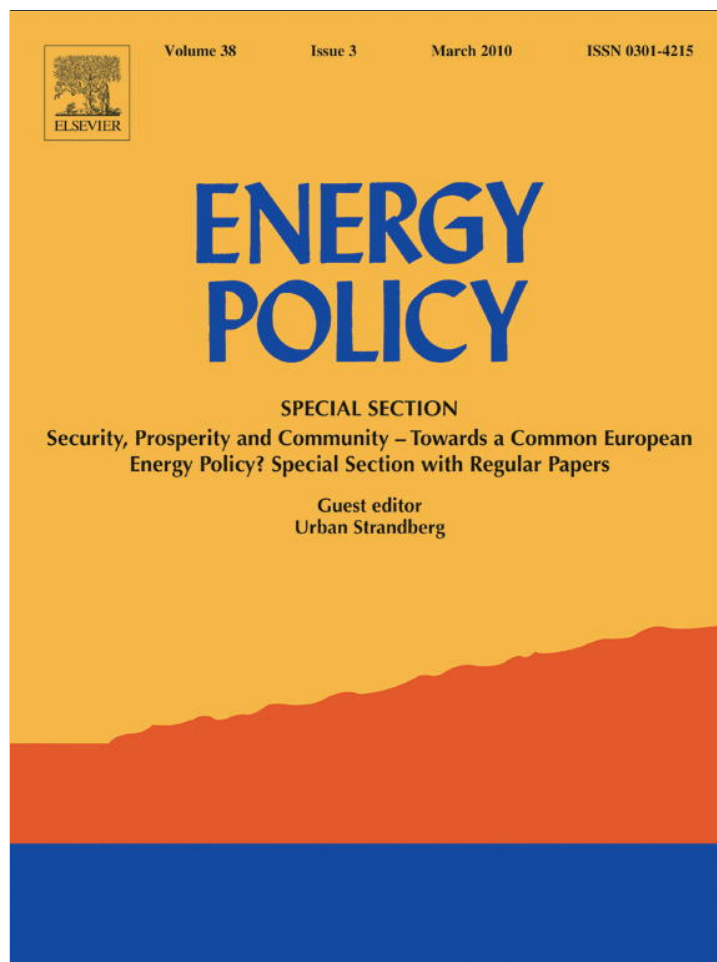


Provided for non-commercial research and education use.  
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

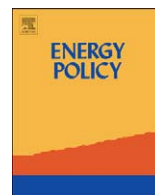
In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>



Contents lists available at ScienceDirect

## Energy Policy

journal homepage: [www.elsevier.com/locate/enpol](http://www.elsevier.com/locate/enpol)

## Global energy security and the implications for the EU

Frank Umbach\*

Centre for European Security Strategies (CESS), Munich-Berlin, Germany

## ARTICLE INFO

## Article history:

Received 21 February 2008

Accepted 15 January 2009

Available online 6 March 2009

## Keywords:

Energy security

Geopolitical challenges

Energy foreign policy

## ABSTRACT

The following article will analyse the global and geopolitical dimensions of the future international energy security and its implications for Europe and the EU-27. In this context, I will discuss to which extent the EU's newly proclaimed "Energy Action Plan" of the EU Spring summit of 2007 and its declared common energy (foreign) policy are a sufficient strategy to cope with the new global and geopolitical challenges. The article concludes the following: (1) The interlinkage between globally designed traditional energy security concepts – that rely just on economic factors and "market-strategies" – and domestic as well as regional political stability demands new thinking with regard to both energy supply security and foreign and security policies. (2) Although after the Russian–Ukrainian gas conflict in January 2006, energy security has forced its way up the European energy and foreign policy agendas, the EU-27 member states have largely failed to forge a coherent European energy security and energy foreign policy strategy after their Spring summit of 2007 because its declared political solidarity has been still lacking. But the 2nd Strategic Energy Review of November 2008 has recommended new initiatives to overcome this lack by promoting concrete infrastructure and other projects for enhancing Europe's supply security and its political solidarity as part of a common energy (foreign) policy. If the EU is able to implement the March 2007 and November 2008 decisions, the EU oil and gas demand will drastically reduce and freeze at current levels. In this case, Putin's energy policies by using Russia's energy resources and pipeline monopolies as a political instrument to enforce its economic and geopolitical interests will be proved as self-defeating in Russia's long-term strategic interests. It will reduce Gazprom's gas exports to a much smaller EU gas market than originally forecasted as the result of a deliberate EU policy of decreasing its overall gas demand and by diversifying its gas imports.

© 2009 Elsevier Ltd. All rights reserved.

Although energy companies will be prospecting in more difficult environments, the major obstacle to the development of new supplies is not geology but what happens above the ground: namely, international affairs, politics, decision-making by governments, and energy investment and new technological development (Yergins, 2006)

## 1. Introduction

When on August 2, 2007, two Russian submarines planted a Russian flag at the bottom of the Arctic Ocean to claim a large portion of the world's biggest continental shelf economic zone, it highlighted the new "resource nationalism" of Russia and its political ambitions to adopt unilateral strategies and power politics rather than following approaches of international law and multilateral political cooperation over an area that might be at the forefront of future international crisis over exploration

rights linked with unsolved territorial claims. Climate change and technological innovation have allowed surveys of the Arctic Ocean, which is suspected to have up to 25% of the global oil and gas reserves as well as non-energy resources. With the retreat of the Arctic icecap, exploiting undersea Arctic resources is now more feasible than ever before (Sloggett, 2007). Accordingly, unilateral and geopolitical strategies are on the rise in the Arctic and Antarctic.

Until 2005/2006, the EU and its member states' energy policies had been increasingly determined by market forces and a separation of energy questions from political factors and strategic developments since the first oil crisis in 1973/1974. However, these trends towards market forces did not destroy the oligopolies in the national gas and electricity sectors of many EU member states (including Germany). But ultimately, energy policies have often been left to the industry in the "old EU", albeit it differs between the individual EU member states. The business interests of companies, however, are primarily guided by short-term economic benefits in an increasingly competitive environment. At the same time, mid- and long-term national interests of energy supply security have been neglected by both energy companies and national governments. In addition, with the privatisation of

\* Tel.: +49(0)173/934 9189 (Mobile).

E-mail addresses: [umbach@cess-net.eu](mailto:umbach@cess-net.eu), [FraUmbach@AOL.COM](mailto:FraUmbach@AOL.COM) (F. Umbach).

the gas sector and new emerging companies, there has been no single actor that will assume overall responsibility for the security of gas supply, mostly transported by politically and technically inflexible pipeline systems during supply crisis.

Whereas the traditional separation of economics from politics has made sense for the internal EU market due to the existing common norms and understanding of the overall importance of market forces, energy policies determined outside of Europe are more than ever defined by those strategic and geopolitical interests of national foreign and security policies (particularly in Russia, China, OPEC countries, USA and others). But only in the aftermath of the winter 2005–2006 gas conflict between Russia and Ukraine, the future security of European energy supplies has become the focus of a broader debate. Because the Russian cutbacks in gas deliveries affected Ukraine and EU member states, the episode has questioned long-standing assumptions underlying Germany's and European energy (foreign) policies:

- Oil and gas are exclusively economic goods, not strategic ones. Accordingly, energy resources are not part of the foreign and security policy strategy of other countries, and the energy policies of other countries strictly adhere to the rules of market economics.
- The security of the energy supply is no longer an important factor and can be left to private utility companies.
- Disruptions in regional or global energy supply can be offset by other oil and gas imports at any time.
- Russia under President Putin has steadily strengthened its market orientation.
- Never having used energy exports as a political weapon even during the cold war, Russia will always prove to be a reliable energy partner for Europe.
- Russia's need to export its oil and gas to the European market has led to mutual dependence that precludes the instrumentalisation of Russian energy and pipeline policy as a factor of foreign policy in the age of globalisation (Umbach, 2006a).

For many years, these assumptions made it possible to ignore that Moscow has indeed used its energy exports and pipeline monopoly as an instrument of foreign policy to intimidate and blackmail neighbouring states since the demise of the Soviet Union. Holding more than 25% of the world's natural gas and hard coal reserves and 6% of the world's oil reserves, Russia has also considerably increased its strategic position in many of the successor states to the USSR and in the new EU member states. It has bought utility companies, pipelines, refineries and infrastructure through Gazprom and other giant energy corporations, thus expanding its monopolies (Loskot-Strachota and Pelczynska-Nalecz, 2008; Larsson, 2006; Umbach, 2006a, 2003).

In the 1970s and 1980s, the international concern and focus were directed towards oil and potential costs of supply disruption, associated with an over-dependence on oil imports. At present, the rise of new consumers such as China and India, increasing scarcity of conventional oil and gas reserves, rising exploration, production, refinery and transportation costs (especially of oil and gas), the increasing role of state players on oil and gas markets as well as the new global climate protection policies, leading to "high energy politics" worldwide, have all challenged and are transforming the traditional global energy security structures. At present, new concerns about energy security also extend to natural gas, which is increasingly traded internationally (albeit at present no global market exists) (IEA, 2004; Victor et al., 2006), the reliability of electricity supply and sufficient investment in the entire energy infrastructure. As a result of a developing global gas market with liquefied natural gas (LNG) and some other factors,

concerns about a future "Gas OPEC", consisting of undemocratic countries and leading to price regulation and dividing consumer markets between its members, have increased during the last few years (Finon, 2007).

