production began for Russia's oil industry. It was therefore a surprise for OPEC when Russia's annual oil output started to increase steadily in the late 1990s; all the more so when, from 2000, Russian oil output grew at a rate of nearly half a million barrels a day—the single largest increase in world oil production at the time.<sup>20</sup> This spectacular growth has been reflected in Russia's oil exports, which in

<sup>18</sup> US Energy Information Administration (note 11), pp. 8, 37, 51.

<sup>19</sup> BP (note 14), pp. 8, 24.

<sup>20</sup> Morse, E. L. and Richard, J., 'The battle for energy dominance', *Foreign Affairs*, vol. 81, no. 2 (Mar./Apr. 2002), pp. 16–17. For Russian oil production data from 1995 to 2005 see BP (note 14), p. 8.



2000 began to rise for the first time since the Soviet era: from 2.9 mbd (145 million tonnes per year) in 2000 (a similar figure to that for 1992) to 3.8 mbd (187 million tonnes per year) in 2003.<sup>21</sup> For OPEC this signalled the entry of a new serious rival into a market that the OPEC cartel thought was rightfully its.<sup>22</sup> The element of paradox, as noted by Fadhil Chalabi, was that the ‘driving force behind the spectacular increase since 2000 in Russian oil production and exports has been OPEC’s high price policies’.<sup>23</sup>

OPEC’s share of the oil market has decreased from 55 per cent in 1973 to 43 per cent in 2005.<sup>24</sup> Nevertheless, with 75 per cent of total world proved oil reserves, OPEC countries are and will continue to be the single most significant force in the oil market.<sup>25</sup> The Middle East and its leading producer—Saudi Arabia—play a pivotal role in world supply of oil and gas. The extraordinarily low oil production costs in the Middle East and the high quality and great abundance of its oil and gas—the region has 62 per cent of world proved oil reserves, expected to last for nearly 80 years, and 40 per cent of world proved gas reserves<sup>26</sup>—make the region unique and ensure that it will remain one of the most important factors in the contemporary energy market. While the economic arguments for the continuing reliance of the market as a whole and of consuming countries on supplies from the Middle East are understood, when the geostrategic aspects are taken into account the costs of such a dependency are high. The Middle East is one of the most politically unstable regions in the world, and its oil and gas infrastructure is particularly vulnerable to disruption. In practice, any kind of terrorist, political or military action in the region or even elsewhere is liable to disrupt Middle East supplies. Such disruption, if serious, could destabilize not only the world energy market but also the world economy as a whole.

Any producing region can be a source of energy supply disruptions. Recent events in Venezuela and Nigeria—the second and third most important OPEC producers outside the Middle East, respectively—disrupted oil flows to the market, and the Russian–Ukrainian gas crisis affected gas deliveries to the European Union (EU) in early 2006.<sup>27</sup> Over-reliance on any single foreign producer or region is, thus, unwise. In this context non-OPEC production in the Americas, the North Sea, Russia and the Caspian Sea region, and West Africa offers a chance for diversification of world oil supplies whose significance cannot be overestimated. The same applies *mutatis mutandis* to structural

<sup>21</sup> Leijonhielm and Larsson (note 12), table 3, p. 32. See also Chalabi, F., ‘Russian oil and OPEC price policies’, *Middle East Economic Survey*, vol. 47, no. 12 (Mar. 2004).

<sup>22</sup> Morse and Richard (note 20), p. 29.

<sup>23</sup> Chalabi (note 21).

<sup>24</sup> Organization of the Petroleum Exporting Countries (OPEC), *Annual Statistical Bulletin 2005* (OPEC: Vienna, 2006), URL <[http://www.opec.org/library/Annual Statistical Bulletin/ASB2005.htm](http://www.opec.org/library/Annual%20Statistical%20Bulletin/ASB2005.htm)>, p. 24.

<sup>25</sup> BP (note 14), p. 6. The oil reserves figure is for the end of 2005.

<sup>26</sup> BP (note 14), pp. 6, 22.

<sup>27</sup> See e.g. ‘Striking Venezuelan oil workers sacked’, BBC News, 29 Jan. 2003, URL <<http://news.bbc.co.uk/2/2705281.stm>>; ‘Militants claim Nigeria oil raid’, BBC News, 8 Dec. 2006, URL <<http://news.bbc.co.uk/2/6220562.stm>>; and ‘“Lessons” for EU from gas crisis’, BBC News, 4 Jan. 2006, URL <<http://news.bbc.co.uk/2/4582652.stm>>.



**Figure 6.1.** Current and projected oil and gas pipelines in Central Asia

*Source:* Based on a map by Wojciech Mankowski in Falkowski, M., *Russia's Policy in the Southern Caucasus and Central Asia*, Centre for Eastern Studies (CES) Studies no. 23 (CES: Warsaw, June 2006), URL <<http://osw.waw.pl/en/epub/eprace/23/01.htm>>, map 3, p. 83.

changes in world natural gas supplies that are tending to make the gas market more international, more flexible and in consequence more diversified.

Russia and four countries on or near the Caspian Sea—Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan—play the key role in the group of non-OPEC energy suppliers. Together they hold around 10 per cent of world oil reserves and over 32 per cent of natural gas reserves. Their shares in current world production are around 9 per cent for oil and 28 per cent for natural gas.<sup>28</sup> Russia's oil production is expected to increase by around 2–3 per cent per year, far below growth rates in previous years.<sup>29</sup> In the gas market Russia will remain a dominant exporter, but in the future it will be an increasingly important supplier in pipeline transport to Asia and its significance in the liquefied natural gas (LNG) market may rise.<sup>30</sup> However, lack of investment—today most of Russia's production comes from mature fields—may constrain production growth rates in both the oil and gas sectors. As to the Caspian Sea region, although its vast reserves are well known, it has only just begun to develop into a significant oil- and gas-exporting area. The reason is that most pipelines in the region were designed to supply the Soviet Union and after its collapse Russia maintained a monopoly over the transport of Caspian energy resources. The Baku–Tbilisi–Ceyhan pipeline, the first to free the Caspian

<sup>28</sup> BP (note 14), pp. 6, 8, 22, 24.

<sup>29</sup> Between 2003 and 2004 production rose by around 9%. BP (note 14), p. 8.

<sup>30</sup> LNG is a liquid obtained by cooling natural gas to  $-163^{\circ}\text{C}$ . As a liquid it can be transported in ships before being returned to a gaseous state at 'regasification' terminals.

exporters from the monopoly of Russian state-owned gas company Gazprom, entered into operation quite recently, in 2005. (Figure 6.1 shows current and proposed oil and gas pipelines in Central Asia.)