For the first time in history, the present crisis of the rising demand for energy in emerging economies like China and India coincides with the quintubling of oil prices since 2002/2003 and a crisis of mounting uncertainties about how long oil and gas reserves will last and how many resources will really be available on the future global market. Hence the last global energy price bonanza and inherent supply crisis are very different from the past ones, in which political–military conflicts caused only a temporary supply crisis. As a consequence, an increasing number of governments feel being forced to protect against failures in the global or regional energy supply system that can arise from inherently structural weaknesses in market mechanisms or from challenges that cannot be handled by the markets alone.

The following article will analyse the most important global and geopolitical dimensions of the future international energy security and its implications for Europe and the EU-27. It will focus on the inherent challenges of the global demand, worldwide trends of re-nationalisation and a new resource nationalism with the rise of state-owned energy enterprises, high concentration of energy resources, internal conflicts and domestic stability of export countries, multiple crisis effects, the refinery crisis and the lack of spare capacity, "cheap oil" as a future source of economic and political instability, development costs and investment needs, as well as climate change and its interdependencies with energy security. Against this background, I will discuss to which extent the EU's newly proclaimed "Energy Action Plan (EAP)" of the EU Spring summit of 2007, its evolving common energy (foreign) policy and its 2nd Strategic Energy Review package of November 2008 are a sufficient strategy to cope with the new global and geopolitical challenges, including the assertive energy foreign policies of Russia.

## 2. Global and geopolitical challenges of international energy security

Although the world is not confronted with an overall shortage of energy resources (the end of the oil age will last for at least another 40 years), geopolitical factors nonetheless can constrain their timely availability (Yergins, 2006; Umbach, 2003, 2004). If political factors such as crisis and conflicts were to block the development of new promising oil fields in the Middle East, the ramifications for world oil markets could be quite severe unless measures can be taken immediately to diversify to other energy fields.

The global demand for oil and gas, rising instability in many producer countries, the rise of state-owned energy champions and the nearing of the "peak-oil" situation or at least the end of "cheap oil" have begun to change the overall balance of power in the relationship between energy producer and consumer states in a way that strengthens the latter. The emergence of a "sellers' market" on the global level may lead to a profound change in the nature of competition between producer and consumer states as well as among consumers themselves. These strategic trends have been reflected in the high increase of the global average oil and gas prices until the summer of 2008, which increased up to \$147 for a barrel of oil.

These energy prices offer a significant increase of hard currency in the state budgets for many producer states. The New York Times columnist Thomas L. Friedman and others have identified a direct correlation and negative impact of average crude oil prices on political freedom, democratisation and the direction of cooperative or confrontational foreign policies. According to his "First Law of Petropolitics", the higher the

average oil and gas prices on the international market, the lower the internal political and economic reform willingness of governments and the more confrontational their foreign and security policies, leading to “petro-authoritarianism” (Friedman, 2006). It explains the present policies of those “petro-ist”-states such as Russia, Iran, Venezuela, Nigeria, Sudan and others, which are highly dependent on oil and gas for their GDP and having either weak institutions or authoritarian systems. They have started asserting themselves domestically as well as in their foreign policy environment by weakening the global democratization trend (Ross, 2001). These dysfunctional energy politics could undermine fundamental Western and European foreign and security interests worldwide.

### 2.1. Global energy demand

Against the background above, key global energy developments during the last years and new energy forecasts till 2030 (seen also Tables 1 and 2) confirm the worrying global energy trends (IEA, 2007a; EIA, 2007; WEC, 2007a, 2007b) as follows:

- Global energy demand will rise by 55% until 2025/2030, at an average annual rate of 1.8% if the present energy trends continue (Reference Scenario of the IEA).

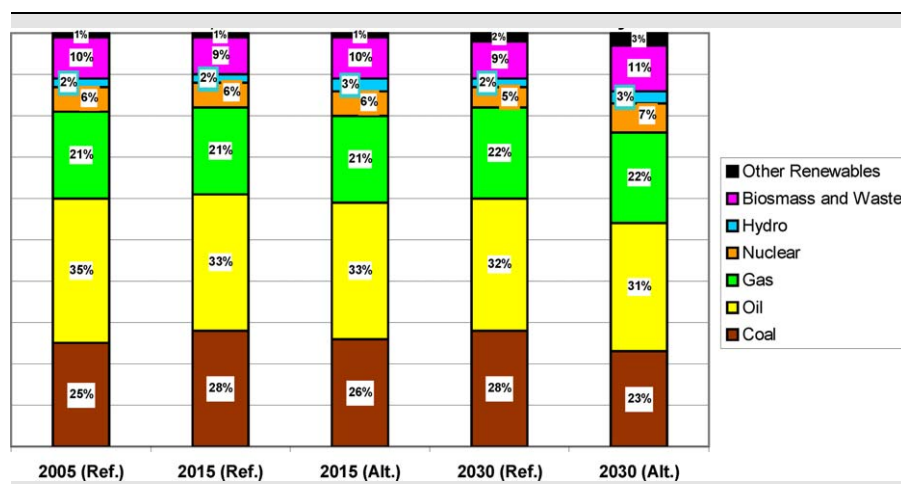
**Table 1**  
World primary energy demand 1971–2030 in Mtoe (Reference and Alternative Policy Scenarios).

|                   | 1980        | 2000         | 2005         | 2015                 | 2030                 | 2005–2030 <sup>a</sup> |
|-------------------|-------------|--------------|--------------|----------------------|----------------------|------------------------|
| Coal              | 1786        | 2292         | 2892         | 3988 (3643)          | 4994 (3700)          | 2.2% (1.0%)            |
| Oil               | 3106        | 3647         | 4000         | 4720 (4512)          | 5585 (4911)          | 1.3% (0.8%)            |
| Gas               | 1237        | 2089         | 2354         | 3044 (2938)          | 3948 (3447)          | 2.1% (1.5%)            |
| Nuclear           | 186         | 675          | 721          | 804 (850)            | 854 (1080)           | 0.7% (1.6%)            |
| Hydro             | 147         | 226          | 251          | 327 (352)            | 416 (465)            | 2.0% (2.5%)            |
| Biomass and waste | 753         | 1041         | 1149         | 1334 (1359)          | 1615 (1738)          | 1.4% (1.7%)            |
| Other renewables  | 12          | 53           | 61           | 145 (165)            | 308 (444)            | 6.7% (8.2%)            |
| <b>Total</b>      | <b>7228</b> | <b>10023</b> | <b>11429</b> | <b>14361 (13818)</b> | <b>17721 (15783)</b> | <b>1.3%</b>            |

Figures of the Alternative Policy Scenarios for 2015, 2030 and the average annual growth rate are put in brackets. Source: IEA (2007a).

- Although renewable energies and new technologies (such as the fuel cell) are also becoming more important, they will reportedly be unable to contribute much to the global energy supply until 2025/2030. Even in the optimistic Alternative Policy Scenario of the IEA, all renewable energy sources (including hydro) will only account for 17% of the global energy mix (instead of 13% in the Reference Scenario) in 2030. However, they might be able to become the second largest source of electricity after coal in the power sector, accounting for 43% of incremental electricity generation between 2005 and 2030.
- Although renewables are growing between 6.7% and 8.2% annually, oil will remain the world's most important energy source and reach 116 billion cubic meter (bcm) (84bcm in 2006). Its demand is growing 37% until 2030, albeit its share in overall global demand will fall from 35% to 32%.
- Due to the concentration of the remaining oil and gas reserves in the Middle East and especially the Persian Gulf, the collective output of the OPEC countries will rise from 36 million barrels per day (mb/d) in 2006 to 46 mb/d in 2015 and 61 mb/d in 2030. Accordingly, OPEC's share of the global oil supply will increase from 42% in 2006 to 52% in 2030. But this expected and much-needed increase of worldwide oil production depends very critically on sufficient investments, which seems uncertain at present. According to the IEA, 12.5 mb/d of gross capacity needs to be increased between 2012 and 2015 to meet the growth of demand of 4.2 mb/d and to compensate the decline at existing oil fields of 8.4 mb/d.
- Furthermore, the consuming countries' increasing reliance on oil and gas imports from a much smaller number of producing countries – and most of them politically unstable – heightens global short-term energy-security risks. It reduces the geographic supply and import diversity and increases the reliance on vulnerable (mostly maritime) supply routes as well as the market dominance of the oil- and gas-producing countries.
- In contrast to previous forecasts until 2005, the biggest increase in global energy demand in absolute terms will come from coal, rising by 73% between 2005 and 2030. Its share of total energy demand will climb up from 25% to 28%. Despite new global efforts for containing the climate change, coal will remain the second largest energy source and fossil fuel, ahead of natural gas. Accordingly, natural gas will increase much slowly than in forecasts until 2005 just from 21% to 22%.

**Table 2**  
IEA – shares of global primary sources 2005–2030: Reference and Alternative Policy Scenarios.



Source: IEA (2007a).



The reason for this important forecast change can be found in China's and India's energy and coal policies, which already account for 45% of global coal use, and being responsible for over four-fifths of the increase to 2030 (Reference Scenario). Furthermore, higher oil and gas prices have made coal more competitive, particularly for baseload generation.