Among other non-OPEC oil suppliers, sub-Saharan Africa deserves special mention. The region is expected to expand oil output hugely in the coming years. For example, Angola became a million-barrel-per-day producer in 2004 (and in December 2006 became an OPEC member), while other western African producers with offshore oil tracts are expected to increase production by up to 1.1 mbd by 2030. Significant oil production increases are projected also in Canada, Mexico and South America (in Argentina and Brazil, but also in Colombia and Ecuador with their difficult political situations). Some increase is also expected in Asia-Pacific countries such as Australia, Bangladesh, India, Myanmar and Viet Nam. At the same time prospects for one of the most important European sources of oil supply—the North Sea—are not encouraging. Norwegian oil output is projected to decrease from a peak of 3.6 mbd (179 million tonnes per year) in 2006 to 2.5 mbd (124 million tonnes per year) in 2030 and the United Kingdom's from 2.2 mbd (110 million tonnes per year) in 2010 to 1.4 mbd (70 million tonnes per year) in 2030.<sup>31</sup>

The above projections by the US EIA do not anticipate world oil production to peak until 2030. It is important to note, however, that they are based on proved reserves and on economic assumptions about future oil prices, rates of growth and the levels of investment. They do not take into account possible disruptions of any kind—caused by war, terrorism, political turmoil or weather. The analysts who stress the prospect of supplies peaking earlier argue that, first, both OPEC and non-OPEC countries are producing over 2 barrels of oil for every new barrel they find; second, reserves in many producing countries have been depleted by up to 50 per cent; third, companies have problems in finding new large oil fields; and finally, in recent years virtually all of the spare production capacity has been in the Middle East.<sup>32</sup>

All the major producers of natural gas are expected to increase their output by 2030, yet the two regions with the world's largest natural gas reserves—the Middle East and Russia and the Caspian Sea region, which account for more than two-thirds of proved reserves—will together account for only 47 per cent of increases in global output. In fact, the fastest growth rates in natural gas production will come from African producers (with an annual average growth rate of 4.9 per cent between 2003 and 2030). OECD countries will see their dependency on imported gas rise, since the projected growth in their natural gas production (averaging 0.5 per cent per year) will not match the projected rise in their demand of 1.5 per cent per year.<sup>33</sup>

The most significant structural change in the natural gas market is that this fuel of choice has been transformed from a marginal energy resource consumed in regionally distinct markets to a fuel traded internationally and trans-

<sup>31</sup> US Energy Information Administration (note 11), pp. 31–32.

<sup>32</sup> For more discussion on this subject see 2005 Global Oil and Gas Forum, *The New Energy Security* (Aspen Institute: Washington, DC, 2006), URL <<http://www.aspeninstitute.org/ee/globalenergy/>>.

<sup>33</sup> US Energy Information Administration (note 11), pp. 39–40.

ported across great distances.<sup>34</sup> Technological improvements that have lowered the cost of LNG have facilitated the development of an international gas market and the spot gas trade. In 2004 only 12 countries produced LNG—Algeria, Australia, Brunei, Indonesia, Libya, Malaysia, Nigeria, Oman, Qatar, Trinidad and Tobago, the United Arab Emirates (UAE) and the USA—but Russia and Egypt joined the LNG business in 2005 and others, including Iran (and perhaps Saudi Arabia), are expected to follow suit from the next decade onwards.<sup>35</sup> Similarly, more countries are acquiring LNG regasification terminals so that they can import LNG. The LNG trade has potentially far-reaching implications for energy security: it gives a chance to diversify the sources of natural gas imports and makes the gas market overall more flexible. Through trade in LNG, what used to be three separate regional trading zones for gas—the Americas, the Asia–Pacific region and Europe—are becoming more linked, which also means that disruption of supplies in one producing region can affect the others. Finally, the increasing importance of natural gas suppliers together with the new LNG trade have raised concerns over the potential for a gas cartel.<sup>36</sup> In reality, the question of whether the gas market could become a global market similar to that of oil is still open.

The structural changes of the past decades have been even more significant on the energy demand side. In the 1970s the OECD accounted for 70 per cent of global oil consumption, and North America alone consumed twice as much oil as Asia's countries. Today these proportions look quite different: the OECD's share of global oil demand decreased to around 60 per cent in 2005 and Asia's oil consumption is very close to that of North America. Demand for oil and other primary energy sources in developing countries has mushroomed as a consequence of their economic and demographic growth, industrial activity and expanding transport use. The most spectacular examples are provided by two of the fastest growing Asian countries—China and India. China's oil consumption rose from 6.1 mbd (285 million tonnes per year) in 2003 to 7.1 mbd (334 million tonnes per year) in 2004, an increase of 17 per cent. Its oil consumption has more than doubled since 1993 when it first became a net oil importer. By 2005 it was dependent on imports for 50 per cent of its oil needs and this proportion is increasing rapidly. As to India, its domestic oil consumption has risen steadily—by 57 per cent between 1995 and 2005—while its effective oil import dependency increased to over 68 per cent. In both these countries, statistics for primary energy use and natural gas consumption are telling. China's demand for natural gas rose over the decade

<sup>34</sup> Soligo, R. and Jaffe, A. M., 'Market structure in the new gas economy: is cartelization possible?', Paper prepared for the Geopolitics of Natural Gas Study of the Stanford University Program on Energy and Sustainable Development and the Rice University James A. Baker III Institute for Public Policy, May 2004, URL <<http://pesd.stanford.edu/publications/>>, p. 8.

<sup>35</sup> US Energy Information Administration (note 11), p. 40.

<sup>36</sup> See Soligo and Jaffe (note 34); Daniel, P. D., 'Natural gas in North America: a global commodity with an exciting—but uncertain—future', Paper presented at the Ziff North American Gas Strategies Conference, Calgary, Alberta, 3 Nov. 2003, URL <<http://www.enbridge.com/about/commentary.php>>; and Yergin, D. and Stoppard, M., 'The next prize', *Foreign Affairs*, vol. 82, no. 6 (Nov./Dec. 2003), pp. 103–14.

1996–2005 by more than 163 per cent and India’s by 78 per cent. Total primary energy use during the past decade rose in China by 61 per cent and in India by 43 per cent.<sup>37</sup>

Emerging economies now account for nearly two-thirds of the present increase in world energy use.<sup>38</sup> Looking ahead, energy market structure on the demand side will be further transformed. The EIA projects that the aggregate energy demand from countries outside the OECD will by 2030 exceed energy use within the OECD by 34 per cent—meaning that natural gas and oil consumption in non-OECD countries will grow three times as fast as OECD consumption.<sup>39</sup> The largest share of this non-OECD growth will take place in Asia, notably in China and India, while in the OECD North American consumption will grow fastest. Energy demand in non-OECD countries is expected to more than double by 2030. However, the OECD will remain a major natural gas consumer, although its share of world gas demand will decline from over 50 per cent to nearer 40 per cent.<sup>40</sup>

Such sweeping changes in the demand and supply structure of the energy market create both opportunities and challenges. As Anoush Ehteshami and Sven Behrendt note, these changes will increase the bargaining power of suppliers ‘as they find hungry new customers for their processed and unprocessed hydrocarbon resource’, but on the other hand ‘consumers will for the first time in decades, have the opportunity to negotiate alternative deals with a number of suppliers that operate outside of the OPEC-pricing mechanism’.<sup>41</sup> Overall, strong and increasing dependence on imported oil and natural gas—which will become a feature of both OECD and non-OECD economies—will heighten the world’s vulnerability to disruption of oil and natural gas supplies. Together with the tight supply situation in the oil market, this is bound to further intensify energy security concerns, with consequences that will influence international relations and help to shape the future global energy security system.

#### IV. Energy security concerns as a source of conflict

States’ activities aimed at ensuring energy security are an important element in their foreign policy and foreign relations. However, many features of the international environment—the stability of producing regions, market supply and demand and price trends, the state of consumer–producer relations, consciousness of potential challenges and threats to energy security, and so on—influence national energy strategies and lead states to adopt different policies and use different tools at different times. Countries’ efforts to assure access to natural resources affect security dynamics particularly in those parts of the

<sup>37</sup> BP (note 14), pp. 8, 11, 12, 27, 40.

<sup>38</sup> BP (note 14), p. 40.

<sup>39</sup> US Energy Information Administration (note 11), pp. 7–8.

<sup>40</sup> US Energy Information Administration (note 11), p. 37.

<sup>41</sup> Ehteshami, A. and Behrendt, S., ‘Perspective: geopolitical transformations and the shifting energy markets’, *Energy Vision Update*, spring 2006, URL <<http://www.weforum.org/en/initiatives/energy/>>, p. 21.

world that are crucial for global energy security, and may lead both to regional alliances and to conflicts between major energy-consuming and energy-producing countries. Thus, contemporary structural changes in the energy market have serious geopolitical implications.

When considering the role of energy security concerns in generating tension or even conflict between states, it is important to emphasize that most states would regard actual armed conflict as an extreme measure for the purpose. Indeed, energy codependency between states, like other factors of interdependence, may help to reduce the likelihood of military conflict between them.<sup>42</sup> The distinction should be kept clear between, on the one hand, an increase in tension between major energy market players that leads to rivalry rather than direct armed confrontation, and on the other, actual conflict over energy and other occurrences of the use of force in regions abundant in oil and gas.

Competition for resources is not new or characteristic of our times. Together with competition for territory, it lies at the root of most violent conflicts in history. The thesis of an increasing number of conflicts over energy resource has become popular lately, yet analysts were forecasting this trend more than three decades ago. For instance, Richard Ullman in the early 1980s noticed a drop in the incidences of conflict over territory and predicted that ‘as demand for some essential commodities increases and supplies appear more precarious’, more conflicts over resources, oil in particular, would arise. He prophesied that such struggles ‘will often take the form of overt military confrontations whose violent phases will more likely be short, sharp shocks rather than protracted wars’, and that they would occur between neighbouring states above all.<sup>43</sup>

Indeed, the militarization of energy policy—that is, employing military means to guarantee stability in oil- and gas-producing regions<sup>44</sup>—has been a phenomenon in international affairs for some time. A striking example from 1980 is the Carter Doctrine in which, responding to the 1979 Soviet invasion of Afghanistan, US President Jimmy Carter stated that the USA would use ‘any means necessary’, including military force, to defend its vital interests in the Persian Gulf, including the flow of oil.<sup>45</sup> Since the end of World War II, one of the fundamental guarantees of secure oil supplies from the Middle East to the world market—in times of peace and of war—has been the combination of US policies designed to bolster the Saudi Arabian monarchy. This commitment, dating back to the meeting of President Franklin D. Roosevelt and King Ibn Saud in February 1945, has involved direct US military engagement in the region, for instance during the 1980–1988 Iraq–Iran War or after Iraq’s 1990 invasion of Kuwait.

<sup>42</sup> Kemp, G., ‘Scarcity and strategy’, *Foreign Affairs*, vol. 56, no. 2 (Jan. 1978), p. 396.

<sup>43</sup> Ullman (note 7), pp. 139–40.

<sup>44</sup> Klare, M. T., ‘Oil wars: transforming the American military into a global oil-protection service’, *TomDispatch.com*, 7 Oct. 2004, URL <<http://www.tomdispatch.com/index.mhtml?pid=1888>>.

<sup>45</sup> Carter, J., *State of the Union Address*, Washington, DC, 23 Jan. 1980, URL <<http://www.jimmycarterlibrary.org/documents/speeches/>>.

In a typical ‘resource conflict’, the energy factor predominates. However, there are also conflicts in which energy resources are just one of many elements or catalysts. There are, thus, three basic ways in which energy resources and armed conflicts interconnect. The first and most obvious is when energy resources are the proximate cause of a conflict; the second is when they play the role of an instrument, target or any other secondary element of war; and the third is when profits from the sale of energy resources help to finance armed conflicts.<sup>46</sup>

In the traditional regions of great-power rivalry—the Middle East and Central Asia—the abundance of oil and gas reserves led to competition between states over access to these resources and also, as in the case of the landlocked Caspian Sea basin, over pipeline routes. Both local and outside powers may maintain a military presence in order to protect drilling rigs, pipelines, refineries and other oil and gas facilities, as well as to ensure the stability of producing or transit regions. Usually, foreign troops are stationed with the clear aim of protecting the flow of oil and gas—typical examples are the different types of US presence in Colombia and the Persian Gulf region. Sometimes, a wider military campaign—like Russia’s in Chechnya or the USA’s in Iraq—is also seen by many observers as having an energy component because, even if it has other *prima facie* motives, it takes place in an area of great significance for regional and (in the case of Iraq) global energy security.

The 2003 US-led invasion of Iraq aimed to create a new, Western-friendly Iraq as the first building block of a more democratic and stable Middle East that would, among other things, ensure Western access to the region’s energy resources. Paradoxically, the operation and post-war US military presence in Iraq have not only failed to stabilize the region or to increase the security of oil supplies, but have also opened the door to new threats. Today, the increasing terrorist activity in the Middle East includes frequent attacks on oil facilities in Iraq, yet there are many other tempting oil-related targets for terrorists in the region. The Strait of Hormuz is the world’s most important oil chokepoint, with 17 million barrels (2.3 million tonnes) of oil passing through it each day, about 20 per cent of the global supply.<sup>47</sup> Just one supertanker on fire in the narrow strait could block the passage for other shipping and seriously disrupt supplies to the global oil market for weeks.