- Even in the case of a more optimistic scenario (Alternative Policy Scenario of the IEA) with a faster worldwide increase of energy efficiency and savings (comparable to Africa's total energy consumption and a decreased global oil demand of 14mb/d – equal to the entire current output of the USA, Canada and Mexico combined), the expansion of renewables and a slowing of the global increase of coal use, falling in absolute and percentage terms, the worldwide coal demand reducing to 23% might be still higher than the climate-friendly natural gas (22%).
- Worldwide natural gas demand will grow by 2.1% per year with the fastest increase in developing countries and the biggest regional rise in the Middle East (20% of increase in global natural gas demand) until 2030. North America will become a major importer after the EU. In inter-regional gas trade, LNG will grow for about 84% from 189bcm in 2005 to 393bcm in 2015 and 758bcm in 2030. In this perspective, LNG will develop into a global market and become fungible like oil.
- Therewith, fossil fuels will remain the dominant source of primary energy. They will cover 84% of the global increase in energy demand until 2030.
- Global electricity use will double. Its share of worldwide energy consumption will grow from 17% to 22%.
- The developing countries' share in world demand will increase from 41% today to 47% of the global energy market in 2015 and to more than 50% in 2030. It is explained also by the fact that 83% of the world's population live in non-industrialised countries, which will double their current energy consumption. China and India alone account for 45% of the overall 74% of the increase in global primary energy use. Consequently, the OECD's share is expected to fall from 48% nowadays to 43% in 2015 and to just 38% in 2030.
- According to the IEA, some US\$ 22 trillion of global investment in supply infrastructure is needed to cope with the global energy demand and to secure the stability of international energy security. However, the realization of that investment is seen as very challenging and uncertain.

## 2.2. Worldwide trends of re-nationalisation and a new resource nationalism

Moreover, the recent trends of re-nationalisation of energy policies and concomitant resource nationalism are not only threatening the future sustainability of global energy markets and the WTO order but also jeopardizing future global investments, energy efficiency and planned production levels (Leverett and Noel, 2006). State-owned energy companies now control far more oil and gas reserves (up to 85%) than do the traditional private energy companies, once known as the “Seven Sisters”. These “Seven Sisters” (today only six are existing after the mergers and acquisitions: ExxonMobil, Chevron, BP, Royal Dutch Shell, Conoco Phillips, Total<sup>1</sup>) had access to 85% of the world's oil

and gas reserves in the 1960s. Meanwhile, National Oil Companies (NOCs) represent the top 10 reserve holders worldwide, whereas Western international oil companies (IOCs) control less than 10% of the global oil and gas resources. OPEC member Saudi Aramco, for instance, holds 20 times the oil reserves of ExxonMobil as the biggest privately owned supermajor. The new “Seven Sisters” are now Saudi Aramco, Russia's Gazprom, CNPC of China, NIOC of Iran, PDVSA of Venezuela, Petrobras from Brazil and Petronas from Malaysia (Hoyos, 2007).

NOCs also dominate the global oil and gas production. It is expected that NOCs will control even a greater proportion of future oil supplies until 2030 as oil and gas production in OECD countries continue to decline (James A. Baker III Institute, 2007). Under these circumstances, IOCs will find it even harder in the future to build business with resource-holding governments. Moreover, an increasing number of aggressive international acquisitions of NOCs have underlined their new ambitions outside their own borders. Many of these state-owned companies such as in Russia and Venezuela are not following merely the policies of market forces, but newfound pricing power for political forces such as foreign policy objectives in a new global energy environment of a “sellers' market”.

Saudi Arabia, Russia, Iraq and Iran, which together hold 50% of world conventional oil reserves, are all reluctant to accept FDI, which would be necessary to develop oil production in a way as would be required by market rules and international projections of global oil consumption till 2030. As a result, the timely development of the much-needed resources for the global energy demand under the control of the NOCs is more uncertain than any time before, given the constraints imposed by domestic political factors and geopolitical interests (Accenture, 2006). But it reflects a new global business environment in which the cash-flush NOCs are able to outspend their rivals of IOCs when paying for licences, and accept lower returns on capital, because their investments are driven by their governments' strategic interests to secure energy supply and long-term geopolitical aspirations rather than by a need to keep shareholders' happy with short-term profits (Boxell and Morrison, 2004). They have fundamentally changed the “rules of the games” of worldwide competition in the energy and resource sectors. Sceptical observers already see the end of the era of the vertically integrated supermajors, which are unable to adapt to the new global business environment.

In the view of the IOCs, NOCs are no longer just partners or customers, but increasingly commercial competitors since the end of the 1990s. Given the often very different priorities of NOCs compared with IOCs, understanding the people, organizations, culture, their commercial and political roles, decision-making processes and strategic interests, including the governments behind the NOCs, are pre-conditions for future businesses, highly tailored strategies as well as protecting the interests of the Western privately held energy enterprises and governments. This conclusion, however, is important not only for the Western IOCs but also for Western governments and the EU if they want to protect their economic, geopolitical and other strategic interests regionally and globally.

Moreover, declining advantages in technical expertise, combined with tough negotiations and competition, the Western privately owned energy companies appear to be relegated from an operator to mere oil and gas service providers (like Schlumberger or Halliburton) for the assistance in the exploration projects of cash-flush NOCs such as Total's recent deal with Gazprom over the huge Shtokman gas field (Kumaria, 2007; Milov, 2008, 11f.).<sup>2</sup>

<sup>1</sup> Originally, the (Anglo-Saxon) Seven Sisters were the four ARAMCO partners – Jersey (Exxon), Socony-Vacuum (Mobil), Standard of California (Chevron) and Texaco – and the three Gulf, Royal Dutch/Shell and British Petroleum, tied together in Kuwait. An eighth sister, the French national champion CFP, was both a member in the Iranian consortium with the Seven Sisters, and the Iraq Petroleum Company, together with Jersey, Socony, British Petroleum and Royal Dutch/Shell, but not seen as an Anglo-Saxon one.

<sup>2</sup> Total received a 25% stake in special vehicle that owns the infrastructure of the Shtokman operation, and will receive 25% of the profits according to the

The new age of “petropolitics” reflects increasing asymmetric relationships between NOCs and IOCs, in which IOCs are “price takers, not price setters” (Vaitheeswaran, 2007; Milov, 2008, p. 17). Gazprom in particular has been able to play one Western IOC against other ones. As a result, the IOCs’ previously united front towards the new power politics of NOCs (like Gazprom to block any change of the rules of the games) has crumbled such as in giving in to NOCs to renegotiate existing contracts with IOCs. Due to Russia’s present perceptions of “unfair” concessions during the early 1990s when it was “weak”, even Western supermajors like Shell and BP have lost the majority control of significant hydrocarbon reserves in Russia since 2006. But while Moscow may benefit from its assertive policies in the short-term, it may cause self-inflicted consequences in the mid- and long-term such as failing Western investments in its exploration sector or a reduced energy demand in consumer countries (i.e. EU), on which Russia’s state budget is still so much dependent.

As a consequence of the re-nationalization processes and the transformation of the power balance between energy producer and consumer states as well as between NOCs and IOCs, the global supply–demand gap may rather widen. The upstream oil sector was also, in the last decades, far from an open and competitive environment. But lacking transparency of their resources and production capabilities, NOCs tend often to overstate their resources and minimize their production problems (Simmons, 2005; Cordesman, 2004). During the last few years, doubts have grown regarding the political willingness and ability of NOCs to increase their oil production to cope with the rising worldwide demand (IEA, 2007a, b).

Moreover, political factors of “state-orchestrated strategies” are determining more than ever the access to oil fields in Africa, the Caspian Basin and the Middle East. The changing energy landscape has already created new political linkages, partnerships and strategic alliances inside and outside of the OPEC such as between Venezuela, Iran, Russia, China and India. In such a political environment, political solutions for regional conflicts will be very difficult to find as the present conflict of Iran’s nuclear ambitions has highlighted during the last years (Umbach, 2006b).

### 2.3. High concentration of energy resources

The Middle East alone has 62% of all globally proved oil reserves and more than 45% of all proven natural gas reserves (IEA, 2007a, 81ff.; BP, 2008, p. 6). But given the fact that until 2030, the world energy demand will rise by more than 50%, the Persian Gulf must expand its oil production by again almost 80% in this timeframe (CSIS, 2000, vol. 1). But this is only achievable if sufficient foreign investment is possible, if Iran and Iraq are free of sanctions and the entire region remains politically stable! In the next decades, the major growth in oil and gas supplies thus will have to come from fewer and politically more unstable countries than today, which will increase the already-existing energy security concerns.

(footnote continued)

production-sharing agreement. But Total had to pay Gazprom \$800 million to get the deal with Gazprom, which was able to gain access to most sophisticated deep-water extraction and has liquefaction technology. Furthermore, the Shtokman Development Company (SDC), co-owned by Gazprom and its foreign partners, will neither be the owner of the produced gas nor the extent of control that Gazprom would be willing to share in return for the expected contribution of its European partners (Kumaria, 2007; Milov, 2008, 11f.).

### 2.4. Internal conflicts and domestic stability of export countries

By 2020, 50% of the estimated total global oil demand will be produced by countries that pose a high risk of internal instability (and a crisis is seen as highly likely until then, particularly by at least 10 of the 14 top oil-exporting countries – CSIS, 2000, vol. 1) and close to 40% of the world’s oil supply is produced in countries that had in 1999 not signed or ratified the main UN human rights conventions or were subject to major criticism by the U.S. State Department and human rights organizations (CSIS, 2000, vol. 3). Of the seven countries that once the U.S. had designated as sponsors of terrorism and “rogue states”, five (Libya, Iran, Iraq, Syria and Sudan) are energy producers, three (Libya, Iran and Iraq) are major producers to top the world oil market and two (Iran and Iraq) together possess close to 20% of the global proved oil reserves.