Another, and perhaps the most disturbing, factor that may shape the future security dynamics of the region is the continuing expansion of Iran’s influence. Iran could at any moment try to block the Strait of Hormuz. More generally, the Persian Gulf abounds in major unresolved territorial disputes between its states, for example between Iran and the UAE, between Saudi Arabia and Qatar, and between Qatar and Bahrain. All these factors and more—including developments involving Israel—could destabilize the Middle East political

<sup>46</sup> On this subject see Klare, M. T., *Resource Wars: The New Landscape of Global Conflict* (Metropolitan Books: New York, N.Y., 2001); Renner, M., *The Anatomy of Resource Wars*, Worldwatch Paper no. 162 (Worldwatch Institute: Washington, DC, Oct. 2002); and Kemp (note 42).

<sup>47</sup> US Energy Information Administration, ‘World oil transit chokepoints’, Country Analysis Briefs, Nov. 2005, URL <[http://www.eia.doe.gov/cabs/World\\_Oil\\_Transit\\_Chokepoints/Full.html](http://www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Full.html)>.

scene and thus threaten oil supplies. This makes them also a potential source of armed conflict or military intervention.

Fierce territorial disputes over oil and gas deposits occur also in other geostrategically important regions, primarily Central Asia and the South China Sea. Relative to the South China Sea, disputes in Central Asia between Caspian Sea littoral states have a more peaceful and diplomatic character and are only one aspect of a wider international rivalry that started after the Soviet Union's collapse and the opening up of the region's oil and gas fields to Western companies. The key issues include access to Caspian Sea energy resources for foreign companies, and rival pipeline schemes to ensure (for each particular state) the most profitable route for exports to world markets. The construction of new export facilities, especially large-diameter pipelines, to transport increasing volumes of Caspian oil and gas to world markets has become the most important field of international competition in the region. However, other geopolitical interests are also at stake in the local rivalry between China, Iran, Russia, the USA and other powers. Future threats to security in Central Asia are, on balance, more likely to flow from ethnic conflicts, separatist movements and unstable political regimes and economic systems than from a 'great game' of competition over oil and gas transport routes.

In the South China Sea, prolonged international quarrels and disputes over the boundaries of exclusive economic zones and the ownership of islands seem to be the main destabilizing factors in the region, which is not only believed to hold substantial oil and gas deposits but is also the chief route for seaborne oil and gas supplies to Asian countries. Tensions and military activity date back to the 1970s, around the time of China's 1974 invasion of the Paracel Islands. Soon after the discovery of large oil deposits in the Spratly Islands in 1976, several littoral countries began production there. Territorial disputes over the Spratly Islands have involved six states: Brunei Darussalam, China, Malaysia, the Philippines, Taiwan and Viet Nam. All have built up their military presence in the region, so that today up to 65 islets, reefs and rocks in the South China Sea are occupied by military troops from various countries.<sup>48</sup> Since the late 1980s there have been recurrent naval clashes in the South China Sea. In its 1992 Law on the Territorial Sea and the Contiguous Zone, China claimed sovereignty over the whole Spratly and Paracel archipelagos and authorized itself to use force in the event of any attempt at occupation by another country.<sup>49</sup> These and other ongoing disputes—China and Viet Nam are locked in a similar dispute over the Gulf of Tonkin, Malaysia and the Philippines over the areas east of Borneo, and Malaysia and Viet Nam

<sup>48</sup> Kiesow, I., 'China's quest for energy: impact upon foreign and security policy', Swedish Defence Research Agency (FOI) User Report FOI-R--1371--SE, Stockholm, Nov. 2004, URL <[http://www.foi.se/FOI/templates/Page\\_4531.aspx](http://www.foi.se/FOI/templates/Page_4531.aspx)>, p. 25.

<sup>49</sup> The Law on the Territorial Sea and the Contiguous Zone of the People's Republic of China was adopted on 25 Feb. 1992. An English translation of the law is available at URL <<http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/STATEFILES/CHN.htm>>. See also e.g. Buszyński, L., 'ASEAN security dilemmas', *Survival*, vol. 34, no. 4 (winter 1992/93), pp. 90–107; and Burgess, J. P., 'The politics of the South China Sea: territoriality and international law', *Security Dialogue*, vol. 34, no. 1 (Mar. 2003), pp. 7–10.



over the maritime boundary in the Gulf of Thailand—destabilize the situation in South-East Asia and could indirectly threaten the energy security of other Asian states, like Japan or South Korea. Although China has often been seen as the prime mover in regional conflicts, in more recent years the Chinese Government has shown some tendency to try to resolve territorial problems through more diplomatic measures.<sup>50</sup> A telling example is the 2002 code of conduct in the South China Sea, the first political document concluded between China and the Association of South East Asian Nations (ASEAN) over the disputed region.<sup>51</sup> The code of conduct stresses the need for peaceful settlement of territorial and jurisdictional disputes in the region and obliges the parties to avoid any activity that could ‘complicate or escalate disputes and affect peace and stability’, including action to inhabit currently uninhabited islands and other features.

An equally problematic issue in the South China Sea is control over its energy arteries, particularly the sea lanes from the Persian Gulf region and the approaches to the Strait of Malacca, through which 11.7 million barrels (1.6 million tonnes) of oil and two-thirds of global LNG deliveries pass daily, bound for China, Japan, South Korea and other Pacific Rim countries.<sup>52</sup> China, India, the USA and some other states feel entitled to use their own military sources to protect these sea lanes against piracy or terrorist attacks and ensure free passage for their ships and tankers, yet they are also suspicious of each other. India and Japan see Chinese naval expansion as a bid for dominance in the region and a threat to their own security. For the USA, China’s leading military position in the South China Sea appears to challenge its own military role in the Western Pacific, as well as threatening Taiwan. At the same time, China regards US plans for military presence in the Strait of Malacca as a threat to its national interests in the South China Sea, while Indonesia and Malaysia also reject the idea of US patrols in the strait.

The strategic engagements of the USA in the Persian Gulf, China in the South China Sea and Russia in Central Asia underline that these are the primary potential zones of interstate rivalry in the energy context. Within this ‘strategic triangle’<sup>53</sup> the world’s largest oil and natural gas deposits are to be found, national frontiers have for years been disputed and the security interests of various states collide. Even so, for the most part it is rather difficult to imagine that these rivalries could turn into armed conflict—too many states have too much to lose. Armed conflict with an energy resource dimension is in practice more likely to take place outside the strategic triangle, particularly in Africa.