Furthermore, access to oil revenues enables authoritarian regimes to avoid public accountability regimes and has often hampered rather than fasten the transition to more pluralistic and democratic societies in the world. The new oil- and gas-rich producer states are threatening their wealth and political stability themselves if they do not use their revenues wisely for sustainable development of their countries and societies in order to avoid a widening internal inequality, which may even lead to civil wars. Effects of a “resource curse” and “Dutch diseases” have already been identified in many producer states. As a consequence of a failing diversification of their economies, 34 countries rely on oil and gas resources for at least 30% of their export revenues (Burrows and Treverton, 2007).

Furthermore, terrorist attacks on oil and gas pipelines or crude thefts of oil have increased worldwide, albeit they hitherto had only local impact (Blanche, 2002). Attacking oil and LNG tankers on the sea is no longer a movie fiction: in November 2000 the USS Cole warship had been attacked by terrorists that killed 19 US servicemen; in October 2002, the French-owned supertanker Limburg faced suicide bombers in a small speedboat, killing three crew members. Terrorists attacks on oil and other energy infrastructure are today at the heart of an economic jihad (Stracke, 2007). Thus security of transporting energy sources has become another important security challenge to cope with.

### 2.5. Multiple crisis, global refinery constraints and lack of spare capacity

In times of crisis and conflict, additional capacity to pump oil and deliver natural gas is more limited than ever. A particular challenge for the stability of global energy security is multiple crises as we have witnessed in 2002–2003 when Venezuela’s oil production declined from almost 3 mb/d to some 400,000 b/d in early 2003 due to country-wide strikes to bring down Hugo Chavez’s presidency. It pushed oil prices above US\$30 per barrel. In the following years, the November 3, 2002 earthquake in Alaska, the unrest in oil-provinces in Nigeria, export disruptions in Colombia as the result of guerrilla attacks on oil facilities and pipelines, terrorist attacks on a French oil tanker, a failed Al-Qaeda plot to sabotage oil facilities in Saudi Arabia as well as continued instability in the Middle East (Iraq-war) and Indonesia all contributed to a growing sense of insecurity of sufficient oil supplies and the inherent risks of relying too heavily specifically on Middle Eastern oil supplies (IISS, 2003). In 2007, Nigerian oil production declined to about 750,000 b/d, while Russia cut oil deliveries to Belarus and civil as well as ethnic unrest in Iraq continued to disrupt a higher oil production (IEA, 2007a, b).

Between 1986 and 2005, the global spare oil production capacity (“the energy equivalent of nuclear weapons” – Morse and Richard, 2002) decreased from about 15% to just 2–3% of the

global demand (Maugeri, 2006). In 2003, the previously available spare oil production capacity up to 7.3 mb/d had already dropped to between 0.7 and 1.2 mb/d. While Saudi Arabia and United Arab Emirates were able to boost their production (by 400,000 mb/d), Venezuela, Indonesia, Nigeria and other leading oil producers either no longer had any appreciable reserve capacities or had their own domestic political crises and production stoppages to deal with. The International Monetary Fund (IMF) warned the OPEC countries to increase their spare production capacity to 5 mb/d in order to ensure the future stability of world economy (Economist, 2005). During the last few years, OPEC's supply capacity has operated at 99% of its total crude oil productive capacity, compared with 90% in 2001 and a mere 80% in 1990 (Barnes and Myers Jaffe, 2006; Harks, 2007). But only Saudi Arabia seems currently willing to increase its spare production capacity.

At the same time, the global refinery capacities are limited for coping with a variety of crude oil qualities, especially the lowest quality, and convert the different grades of crude oil into refined products, such as gasoline and diesel. In Asia, the unsophisticated refineries can also not cope sufficiently with medium and heavy oil. The United States is now the only market in the world that faces even a net deficit in refining capacity (20% of domestic demand). It is the result of inadequate investment in exploration during the last few decades and the overproduction in the 1980s and the 1990s (Maugeri, 2006). Without these refinery systems, even excess supplies of crude oil will not satisfy the global demand. With sufficient investment, the global refinery problems will last at least for another 5–6 years.

## 2.6. Development costs and investment needs

The IEA has estimated that worldwide investment in the energy sector will come to US\$22 trillion by 2030. In Asia, even conservative estimates of the investment, required to achieve average economic growth of only 3.5% in the region by 2020, go up to as high as US\$4.4 trillion for Asia's oil infrastructure alone. For the development of new oil and natural gas fields in the six member states of the Gulf Cooperation Council, approximately US\$300 billion is required. According to US Department of Energy, Saudi Arabia as the world's largest oil producer and exporter needs to increase its crude oil production from the present 11 mb/d up to 23.5 mb/d by 2025 (Barnes and Myers Jaffe, 2006). But at present, it can increase its production in the mid-term perspective only to 15 mb/d.

## 2.7. "Cheap oil" as a source of economic and political instability

Given the high dependence of many oil-producing countries on its oil revenues, a dramatic decline in global energy consumption as a result of an economic recession (like an economic-financial crisis in China) and accompanied by a higher decline of international oil prices could trigger domestic or even regional instability in many of the world's major energy-exporting countries (Myers Jaffe and Manning, 2000). In 1998 during the Asian financial crisis with its worldwide impacts, several oil-exporting countries faced a decline of 50% in their national incomes within a year, which caused severe political and economic repercussions. At the end, governments changed in Algeria, Brunei, Indonesia, Nigeria and Venezuela as those losses exacerbated other national problems. With oil prices up to US\$147 per barrel until recently, the global effects of falling oil prices on the social-political stability of many producer and exporter states, compared with the Asian crisis during 1997–1999, could be much harder and more dramatic for their domestic stability.

While the present worldwide financial crisis reduces the global energy demand and may ease a number of those challenges and problems linked with high energy prices, it may also decrease further much-needed investments in all types of energy infrastructure and energy efficiency measures for future global energy stability. Likewise, state funding and private risk capital for the worldwide expansion of renewables as well as for innovative energy research and development programs in order to mitigate global climate change are at risk for being reduced, which may slow down the transformation to a global non-fossil energy future.

## 2.8. Climate change and its interdependencies with energy security

In contrast to energy security and its vulnerabilities, climate change is more a recent concern, but closely linked with energy policies and energy security. Thus energy supply disruptions are also the result of extreme weather conditions or accidents. In August and September 2005, the hurricanes Katrina and Rita shut down 27% of US oil production and 21% of US refining capacity in the Gulf of Mexico (Yergins, 2006) – with worldwide implications for global oil prices, energy policies, climate change, strategic oil stocks and perceptions of supply security. Policy-makers need to address these twin challenges of energy security and climate change to ensure the security of our global energy system and to reduce greenhouse gas emissions as part of an overall strategy of a sustainable energy security concept (IEA, 2007b).

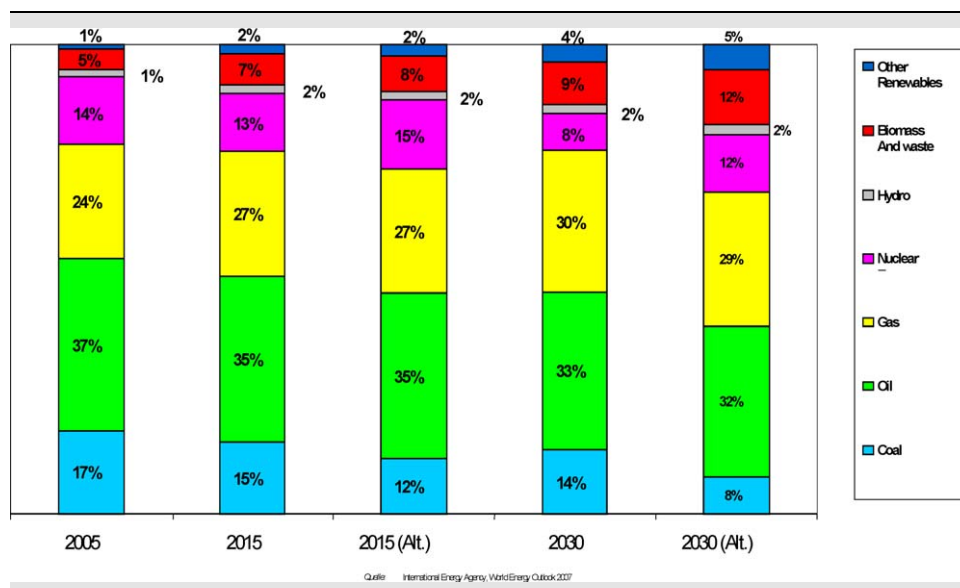
As long as fossil fuels continue to dominate the global fuel mix, energy-related greenhouse gas emissions and increased reliance on imports of oil, gas and coal from politically unstable countries will increase concerns about climate change as well as energy security. Having no adequate and secure supplies of energy at affordable prices is being perceived as a major threat as soaring energy prices and consumption cause irreversible environmental damage for societies. If the energy prices stay high, the big losers will be in particular the poor countries because they will be hit economically, socially and politically much harder in comparison with the OECD countries. It may curtail their economic development prospects and lead to social-political unrest, state failure, new terrorist havens or large-scale migration (Burrows and Treverton, 2007).

## 3. The EU's "Energy Action Plan": a sufficient concept for coping with the new global and geopolitical challenges to energy security?

While most European energy experts view the overall European energy supply security beyond 2030 as more optimistic due to the expansion of renewable energy sources (being able to replace increasingly fossil fuels), new innovative technology breakthroughs, energy-efficiency improvements and a wider available global energy mix of resources, the mid-term challenges till 2030 are considered much more uncertain (see also Table 3).

After just 1 year of the Russian-Ukrainian gas conflict in January 2006, the European Council under the German Presidency has agreed in March 2007 on the worldwide most ambitious integrated climate and energy policy with an 'Energy Action Plan' for the years 2007–2009. The EAP favours a liberalized internal market for gas and electricity, enhanced measures for security of supply, defined a common approach to an external energy policy with a global dimension and put energy efficiency as well as energy conservation into the centre of its strategy (European Council, 2007). The EU's declared energy policy seeks to maintain a careful balance between all three parameters: security of supply, competitiveness and environmental sustainability.

**Table 3**  
Total primary energy demand of the EU 2005–2030 (Reference and Alternative Policy Scenarios).



Source: IEA (2007a, b).

With the world's most comprehensive action plan on climate protection and energy supply, the EU-27 were able to agree on 17 individual measures and three 20% targets at the March summit of 2007:

- Energy efficiency should be increased by 20% across the EU.
- The goals of the Kyoto protocol should exceed and carbon emission should be reduced by 20% by 2020 compared to 1990 (if other industrialized countries such as the USA, India and China commit themselves to similar policies, the EU would be willing to reduce emissions by 30%).
- Additionally, a 20% share of the energy mix should be generated from renewable energy sources.

Disagreements existed concerning the ambitious climate policy targets, such as the increase in the share of renewable energies in the overall EU energy consumption by 2020 and whether nuclear energy can be considered as a carbon-free energy source. Controversies especially erupted around the question to what extent nuclear energy could be used to reach this target.

At present, nuclear energy does play a vital role in the sustainable production of electricity. In 2006 it produced 29% of electricity in Europe compared with 15% from renewables (European Commission, 2008b). For baseload supply, it is currently the only industrially mature energy source with negligible greenhouse gas emissions, which can be expanded. The Green Paper of 2000 already warned that the EU would not meet its obligations under the Kyoto protocol without nuclear energy. Annually, it avoids some 300 mtonne of carbon dioxide emissions – equivalent to half the amount produced by all the cars in the EU (European Commission, 2001).

In this light, more and more EU member states have begun to re-think the nuclear option as the EU Commission, the IEA, the World Energy Council (WEC) and numerous international energy experts have recommended for years. Even Germany's unilateral withdrawal from the use of nuclear power is increasingly disputed domestically. Besides Russia and Ukraine as non-EU member states, Finland, France, Great Britain and many new Central

European members of the EU have already indicated that they do not want to renounce the nuclear power option. Construction of new nuclear power plants is being declared or at least seriously considered (like in Great Britain, Italy, France, Finland, Lithuania, Romania and Bulgaria) or lifetimes of the nuclear reactors have already been extended (like in Sweden). For economic, environmental, technological and political reasons, the nuclear power option is also undergoing a renaissance in the United States, Russia and particularly in Asia.

Since the EU's March Summit and the G8 summit of 2007, Germany has isolated itself with regard to the use of civilian nuclear power and failed to assert on the European level. Yet the Spring European Council's agreement was clearly a compromise and a common European response on the future of nuclear energy is still missing. Furthermore, the largely unresolved political problem of nuclear waste and the high infrastructure costs may constrain some of the too optimistic forecasts for nuclear power in Europe.

Furthermore, after years of discrediting coal, the Commission has also been viewing coal as an important future energy source since 2005, which can contribute to enhancing the security of supply in the EU. It decided to support the technical progress in terms of the actual clean burning process of coal (European Commission, 2005) such as Carbon Capture and Storage (CCS) projects.

In November 2008, the new European Commission's "2nd Strategic Energy Review" and its new "EU Energy Security and Solidarity Action Plan" (European Commission, 2008a)<sup>3</sup> have identified major weaknesses and problems that need to be overcome on the way to a real common energy (foreign) policy and by enhancing the energy supply security of its 27 member states. It has proposed five key areas for joint cooperation and projects in the forthcoming years: (1) infrastructure needs and the diversification of energy supplies; (2) external energy relations; (3) oil and gas stocks and crisis response mechanisms; (4) energy

<sup>3</sup> See also the relevant web-site [http://ec.europa.eu/energy/strategies/2008/2008\\_11\\_ser2\\_en.htm](http://ec.europa.eu/energy/strategies/2008/2008_11_ser2_en.htm) and its related documents.



efficiency and (5) making the best use of the EU's indigenous energy resources.

But the implementation of the painful decisions of the Spring summit in the field of climate protection is still in the offing.

Firstly, it remains questionable whether the self-proclaimed leadership role of the EU on climate matters will be honoured and followed by the US, China, India and other transition countries. Although these global concerns of climate change and its impacts have been increasingly recognized, including China and India, their present willingness to compromise their traditional economic policies and threaten their economic growth is still very limited. During the last few years, they have allied with the Bush Administration rather than with the EU.

Secondly, the present and future development of the EAP and the integrated climate policies are also hampered by the fact that hitherto only few members have implemented attractive strategies for renewable energy sources. Hence even for the EU, it may not be able to live up to its obligations of the Kyoto Protocol, which envisions to cut greenhouse gas emissions by 8% between 2008 and 2012 from the 1990 levels (Die Welt, 2008). While Germany will fulfil its Kyoto-obligations, recently it has opposed together with Italy and Poland the Commission's proposals on the auctioning of permits for carbon emissions. Whereas the Commission wants companies in many countries to pay for the permits, Germany has insisted that most permits be given out free for energy-intensive industries. Although Merkel's government herself brokered the EU's ambitious climate change package in 2007, now it may weaken its own policies and political credibility.

Thirdly, with the increasing critical global debate on the first generation of biofuels as a replacement for petrol and diesel supply for the transport sector, the 10% binding minimum target for the share of biofuels in overall EU transport petrol and diesel consumption by 2020 has already been threatened and, therewith, the overall objectives of its policies for mitigating climate change. But if the EU is able to implement and achieve its March 2007 aims by 2020, the EU would be using 13% less energy than today, which is equivalent to a saving of more than 100 billion Euro and a reduction in CO<sub>2</sub> emissions of about 780 million tonne/year (European Commission, 2007a, p. 13).

### 3.1. Europe's energy supply security

Since November 2000, the European Commission has warned in its first 'Green Paper' that in the next 20–30 years, up to 70% of the Union's energy demand (presently 50%) will have to be

imported. With regard to oil, EU's dependence could reach even 90% for oil, 70% for gas and 100% for coal.

In 2006, the EU-27's total primary energy supply was generated by oil (37%), gas (24%), solid fuels (18%), nuclear energy (14%) and renewables (7%). The future new capacity will be predominantly generated still by fossil resources with a rising percentage of gas, while the number of oil and solid-fuel power stations will continue to decline (European Commission, 2008b).

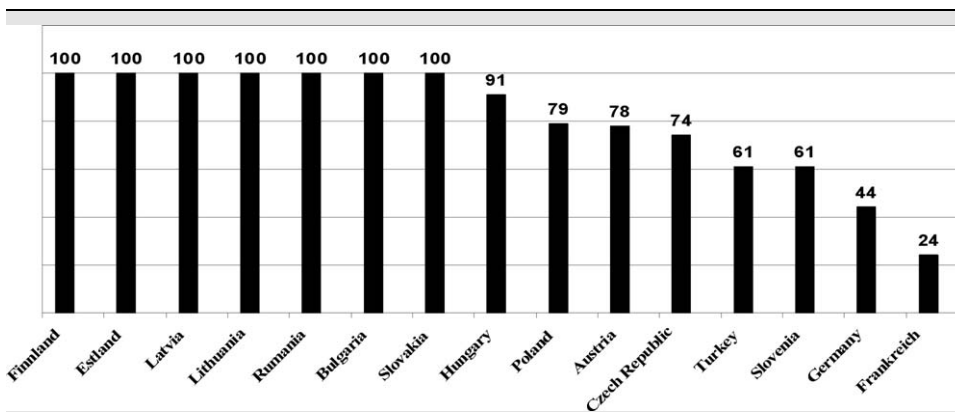
The expansion of natural gas as an environmental clean energy source is widely seen as the most problematic factor in the next two decades for the EU member states (Keppler, 2007; Helm, 2007; Stern, 2006). Europe is already today the largest natural gas import market and will continue to be the world's champion of gas importers till 2030. But today, almost half of the EU's gas consumption is being imported from only three countries: Russia (23%), Norway (14%) and Algeria (10%). The new EU members and former allies of the Soviet Union are, in particular, still very much dependent on gas imports from Russia (see Table 4).

Given the current trends, gas imports would increase to 80% over the next 25 years. In 2030, Europe will have to import 488 bcm (North America: 159 bcm and China/India just 85 bcm – IEA, 2006a). The share of gas in total primary demand could rise from 23% at present to 32% in 2030. But a growing share of EU gas imports will be shipped as LNG, which would offer a better crisis stability for gas imports.

But meanwhile, the EU's great hopes of a real strategic energy partnership with Moscow are gone. While it views such a partnership rather as a long-term vision, it has become increasingly uncertain whether Moscow will be able to increase its gas exports beyond 180–200 bcm after 2020 due to an emerging domestic gas crisis (Milov, 2008; Riley and Umbach, 2007; Umbach, 2007; Paillard, 2007; IEA, 2006b; Fredholm, 2006; Milov et al., 2006; Stern, 2006, 2005). The potential gas crisis has been acknowledged by President Putin himself in September 2006 who has developed an alternative plan by expanding nuclear power and coal consumption for its domestic market to fulfil Russia's gas export obligations, as well as by representatives of Russia's economic and resource ministries (Umbach, 2008a, 2007a). In other words, the EU is forced to diversify its gas imports anyway.