<sup>50</sup> See Gill, B., ‘China’s new security multilateralism and its implications for the Asia-Pacific region’, *SIPRI Yearbook 2004: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2004), pp. 207–30.

<sup>51</sup> The Declaration on the Conduct of Parties in the South China Sea was signed on 4 Nov. 2002. Its text is available at URL <<http://www.aseansec.org/13163.htm>>.

<sup>52</sup> US Energy Information Administration (note 47); and BP (note 14), map, p. 31.

<sup>53</sup> Klare (note 46), p. 49.

The structural conditions of many African countries—authoritarian governments, weak and corrupt political elites, poverty and economic inequality within societies, the unbalanced distribution of revenues from energy resources, and so on—make them prone to internal armed conflicts that have a resource dimension. The pillaging of energy resources is often a factor that prolongs an armed conflict even if it was triggered by other reasons. In Angola, oil revenues—which account for 90 per cent of government income<sup>54</sup>—fuelled arms purchases during the 1974–2002 civil war; oil money has been an increasingly important issue in the ongoing conflicts in Sudan, at first in the south of the country and currently in Darfur. It is telling that during these civil conflicts oil companies from Canada, China, France, Kuwait, Malaysia, Russia, Sweden and the USA among others have bought oil concessions and begun to develop oil facilities in Sudan.<sup>55</sup> Today, the situation in Nigeria is also evolving towards increased volatility and conflict. Instead of giving the country a chance to be one of the wealthiest in Africa, oil has enriched a tiny minority of Nigerians and led to environmental and health problems as well as impoverishing the oil-producing regions' inhabitants. This finally led to open conflict in the Niger Delta region.

## V. Responses to energy security challenges: consumer and producer policies

As stressed above, the rapidly rising demand for energy has led to more competition in the world energy market. At the same time, both consumer and producer countries have become more aware lately of the many new challenges and threats to their energy security in the near future. The complexity of these problems requires all states to develop equally sophisticated energy policies on two fronts—internal and external. The internal dimension of energy security policy focuses primarily on such issues as (a) the choice of energy sources, which should include diversifying and optimizing the national energy structure as well as promoting environmental protection; (b) the security of state energy infrastructure—energy grids, refineries, pipelines, power stations and so on; (c) energy demand management; (d) energy efficiency; and (e) liberalization and deregulation of the energy sector. The development and promotion of alternatives to fossil fuel energy sources—renewable sources and nuclear energy—can play an important role in this dimension of energy policy. External energy policy is more about the security of import supplies, access to oil and gas fields, diversification among foreign suppliers, and the variety and safety of transport routes. International cooperation with exporters and transit countries, and with other importers, can make an important contribution to this policy. Yet, as discussed above, countries may also use less

<sup>54</sup> US Energy Information Administration, 'Angola', Country Analysis Briefs, Jan. 2006, URL <<http://www.eia.doe.gov/cabs/Angola/Full.html>>.

<sup>55</sup> On the oil factor in the Sudanese conflicts see Human Rights Watch, *Sudan, Oil, and Human Rights* (Human Rights Watch: Brussels, 2003), URL <<http://www.hrw.org/reports/2003/sudan1103/>>.

peaceful means to secure their interests in the energy sphere—armed force, sanctions, embargoes or the manipulation of energy as a weapon.

For all countries, energy resources represent more than just traded commodities. They are strategic goods par excellence. Accordingly, states' decisions on almost every dimension of both internal and external energy policy are based not just on economic, but in a large measure also on geopolitical and security calculations. For instance, European countries' decisions in the 1970s to begin oil production in the North Sea—one of the costliest regions in the world for drilling—and Russia's recent, very costly and technologically advanced oil and gas pipeline developments (such as the Blue Stream and Nord Stream gas pipelines<sup>56</sup>) were dictated above all by security and geopolitical calculations.

Today it is clear that some aspects of energy security, which has traditionally been regarded as a purely national or internal matter, are best addressed collectively on a multilateral basis. The reason is that one country's energy policy choices may have significant impacts on other countries' choices. Rising demand in one region—often as an effect of low energy efficiency and weak, demand-oriented policies—aggravates international competition over access to energy resources and to the supply system. If producers adopt a nationalistic policy and close their energy sector to foreign direct investments, they are in effect reducing their chances of developing new exploration programmes, production and transport capabilities in the region. In the long term this will also prejudice the supply situation in the world energy market. Finally, problems such as high carbon dioxide emissions generated by the energy sector, old, unsafe nuclear plants, and the transport and storage of radioactive waste materials, even if they are treated as national policy matters, generate risks and dangers that have a transnational character and are of concern to the whole international community.

Nevertheless, countries' readings of the energy security concept often lead them to make policy choices that disregard the energy interests and needs of other market players. Robert Skinner notes that 'Energy security's banality is due in large measure to its having been so leveraged as a pretext for all manner of policy, from imperialism to isolationism, from expansionism to protectionism, from communism to economic liberalism'.<sup>57</sup> In effect, countries' approaches to energy security range from the extremely self-centred and nationalistic to the consistently cooperative. The former approach is more or less characteristic of some of the major energy importers and exporters like China, India, Iran, Russia, Venezuela and the USA, while most European

<sup>56</sup> The Blue Stream gas pipeline links Russia and Turkey under the Black Sea, providing an alternative to gas deliveries through Ukraine, Moldova, Romania and Bulgaria. Supply of natural gas through the pipeline began in Feb. 2003. See the Gazprom website at URL <<http://www.gazprom.com/eng/articles/article8895.shtml>>. The Nord Stream pipeline is also an offshore project, running through the Baltic Sea, aimed at avoiding transit states in deliveries of Russian gas to West European countries. The pipeline is expected to begin operation in 2010 and carry around 55 billion m<sup>3</sup> a year. The minimum total investment cost is estimated at €5 billion. See the Nord Stream website at URL <<http://www.nord-stream.com/>> and note 65 below.