At first glance, the EU seems to be in a very favoured position: unlike any other region of the world, the EU is geographically surrounded by many gas-exporting countries. Eighty percent of the global gas reserves are within a range of 4500 km; most of those reserves can be connected to the EU by pipelines. However, most of those gas export countries are considered as politically unstable. With these energy supply challenges confronted, the EU

**Table 4**  
European natural gas imports from Russia in 2005 (in %).



Source: EU, IEA, Eurostat (2005).

has recognized that it needs an active and coherent energy foreign policy at the regional and global levels.

### 3.2. The EU's new external policies

The EU cannot achieve its energy and climate change objectives on its own. But the enlarged European Union borders the main oil- and gas-producing areas such as Russia, Caspian Sea and North Africa, and with decreasing distance also the Middle East and the Persian Gulf. Given the close relation between geopolitical stability and energy supply security, the rising dependence of the EU on energy imports and the growing interdependence between producer, transit and consumer states, the Commission has recognized the need for closer cooperation with supplying partners. It seeks to encourage geopolitical and economic stability in supplier as well as transit countries and predictability in the producer–consumer relationships. Consequently, the EU has become more pro-active in order to widen and deepen its energy dialogues with neighbouring countries and regions.

Between January 2004 and the Russian–Ukrainian gas crisis in January 2006, the EU already extended its cooperation not only with Russia but also with Norway, Algeria and even with the OPEC and the Gulf-Co-operation Council. The EU has also started to integrate energy aspects into its Common Foreign and Security Policy (CFSP) and relations with third countries.

On October 25, 2005, the EU signed an energy treaty with South Eastern Europe, which fastened full integration into the EU Single Energy Market. This first example of a sectoral enlargement of the EU has far-reaching political, economic and social consequences, including the development of a stable and efficient energy supply and the geopolitical importance of securing different supply routes for energy in Europe. Furthermore, the Commission has intensified relations with other major producer and consumer countries, such as in the Caspian Basin, the Mediterranean region, Norway, Ukraine and even beyond (such as US, Latin America, India, China and Japan) in order to diversify the EU's future oil and gas supply networks (European Commission, 2006).

These energy dialogues underline the need for a coherent and coordinated external policy for energy in Europe. In June 2006, the Commission and the High Representative for the CFSP, Javier Solana, have called for an active external energy policy conducted in a spirit of close political solidarity by the EU member states. On October 12, 2006, the Commission adopted another concept paper and action plan (European Commission, 2006) for the Informal European Council in Lahti, Finland, on October 20, 2006.<sup>4</sup>

Despite its progress on the way to adopt a common energy (foreign) policy as part of the EAP of 2007, the EU is now confronted with two major challenges in the months and years ahead. Firstly, the public debate about the results of the Spring summit widely concentrated on the “historic agreement on climate change”. This rather narrow focus, however, has jeopardized the balance within the energy triangle between security of supply, competitiveness and sustainability.

Secondly, EU heads of states and governments have failed to agree upon a common strategy towards Russia, the bloc's most important energy supplier. Since the EU's March summit, the lack of coherence of the bloc's external energy policy has enabled Russia to continue successfully with the “bilateralisation” of energy partnerships with Austria, Italy, Hungary, Greece and Bulgaria (Umbach, 2007). Russia's policies are certainly also the

result of the EU's emerging common energy policies and the declared goal of establishing liberalized energy markets. In the case of a successful EU implementation, it will threaten Russia's monopoly policies, market shares in the EU and long-term contractual prices in particular in the European gas market (Locatelli, 2008). Given the long-standing traditions of national energy policies of EU member states, the past lack of a credible common EU policy and the still existing mistrust in it for the short-term future, many EU member states, including Germany, have still favoured bilateral relations and special relationships. But ultimately, their preference for bilateral relations often takes place at the expense of the other members of the EU and undermines the credibility of both a much-needed common energy policy and its Common Foreign and Security Policy. In this light, Russia has been still successful by adopting its traditional politics of “Divide and Rule!” and to play off individual European states and their “national energy champions” against each other. However, with its assertive policies, Russia might only benefit in the short-term, but undermining its long-term strategic interests on the EU gas market.

### 3.3. EU's diversification of gas imports and its reduced gas demand: Russia's self-defeating policies in perspective

Given the March summit results and agreed targets, new studies predict a much lower gas import of the EU till 2030 (Hirschl et al., 2007; Goetz, 2007). In 2005, the EU's combined gas production with Norway amounted to nearly 300 bcm, which will decrease to 200–250 bcm till 2030. Between 2005 and 2006, the IEA had already reduced its forecasts of the EU's rising total gas imports in 2030 from 530 to 488 bcm (298 bcm in 2005 by EU-27). That import volume forecast of 488 bcm had been still used till November 2008 even by the IEA and the European Commission in spite of the March decisions, changing energy conditions with regard to nuclear power as well as coal consumption in Europe and deliberate supply strategies to reduce the EU's gas dependence on Russia (Umbach, 2008b, 2007).

In order to strengthen its energy supply security, the EU thus has proceeded with a number of pipeline (see Table 5 – up to more than 80 bcm if the Nabucco pipeline is built) and LNG projects to import non-Russian natural gas sources in addition to the planned Nord-Stream-pipeline (with a capacity of  $2 \times 27.5$  bcm = 55 bcm). The announced LNG projects would represent an additional import capacity of about 100 bcm/year after 2010 (European Commission, 2007b). Furthermore, with increased production in Norway, the EU will benefit from its rising exports from 84 bcm to 125–140 bcm annually. Altogether, the EU could have available more than 200 bcm of non-Russian gas in 2020.

Russia's monopolistic strategy with its blurring mix of geopolitical and commercial interests has been most visible in its efforts to undermine a common European policy towards Central Asia. Moscow has tried in particular to torpedo the Nabucco-gas pipeline project from Central Asia via Turkey and South Eastern Europe to Austria with a rival pipeline (“South Stream-pipeline”), albeit it will cost at least twice as much as the Nabucco land-pipeline. It has also sought to strengthen its gas pipeline monopoly not only from Central Asia (Turkmenistan, Kazakhstan, Azerbaidshan) but also from all other real and potential gas suppliers to the EU member states (such as Iran, Qatar and North-African states) by offering to buy all their gas for exports to Europe. These strategies could have far-reaching impacts on the EU's liberalization of its energy (particular gas) markets and its CFSP. But hitherto, Russia has only got some support from the Libyan President, but even not from the Libyan industry (Umbach, 2008b).

<sup>4</sup> See for the EU's “external energy policy” also its web-site – [http://ec.europa.eu/external\\_relations/energy/index.htm](http://ec.europa.eu/external_relations/energy/index.htm).

**Table 5**  
Main Greenfield pipeline projects.

| Project  | Supplier | From           | To      | Capacity (bcm) | Investment (M€) | Foreseen start-up |
|----------|----------|----------------|---------|----------------|-----------------|-------------------|
| Medgaz   | Algeria  | Hassi R'Mel    | Spain   | 8–10           | 1300            | End 2008          |
| Galsi    | Algeria  | Hassi R'Mel    | Italy   | 8–10           | 1200            | 2009–2010         |
| ITG-IGI  | Caspian  | Greece         | Italy   | 8–10           | 950 (IGI)       | 2011              |
| Langeled | Norway   | Ormen Lange    | UK      | 22–24          | 1000            | 2006–2007         |
| Nabucco  | Caspian  | Turkish border | Austria | 25–30          | 4600            | 2010              |

Total additional non-Russian gas supply capacity via pipelines to Europe: 71–84 bcm

Source: European Commission (2007b, p. 24).

**Table 6**  
2nd Strategic Energy Review (November 2008): EU-energy demand – Main Scenarios for 2020.

|                          | 2005                                       |   | 2020  |  |
|--------------------------|--|---|---|--|
|                          | Baseline projection: oil price \$61/barrel | Baseline projection: oil price \$100/barrel | New Energy policy projection: oil price \$61/barrel | New Energy policy projection: oil price \$100/barrel |
| EU-27 (Mtoe)             |  |   |   |  |
| Primary energy demand    | 1811                                       | 1968  | 1903  | 1712   |
| Oil                      | 666  | 702   | 648   | 608  |
| Gas                      | 445  | 505   | 443   | 399  |
| Solids                   | 320  | 342   | 340   | 216  |
| Renewables               | 123  | 197   | 221   | 270  |
| Nuclear                  | 257  | 221   | 249   | 218  |
| EU-energy production     | 896  | 725   | 774   | 733  |
| Oil                      | 133  | 53  | 53  | 53   |
| Gas                      | 188  | 115   | 113   | 107  |
| Solids                   | 196  | 142   | 146   | 108  |
| Renewables               | 122  | 193   | 213   | 247  |
| Nuclear                  | 257  | 221   | 249   | 218  |
| Net imports              | 975  | 1301  | 1184  | 1033   |
| Oil                      | 590  | 707   | 651   | 610  |
| Gas Mtoe (bcm)           | 257 (298)                                  | 390 (452)                                   | 330 (383)   | 291 (337)  |
| Solids                   | 127  | 200   | 194   | 108  |
| Final electricity demand | 238  | 303   | 302   | 257  |

Source: European Commission (2008a, b, Annex 1, 19 f.).