<sup>57</sup> Skinner (note 2), p. 3.

countries represent the latter approach. Naturally, in some fields of energy security and in certain circumstances, countries categorized as having a nationalistic vision of energy policy can also act cooperatively. The USA was the initiator of the 1974 Washington conference that established the International Energy Agency, and US strategic reserves are one of the key elements of the present global energy security system. Russia is an active participant in the Energy Charter Conference and Transit Protocol negotiations.<sup>58</sup> It also maintains an energy dialogue with the EU and initiates international debates on energy security matters, as at the July 2006 St Petersburg Summit of the Group of Eight industrialized nations (G8).<sup>59</sup> At the same time, these countries consciously avoid legally binding international agreements—Russia has not ratified the Energy Charter Treaty nor the USA the Kyoto Protocol.<sup>60</sup> On the other side, a rise in protectionism and nationalism in energy policy can be observed in some European countries. France and Spain intervened in 2006 in cross-border takeovers of their national energy companies in a way that brought both countries into conflict with the European Commission.<sup>61</sup> These are not isolated incidents, since many other EU members have not opened their national energy sectors to foreign competition.

A nationalistic approach to energy policy in countries with more or less autocratic regimes such as China, Iran, Russia or Venezuela is simply a continuation of their wider economic policy course. Placing national economic and strategic interests first, they want to participate in the world economic system but on their own terms.<sup>62</sup> The USA, for its part, acts as a superpower in all security-related spheres, including energy. Symptoms of the nationalistic approach generally include a readiness to resort to the extreme instrument of a military presence or use of force to secure national interests in the regions abundant in energy resources—for example, China's behaviour in the South China Sea or the USA's armed interventions and military presence in the Middle East, as discussed above. A nationalistic energy policy also manifests

<sup>58</sup> The Energy Charter Conference governs the operation of the Energy Charter Treaty, which was signed on 17 Dec. 1994. The treaty contains provisions regulating 5 broad areas: trade, investment, competition, transit and environmental issues. The proposed Transit Protocol aims to develop operational rules governing energy transit flows on the basis of the treaty's provisions for non-discriminatory transit. The protocol has been under negotiation since 2000. At the end of 2002 multilateral negotiations were provisionally concluded, although a few issues remained to be resolved in bilateral consultations between Russia and the EU. For the text of the treaty, the members of the conference and the draft text of the protocol see URL <<http://www.encharter.org/>>.

<sup>59</sup> See G8 Summit 2006, 'Chair's summary', St Petersburg, 17 July 2006, URL <<http://en.g8russia.ru/docs/25.html>>; and G8 Summit 2006, 'Global energy security', St Petersburg, 16 July 2006, URL <<http://en.g8russia.ru/docs/11.html>>. The summit meeting was preceded by an international conference on energy security on 13–14 Mar. 2006.

<sup>60</sup> The Kyoto Protocol to the United Nations Framework Convention on Climate Change was signed on 18 Dec. 1997 and entered into force on 16 Feb. 2005. The text of the protocol is available at URL <<http://unfccc.int/>>.

<sup>61</sup> See e.g. Gow, D., 'Spain illegally blocking E.ON's Endesa bid', *The Guardian*, 25 Sep. 2006, URL <<http://business.guardian.co.uk/story/0,,1880637,00.html>>; and 'To the barricades', *The Economist*, 2 Mar. 2006, URL <[http://www.economist.com/background/displaystory.cfm?story\\_id=5578849](http://www.economist.com/background/displaystory.cfm?story_id=5578849)>.

<sup>62</sup> Linde, C. van der, 'Energy in a changing world', Clingendael Energy Papers no. 11, Netherlands Institute of International Relations, Clingendael, Dec. 2005, URL <<http://www.clingendael.nl/ciep/publications/?id=6123>>, p. 13.

itself, however, in economic terms through producers' determination to keep the profits of oil and gas production and the large cash flows generated by the oil and gas companies within their own countries. Such governments accordingly maintain strong state control over the energy sector, including seeking to control foreign investment activity and, if necessary, blocking all access by foreign investors to the energy sector or using them only when they serve the national interest. The most radical option is the nationalization of the energy sector. Some spectacular examples of such a policy have occurred recently in several producing countries. In May 2006 Bolivia nationalized its natural gas sector and increased taxes on foreign energy companies. In Russia, Mikhail Khodorkovsky, the independent owner of the Yukos oil corporation, was prosecuted and dispossessed; the oil company Sibneft was bought in October 2005 by Gazprom; and changes have been made in the law providing access to licences and oil export taxes have been increased—these last both complicating the situation of foreign investors. In Venezuela the government has taken steps to enhance its control by reducing the autonomy of *Petróleos de Venezuela SA (PDVSA)*, increasing the royalties paid by private companies under the 2001 Hydrocarbons Law,<sup>63</sup> and changing the structure of the oil industry—converting operating service agreements with foreign companies into joint ventures with PDVSA, which is in turn changing the nature of foreign participation in the country's energy sector.

A nationalistic policy by energy producers leads inevitably to tensions with consumer countries, as seen in the traditionally close but now strained US–Venezuelan relations. It also raises concerns over future global energy security, since—as noted above—such a policy tends to discourage foreign companies from investing in exploration and production, with negative effects on future supplies. It can also happen, however, that such methods help to strengthen cooperation and a common front among consumer countries. Russia's action in January 2006 to interrupt gas supplies to Ukraine has renewed fears of the use of energy as a weapon in Europe and directly prompted the most intensive and comprehensive discussion yet on a common EU energy policy. In a Green Paper presented two months after the gas crisis, the European Commission urged that the fragmented approach to energy be abandoned and a common policy on both internal and external aspects be developed.<sup>64</sup> Such a policy could enable the 25 member countries to speak with one voice on energy security-related issues in global and other international forums, and give the EU greater clout in negotiations with key energy suppliers. Nonetheless, producers may also play consumer countries against each other—Russia might refuse a compromise to EU negotiators in the framework of collective dialogue and yet strike bargains with particular

<sup>63</sup> The Ley orgánica de hidrocarburos [Hydrocarbons Law], Decree no. 1510, 2 Nov. 2001, came into effect on 1 Jan. 2002. The text of the law, in Spanish and in English, is available at URL <<http://www.leydehidrocarburos.gov.ve/>>.

<sup>64</sup> European Commission, 'A European strategy for sustainable, competitive and secure energy', Green Paper, Brussels, 8 Mar. 2006, URL <[http://ec.europa.eu/energy/green-paper-energy/index\\_en.htm](http://ec.europa.eu/energy/green-paper-energy/index_en.htm)>.

member states on the same key energy issues in bilateral relations. In effect, Germany has been strengthening its energy links with Russia and protecting its own national interest, regardless of the other EU members' energy (or general security) concerns.<sup>65</sup>

Taking into account the present tight oil market and consumers' concerns over supply security, the nationalistic energy policy maintained by major energy importers may have more serious geopolitical implications. China's increasing demand for energy made it a net oil importer in 1993. Since then its external energy strategy has been aimed at diversifying oil supplies through investments. The China National Petroleum Corporation (CNPC) is buying licences for oil and gas production across the world, from the Asia–Pacific region through the Middle East and Africa to South America; taking over foreign oil companies; and looking for pipeline solutions for transporting energy resources from Russia and Central Asia.<sup>66</sup> India, the world's second fastest growing economy, has been developing a similar strategy in recent years. The quests of both countries for energy and for a larger investment stake bring them closer to each other, yet at the same time exacerbate the energy security concerns of other major importers.

China has clashed with Japan and the USA over energy issues several times. As well as their disputes over oil and gas resources in the East China Sea, China and Japan have competed in particular to host the pipeline route from Russia's East Siberia oil fields and for a stake in oil and gas production on the island of Sakhalin. The USA for its part sees China's energy strategy as creating new economic and strategic challenges that alter the whole geopolitical scene. China has not only been investing its capital in all major world producing regions but also attempted to purchase one of the largest US oil companies, Unocal,<sup>67</sup> and has been cultivating good relations with producers, like Venezuela, that have recently been on bad terms with the USA.<sup>68</sup> The CNPC is investing in oil drillings in Sudan while the USA has imposed sanctions on that country, including a prohibition on US citizens and companies investing

<sup>65</sup> Former German Chancellor Gerhard Schröder was instrumental in concluding the agreement between German companies and Gazprom on construction of the Nord Stream gas pipeline that was signed 8 Sep. 2005, shortly before he left office, and his government guaranteed a credit of €1.2 billion for the project. Schröder was appointed to the board of Gazprom 2 weeks after leaving office. The agreement will make Germany the main redistributor of additional future Russian gas supplies in the EU member countries of Central and Eastern Europe since the pipeline excludes them as transit states. Poland and the 3 Baltic states are therefore suspicious about the project, which, from their point of view, may threaten their future energy security. 'Schroeder govt guaranteed credit for Russia's Gazprom, report confirmed', *MosNews*, 2 Apr. 2006, URL <<http://www.mosnews.com/news/2006/04/02/>>; and Cohen, A., 'The north European gas pipeline threatens Europe's energy security', Background no. 1980, Heritage Foundation, Washington, DC, 26 Oct. 2006, URL <<http://www.heritage.org/Research/Europe/bg1980.cfm>>.

<sup>66</sup> Zweig, D. and Bi Jianhai, 'China's global hunt for energy', *Foreign Affairs*, vol. 84, no. 5 (Sep./Oct. 2005), pp. 25–38.

<sup>67</sup> Unocal was eventually bought by the US company Chevron in Aug. 2005.

<sup>68</sup> See e.g. Associated Press, 'China to invest US\$5b on oil projects in Venezuela', *China Daily*, 29 Aug. 2006, URL <[http://www.chinadaily.com.cn/china/2006-08/29/content\\_676248.htm](http://www.chinadaily.com.cn/china/2006-08/29/content_676248.htm)>.

there.<sup>69</sup> Although the USA's own policies can be seen as driven by national interest, US Government analysts make a clear distinction between these policies and those of China: 'Whereas the United States has shifted from an oil import strategy that was based upon controlling the oil at its source to one that is based on global market supply and pricing, the Chinese strategy is still focused on owning the import oil at the production point.'<sup>70</sup>

In reality, looking only at China's external measures distorts the picture of the country's activities in the energy field. The real long-term policy goal of China is to base its tremendous economic growth on domestic resources. It therefore seeks to enhance energy efficiency through shifting its economy from energy-intensive industries and introducing high energy-efficiency standards; to build strategic stocks; to develop alternative energy resources; perhaps also to increase its proportional reliance on coal; and to invest in oil and gas exploration on its own territory. Moreover, as some analysts note, China is not acting very differently from other countries in its investments in oil fields and pipelines.<sup>71</sup> Overall, China's increasing import dependency and its investment activity ought to help to increase future oil supplies in the energy market, and it could also eventually lead to cooperation with the USA and other major consumers in protecting vital sea lanes and promoting stability in oil- and gas-producing regions.

The oil crisis of the 1970s put national governments under pressure to find ways of assuring energy supplies in times of crisis. They saw the need in extreme circumstances to work together and coordinate their responses. The OECD member countries of the time formed a common front vis-à-vis OPEC and established the IEA, with its focus on crisis management policies. Today, the emergency arrangements among IEA members are still one of the most important pillars of the energy security system. The most general requirement is that IEA countries must hold oil stocks in three categories—company, government and agency stocks—that are used in response to any oil supply emergency. The last time emergency stocks were released was in 2005 after natural disasters in the Gulf of Mexico disrupted oil production. The example of cooperation within the IEA illustrates that consumers can work together not only in their own national interest but also for a wider international good, that is, for global energy security. On the other hand, a major weakness of the IEA system is that two of the greatest emerging powers in the energy market—China and India—are not members. If 'old' and 'new' major energy importers could find a way to cooperate for the mutual defence of supplies, this should create mutual confidence that in turn would be important for other aspects of cooperation in the energy market, including the positive involvement of all the

<sup>69</sup> US Department of the Treasury, Office of Foreign Assets Control, 'Sudan: what you need to know about U.S. sanctions', Washington, DC, 27 Apr. 2006, URL <<http://www.treas.gov/offices/enforcement/ofac/programs/>>.

<sup>70</sup> US-China Economic and Security Review Commission, *2004 Report to Congress of the U.S.–China Economic and Security Review Commission* (US Government Printing Office: Washington, DC, June 2004), URL <[http://www.uscc.gov/annual\\_report/04\\_annual\\_report.htm](http://www.uscc.gov/annual_report/04_annual_report.htm)>, p. 165. On the implications of China's energy policy see Kiesow (note 48).

<sup>71</sup> Kiesow (note 48), p. 49.

major importers in securing future oil and gas supplies. Given the strategic as well as economic benefits of such multilateral cooperation in the energy security field, it should be a high priority for international diplomacy to explore possible routes towards it.