Despite its continued engagement policy of “Verflechtung” (building interlinkages) with Russia, Germany has also strengthened its diversification of gas imports. Even those companies like E.ON Ruhrgas or VNG, which have traditionally close strategic ties with Gazprom, will import much more gas from Norway and LNG from African and Arab sources in the future.

The recent Russian–Georgian war in August 2008 and the European Commission’s “2nd Strategic Energy Review” with its new “EU Energy Security and Solidarity Action Plan” of November 2008 (European Commission, 2008a, b) have highlighted the improved but still insufficient political solidarity between its 27 member states in speaking with one voice towards external energy partners. But by building new transnational gas and electricity interconnections inside the EU 27 as part of enhancing energy supply security and the creation of common energy markets, these processes will ultimately lead to more common energy (foreign) policies in the future.

Furthermore, the implementation of the EU’s decisions of the March 2007 and the November 2008 package may freeze the EU’s oil and gas imports by 2020 at current levels (for gas on around 300 bcm or even less, see Table 6). In this case, the EU member states and its gas companies need to take care not to contract too

much gas with long-term contracts and in particular with Russia’s “pay and take” clauses, which prevent the selling of Russia’s imported gas to third parties, or they need to renegotiate those contracts with more flexibility enshrined. Furthermore, not all discussed pipeline plans will be realistic any longer. Consequently, pipeline competitions such as between Nabucco and the South Stream project may rather increase.

Hence what the EU needs most of all in the coming years is to have the common political will to implement all the decisions they have agreed upon – which ultimately boils down to the issue of political credibility in both its economic energy and its Common Foreign and Security Policies.

#### 4. Concluding remarks and perspectives

As a consequence of globalization, the once sharp dividing line between foreign, domestic and economic policies is increasingly blurring. Economic factors and global economic stability will become much more dependent on domestic and regional political stability. In the age of globalization, any policies that ignore detailed analyses of various domestic and regional stability factors

could be proved as extremely shortsighted and being paid with high financial, economic and political costs in the mid- and long-term future by governments and energy companies alike. The interlinkage between globally designed traditional energy security concepts – that rely just on economic factors and “market-strategies” – and domestic as well as regional political stability demands new thinking with regard to both energy supply security and foreign and security policies. As a new study of energy policy scenarios to 2050 of the World Energy Council concludes, the best strategy for achieving the three criteria of accessible, available and acceptable (“3 A’s”) energy in all regions in the developed and developing world is no longer a pure market-driven approach with minimal government involvement. Instead it is favouring a strategy that demands a careful planning in a highly cooperative effort of the government side and private industry as well as exercising great control and discipline with a strong government involvement. The latter needs to seek close cooperation and deep integration of the public and private sectors, both domestically and internationally (WEC, 2007b).

Although after the Russian–Ukrainian gas conflict in January 2006, energy security has forced its way up the European energy and foreign policy agendas, the EU-27 member states have largely failed to forge a coherent European energy security strategy after their Spring summit of 2007 because its declared political solidarity has been still lacking until the spring of 2008. Though EU member states have increasingly recognized the need to envisage a clear response to the growing risks of oil and gas dependency over time, they basically have followed narrow-minded national interests by supporting their “national energy champions” at the expense of other EU member states and the EU’s declared “Energy Action Plan” even after the agreed March decisions of 2007.

With regard to the rise of NOCs, the re-nationalization processes and resource nationalism around the globe, the individual EU member states and their national “energy champions” have only little leverage because of the high concentration of the remaining oil and gas resources in the politically unstable Middle East, where state-owned companies control the resources. The rise of NOCs and a new resource nationalism in world affairs are a drift away from efficient and competitive markets. This development is accentuated by the concentration of oil and gas resources in fewer and mostly politically unstable countries and fewer giant companies as a result of the wave of mergers and acquisitions.

Given the rise of state-owned oil and gas companies to control the remaining fossil-fuel resources and worldwide production, the EU – in collaboration with the U.S. as part of a new transatlantic energy security agenda – needs to protect itself from the geopolitical and strategic implications of collective action by an (informal) alliance of exporters, especially state-owned energy enterprises. However, this changing international power balances at the expense of consumer states do not lead to the conclusion that the West should create its own state-owned oil and gas enterprises because it would further aggravate and not decrease innate problems of global energy security and stability. After all, privately held energy corporations are more efficient and productive organizations than any government-held entities.

While thus the creation of state-owned energy companies is not a solution for European and global energy security and stability, Western governments need to take a more active role. They should promote bilateral and multilateral trade treaties in an effort to increase competition, efficiency and sustainability through aid programs as well as assistance and training on transparency (James Baker Institute, 2007, p. 17).

Furthermore, the EU should not only offer new technologies for renewable energy sources (like wind energy) and improve energy

efficiency in its global energy partnership programs, but also support explicitly multilateral approaches and concrete cooperation models (such as the Treaty of the European Energy Charter with its Transit-Protocol, the Joint Oil Date Initiative (JODI), the Extractive Industries Transparency Initiative/(EITI), the International Energy Forum (IEF) and the World Bank’s Global Gas Flaring Reduction Programme).

If energy insecurity is rising and the world’s energy demand cannot always be met because of the insufficiencies of the global energy systems, dysfunctional energy policies, insufficient investments or failing political stability in oil- and gas-producing countries, economic and political crises in countries and regions outside of Europe will have increasingly negative effects on Europe’s future economic and political stability. The only political answer of the EU is to speak with one voice in its energy foreign policy, diversifying the national energy mixes and imports as well as enhancing energy efficiency and conservation as much as possible.

In this context, Kremlin’s instrumentalisation of its energy resources and dependencies of Eurasian states on its pipeline systems have become an economic and foreign policy challenge alike. Shell’s and BP’s ceding of majority control of very significant hydrocarbon resources to the Russian state and its state-owned energy company of Gazprom signal four lessons: (1) the Kremlin will have majority control over any significant energy project, (2) the Russian government has the political will for that objective to use all means, whether political, regulatory ones or legal pressure, and (3) has been successful with its gradualist policy steps, irrespective of their mid- and long-term implications, and (4) its recent success towards the EU may invite the Kremlin to even more aggressive policies.

In this light, a more active EU’s energy foreign policy will either further complicate EU-Russia’s relations, or, given the EU’s consideration of Russia’s energy and security interests, put into question the EU’s Central Asia and diversification strategy of oil and gas imports from the Caspian region. However, the EU cannot forego diversifying its imports of natural gas from the Caspian region because (1) Kremlin is exploiting energy dependencies as means of its foreign policy, and (2) in the light of the EU’s wider energy foreign and security interests, it has no alternative than to extend and to deepen its relations with Central Asia and the Caspian region.

Widely overlooked, the EU has proceeded with a number of pipeline and LNG projects to import non-Russian natural gas sources. Together with rising gas imports from Norway, these new projects could have a combined capacity of more than 200 bcm if they are all implemented. These alternatives will give the EU more leverage and bargaining power vis-à-vis Moscow.

Furthermore, if the EU is able to implement its March 2007 decisions and its 2nd Strategic Energy Review Package of November 2008, it will drastically decrease its gas import demand by 2020 at the current levels or even lower (around 300 bcm) in contrast to previously forecasts (490 bcm). In this case, Putin’s energy policies by using Russia’s energy resources and pipeline monopolies as an assertive political instrument to enforce its economic and geopolitical interests will be proved as self-defeating in Russia’s long-term strategic interests. In contrast to previous forecasts, it will reduce Gazprom’s gas exports to a much smaller EU gas market as the result of a deliberate EU policy of decreasing its overall gas demand and by diversifying its gas imports.

But without the Nabucco pipeline and a diversification of gas imports in the EU’s new member states, a common and liberalized energy and gas market could hardly have been realized in Central and South Eastern Europe. It may create a fragmented energy market with an Eastern part of the EU that remains highly



dependent on Russia's energy supplies and its goodwill, whereas a Western EU has highly diversified its energy and particularly gas imports. Such a development would have grave consequences not only for a liberalized common gas market but also for the EU's future energy (foreign) policy, the future development of the CFSP and the strategic foreign policy orientations of its member states.

## References

- Accenture, 2006. The National Oil Company – Transforming the Competitive Landscape for Global Energy, Kronberg, July. <[www.accenture.com](http://www.accenture.com)>.
- Barnes, J., Myers Jaffe, A., 2006. The Persian Gulf and the geopolitics of oil. *Survival* 48 (1), 143–162 (Spring).
- Blanche, E., 2002. Terror attacks threaten Gulf's Oil Routes'. *Jane's Intelligence Review (JIR)*, December 6–11.
- Boxell, J., Morrison, K., 2004. A power shift: global oil companies find new rivals snapping at their heels. *Financial Times*, December 9, 11.
- British Petroleum (BP), 2008. BP Statistical Review of World Energy, June.
- Burrows, M., Treverton, G.F., 2007. A strategic view of energy futures. *Survival* 49 (3), 79–90.
- Cordesman, A.H., 2004. *Energy Developments in the Middle East*. Praeger Publishers, Westport–London.
- Center for Strategic and International Studies (CSIS), 2000. *The Geopolitics of Energy into the 21st Century*. Volume 1: An Overview and Policy Considerations. CSIS, Washington, DC, November; Volume 3: The Geopolitical Outlook, 2000–2020. CSIS, Washington, DC, November.
- Die Welt, 2008. Ausstoß von Treibhausgasen steigt weiter an. November, 18.
- Economist, 2005. Oil in Trouble Waters. A Survey of Oil, April 30, p. 5.
- Energy Information Administration (EIA), 2007. *International Energy Outlook 2007*, Washington, DC, May <[www.eia.doe.gov/oiarf/ieo/pdf/0484\(2007\).pdf](http://www.eia.doe.gov/oiarf/ieo/pdf/0484(2007).pdf)>.
- European Council, 2007. Presidency Conclusions, Brussels, March 8–9.
- European Commission, 2001. Green Paper. Towards a European Strategy for the Security of Energy Supply (adopted by on November 29, 2000). Luxembourg.
- European Commission, 2005. Report on the Green Paper on Energy. Four Years of European Initiatives, Brussels.
- European Commission, 2006. *External Energy Relations – From Principles to Action*, Brussels, 12 October 2006 [ec.europa.eu/comm/external\\_relations/energy/docs/com06\\_590\\_en.pdf](http://ec.europa.eu/comm/external_relations/energy/docs/com06_590_en.pdf).
- European Commission, 2007a. An Energy Policy for Europe. Communication from the Commission to the European Council and the European Parliament, Brussels, 10 January.
- European Commission, 2007b. *Energy Corridors*. Community Research, Luxembourg.
- European Commission, 2008a. An EU Energy Security and Solidarity Action Plan. Second Strategic Energy Review. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions, Brussels, November.
- European Commission, 2008b. An EU Energy Security and Solidarity Action Plan. Second Strategic Energy Review 2008. Commission Working Staff Document: Europe's Current and Future Energy Position. Demand-Resources-Investments. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions, Brussels, November, COM (2008) 744.
- Finon, Dominique, 2007. Russia and the 'Gas OPEC: Real or Perceived Threat?'. *Russie.Nei.Visions*, No. 24, November.
- Fredholm, M., 2006. *Gazprom in Crisis*. Conflict Studies Research Centre/Sandhurst, October.
- Friedman, T.L., 2006. The first law of petropolitics. *Foreign Policy*, May–June 28–36.
- Goetz, R., 2007. *Russlands Erdgas und Europas Energiesicherheit*, SWP-Studie S21, Berlin, August.
- Harks, E., 2007. *Der globale Ölmarkt. Herausforderungen und Handlungsoptionen für Deutschland*, SWP-Studie, S 11, Berlin, Mai.
- Helm, D., 2007. *The Russian Dimension and Europe's External Energy Policy*. University of Oxford, Oxford (September 3).
- Hirschl, R., Schlaak, T., Waterlander, O., 2007. *International Gas Markets. Security of Demand and Supply: Different Sides of the Same Coin?* Booz-Allen-Hamilton, Amsterdam–Düsseldorf–Vienna.
- Hoyos, C., 2007. The new Seven Sisters: oil and gas giants dwarf western rivals. *Financial Times*, 11 March <[www.ft.com/indepth/7sisters](http://www.ft.com/indepth/7sisters)>.
- IEA, 2004. *World Energy Outlook 2004*. IEA Publications, Paris.
- IEA, 2006a. *World Energy Outlook 2006*. IEA-Publications, Paris.
- IEA, 2006b. *Optimising Russian Natural Gas: Reform and Climate Policy*. IEA-Publications, Paris.
- International Energy Agency (IEA), 2007a. *World Energy Outlook 2007*. IEA-Publications, Paris.
- IEA, 2007b. *Energy Security and Climate Policy. Assessing Interactions*. IEA Publications, Paris.
- IISS, 2003. *Strategic Survey 2002/3*. An Evaluation and Forecast of World Affairs. Oxford University Press, Oxford–London.
- James A. Baker III Institute for Public Policy of Rice University, 2007. *The Changing Role of National Oil Companies in International Energy Markets*, Baker Institute Policy Report, No. 35, James Baker III Institute, Houston, March.
- Keppler, J.H., 2007. *International Relations and Security of Energy Supply: Risks to Continuity and Geopolitical Risks*. External Study for the Directorate – General for External Policies of the Union. Policy Department. European Parliament, Brussels (February).
- Kumaria, S., 2007. Big questions for big oil. *Wall Street Journal Europe*, 5 September.
- Larsson, R.L., 2006. *Russia's Energy Policy: Security Dimensions and Russia's Reliability as an Energy Supplier*, FOI. Swedish Defence Research Agency, Stockholm, March, FOI-R-1934-SE. Scientific Report.
- Leverett, F., Noel, P., 2006. The new axis of oil. *National Interest*, 62–70 (Summer).
- Locatelli, C., 2008. EU Gas Liberalization as a Driver of Gazprom Strategies?, *Russie.Nei.Visions*, Paris, February.
- Loskot-Strachota, A., Pelczynska-Nalecz, K., 2008. *Gazprom's Expansion in the EU – Co-operation or Domination?* Centre for Eastern Studies, Warsaw, April.
- Maugeri, L., 2006. Two cheers for expensive oil. *Foreign Affairs* 85 (2), 149–161.
- Milov, V., 2008. *Russia and the West*. The Energy Factor. IFRI and CSIS, Paris–Washington, DC.
- Milov, V., Coburn, L.L., Danchenko, I., 2006. Russian energy policy 1992–2005. *Eurasian Geography & Economics* 47 (3), 285–313.
- Morse, E.L., Richard, J., 2002. The Battle for Energy Dominance, *Foreign Affairs*, March–April 16–31.
- Myers Jaffe, A., Manning, R.A., 2000. The shocks of a world of cheap oil. *Foreign Affairs*, January–February 16–29.
- Paillard, C.-A., 2007. *Gazprom, the Fastest Way to Energy Suicide*, *Russie.Nei.Visions*, Paris, March 2007.
- Riley, A., Umbach, F., 2007. Out of gas. Looming Russian gas deficits demand readjustment of European energy policy. *Internationale Politik (Global Edition) Spring Issue* (1), 83–90.
- Ross, M.L., 2001. Does oil hinder democracy? *World Politics* 1, 325–361 (April).
- Sloggett, D., 2007. Cold affront. Icy reaction to Russia's arctic exploration. *Jane's Intelligence Review*, 56–57 (September).
- Simmons, M.R., 2005. *Twilight in the Desert. The Coming Saudi Oil Shock and the World Economy*. Wiley, Hoboken/New Jersey.
- Stern, J., 2006. *The New Security Environment for European Gas: Worsening Geopolitics and Increasing Global Competition for LNG*. Oxford Institute for Energy Studies, Oxford (NG 15, October).
- Stern, J., 2005. *The Future of Russian Gas and Gazprom*. Oxford Institute for Energy Studies, Oxford.
- Stracke, N., 2007. Economic jihad: a security challenge for global energy security. In: *Gulf Research Center (Ed.), Energy Security. Security & Terrorism Research Bulletin*, Issue No. 6, Dubai, August, pp. 26–32.
- Umbach, F., 2003. *Globale Energiesicherheit. Herausforderungen für die europäische und deutsche Außenpolitik*. Oldenbourg Verlag, Munich.
- Umbach, F., 2004. *Global energy supply and geopolitical challenges*. In: Godement, F., Nicolas, F., Yakushiji, T. (Eds.), *Asia and Europe. Cooperating or Energy Security. A Council for Asia–Europe Cooperation (CAEC) – Task Force Report*. Ifri, Paris, pp. 137–168.
- Umbach, F., 2006a. Europe's next cold war. *Internationale Politik (Global Edition)* 1, 64–71 (Summer).
- Umbach, F., 2006b. Die neuen Herren der Welt. Öl gleich Macht: Energie-Verbraucherländer müssen umdenken. *Internationale Politik* (9), 52–59.
- Umbach, F., 2007. *Zielkonflikte der europäischen Energiesicherheit. Dilemmata zwischen Russland und Zentralasien*. DGAPAnalyse, No. 3, Berlin, November.
- Umbach, F., 2008a. Memorandum: the European Union and Russia – perspectives of the common, strategic energy partnership. personal analysis for the sub-committee on foreign affairs, defence and development policy, House of Lords/Great Britain. In: *House of Lords and its European Union Committee, The European Union and Russia. Report with Evidence*, 14th Report of Session 2007–08. HL Paper 98, Norwich–London: The Stationary Office, pp. 185–188.
- Umbach, F., 2008b. *Diversifizierung statt Protektorat. Energiepartnerschaft zwischen Russland und der EU. Die politische Meinung*, September 2008, pp. 25–30.
- Vaitheeswaran, V.V., 2007. Oil, *Foreign Policy*, November–December 24–30.
- Victor, D.G., Jaffe, A.M., Hayes, M.H. (Eds.), 2006. *Natural Gas and Geopolitics*. Cambridge University Press, Cambridge/New York.
- World Energy Council (WEC), 2007a. *2007 Survey of World Energy Sources*. WEC, London. <[www.worldenergy.org/documents/ser2007\\_final\\_online\\_version\\_1.pdf](http://www.worldenergy.org/documents/ser2007_final_online_version_1.pdf)>.
- WEC, 2007b. *Deciding the Future: Energy Policy Scenarios to 2050*. WEC, London <[www.worldenergy.org/documents/scenarios\\_study\\_online.pdf](http://www.worldenergy.org/documents/scenarios_study_online.pdf)>.
- Yergins, D., 2006. Ensuring energy security. *Foreign Affairs* 85 (2), 69–82 (March–April).