Individual market players will always have divergent energy interests and will compete with each other in the energy market. Nevertheless, they also have many common or parallel objectives—reducing the vulnerability of the market and of their own economy to disruption, ensuring the physical security of energy infrastructure and the safety of supply routes, enhancing political and economic stability in producing regions, and constructing a transparent legal framework for investment. These issues should become fields for wider cooperation involving both consuming and producing countries. Some attempts at such cooperation have already been made at the regional level. For instance, in the framework of the EU–Russia Energy Dialogue, launched in October 2000, both sides have initiated cooperation on the safety of energy transport networks;<sup>72</sup> and in Asia in 2004 China proposed the launch of an energy cooperation initiative and the creation of a common Asian energy policy designed especially to prevent terrorism and piracy against shipping in the Strait of Malacca.<sup>73</sup> It is worth noting that the North Atlantic Treaty Organization (NATO) has embarked on a study of how to promote energy security.<sup>74</sup>

Another factor that could play a significant role in enhancing links and interdependencies between states is their shared need for advanced, appropriate and affordable technologies. An energy strategy needs to be multifaceted: it should diversify supplies, diversify energy mix (e.g. through enhancing the use of renewables or nuclear energy), conserve energy resources by increasing fuel efficiency, maximize indigenous domestic production and open the way for the use of next-generation energy sources. Advanced energy technologies and large-scale investments are necessary to achieve most of these goals, and technological cooperation between states can give them the best chance of securing their future energy needs in a cost-effective way. The outstanding example in the field of next-generation technologies is the cooperation between the EU and the USA: the 2003 Fuel Cell Amendment to the 2001 Non-Nuclear Energy Cooperation Agreement enables the two sides to conduct joint research on the use of hydrogen as an alternative fuel source.<sup>75</sup> One of the

<sup>72</sup> On the EU–Russia Energy Dialogue see the European Commission Directorate-General for Energy and Transport website, URL <[http://ec.europa.eu/energy/russia/overview/index\\_en.htm](http://ec.europa.eu/energy/russia/overview/index_en.htm)>.

<sup>73</sup> The Qingdao Initiative on energy cooperation was launched at the Asia Cooperation Dialogue (ACD) foreign ministers' meeting in Qingdao, China, on 22 June 2004. It covers 11 areas of regional energy cooperation between ACD members, including: construction of new energy infrastructure; ensuring safe transport along vital energy shipping routes; exchanges of information on energy issues; cooperation on exploration and exploitation; energy efficiency, renewable energy and environmental protection; and enhancing rural electrification. The ACD Energy Forum was established as a follow-up, its first meeting taking place on 26–28 Sep. 2005 on Bali. For the text of the Qingdao Initiative see URL <<http://www.acddialogue.com/web/35.php>> and for the Joint Declaration of the 1st ACD Energy Forum see URL <<http://www.acddialogue.com/web/36.php?id=48>>.

<sup>74</sup> North Atlantic Council, Riga Summit Declaration, NATO Press Release (2006)150, 29 Nov. 2006, URL <<http://www.nato.int/docu/pr/2006/p06-150e.htm>>, para. 45.

<sup>75</sup> The Amendment to the Implementing Agreement between the Department of Energy of the United States of America and the European Commission for Non-Nuclear Energy Scientific and Technological



few tangible achievements thus far of the EU–Russia Energy Dialogue has been in precisely the field of technology cooperation. Since 2002 both sides have been developing cooperation in the sphere of advanced energy technologies through the EU–Russia Energy Dialogue Technology Centre, based in Moscow. A more controversial recent example is the Indian–US Civil Nuclear Cooperation Initiative, launched in 2005, which gives India access to US civil nuclear technology.<sup>76</sup>

## VI. Conclusions

Energy security is one of the highest-ranking issues in both national and international debates. The focus on it is determined by several factors. Trends in the world energy market are important, including the rising global demand for energy, a tight oil market, high oil prices, rising import dependencies and the prospect of future scarcity of oil and gas. Concerns are also intensified by external events such as terrorist attacks on energy infrastructure, power black-outs, hurricanes in the Gulf of Mexico and instability in some producing countries.

The growing importance of energy security issues will have many geostrategic repercussions. The struggle for access to and control over energy resources is likely to exacerbate tensions among the main global energy market players, which may even lead to conflicts. The three basic sources of such tension are: (a) the divergent energy interests of consumer countries and greater competition between them in world energy markets; (b) consumer–producer relations and fears of the use of energy as a weapon; and (c) unsolved territorial disputes over ownership of energy resources. Apart from international tensions, intra-state conflicts with an energy resource dimension are likely to occur, particularly in Africa. On the whole, the worldwide focus on energy security will significantly raise the strategic importance of all geographical areas with rich oil and gas reserves. This means that not only the Middle East but also Africa, Central Asia, South America and South-East Asia will attract continuous attention as areas of potential tension and conflict over the upcoming decades.

At the same time, however, while the nature of states' concerns has been similar to those already apparent in the 20th century—the rise in import dependencies, security of oil and gas supplies, the unstable political situation in producer regions, and fears that oil or gas may be used as a political weapon—the perception of how to deal with challenges to energy security has been changing. Both national and international approaches to energy security need to be further rethought. Nationalistic approaches to energy security, such

Cooperation relating to Cooperation in the Area of Fuel Cells was signed on 16 June 2003. The texts of the amendment and of the original agreement, signed on 14 May 2001, are available at URL <[http://ec.europa.eu/research/energy/gp/gp\\_ef/article\\_1098\\_en.htm](http://ec.europa.eu/research/energy/gp/gp_ef/article_1098_en.htm)>.

<sup>76</sup> See Ahlström, C. 'Legal aspects of the Indian–US Civil Nuclear Cooperation Initiative', *SIPRI Yearbook 2006: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2006), pp. 669–85.

as can be seen in many consumer and producer countries today, are not a good recipe for handling global energy security needs even leaving aside the risk of their leading to conflict. Wider international cooperation could build more trust and release tensions between major market players, thus improving the future security of oil and gas supply for all.

It is important to stress that in a field like energy, international cooperation is not opposed to or incompatible with competition. At present it is impossible to say which of these forces will prevail in the energy market in future. They could, of course, coexist, but would then need to be better balanced. As an example, the present IEA response mechanism that excludes China and India and provides for international responses only to oil disruption is inadequate to deal with the present energy market structure and with the wide range of new challenges to energy security that need a collective answer. Future international cooperation, responding to such imperatives, is likely to transform the present institutional energy market order. New institutions and cooperation mechanisms may be established by consumers themselves, or together with producers (as happens today in bilateral or multilateral consumer–producer dialogues). There is also a possibility that major gas producers will try to create a cartel similar to OPEC.

Finally, it is worth noting that only a breakthrough in the development of alternative energy sources, and particularly in alternative fuels for transport, could significantly change parts of the above forecast. Growing environmental concerns combined with increased risks of disruption to future oil and gas supplies may result in greater attention being given to the issues of development of nuclear energy, renewable energy sources and biofuel production. Progress in these fields, too, will depend not only on national energy policies but also on international cooperation, especially in the sphere of know-how exchange. However, the development of alternative energy sources—nuclear energy in particular—will create new security concerns even while it reduces present energy security risks.<sup>77</sup>

<sup>77</sup> On the perceived risks to security posed by civil uses of nuclear energy see chapter 12 in this volume.