Compass 2020

Germany in international relations
Aims, instruments, prospects

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New Shortages, the Revival of Resource Nationalism and the Outlook for Multilateral Approaches

Dietmar Dirmoser

August 2007

FRIEDRICH EBERT STIFTUNG

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The Compass 2020 project represents the Friedrich-Ebert-Stiftung's contribution to a debate on Germany's aims, role and strategies in international relations. Compass 2020 will organise events and issue publications in the course of 2007, the year in which German foreign policy will be very much in the limelight due to the country's presidency of the EU Council and the G 8. Some 30 articles written for this project will provide an overview of the topics and regions that are most important for German foreign relations. All the articles will be structured in the same way. Firstly, they will provide information about the most significant developments, the toughest challenges and the key players in the respective political fields and regions. The second section will analyse the role played hitherto by German / European foreign policy, the strategies it pursues and the way in which it is perceived. In the next section, plausible alternative scenarios will be mapped out illustrating the potential development of a political field or region over the next 15 years. The closing section will formulate possible points of departure for German and European policy.

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ISBN 978-3-89892-793-2

Design and Layout: Dreispringer, Berlin

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Abstract

The subject of energy security was absent from the political agenda for almost two decades. This situation changed when the price hikes of recent years revealed shortages and supply bottlenecks and interruptions in delivery became easier to envisage. This caused many countries to resort to national security strategies. A race for access to oil and gas began that could easily escalate into a "new Cold War" for energy or into a "Hot Resource War."

Most countries in the world are reliant on imported energy. Future development will largely be determined by the anticipated shift in production locations. The importance of the regions in the "strategic ellipse" from the Persian Gulf to the Caspian Sea to Northwest Siberia in supplying the world with gas and oil is growing as production in OECD countries falls. In 2020, one half of oil and gas production will come from countries currently rated as high-risk. Thus energy security will also depend on whether tensions, crises, and international conflicts adversely affect the flow of investments and resources. Neither a diversified energy mix nor increased use of renewable energies nor greater energy efficiency can render the international security of nations and regions immune to the state of the international system. Even if a decision were taken today to drastically reduce the use of fossil energy, there would be no energy security for a transitional period of several decades without sufficient supplies of oil and gas from risk regions. This means that no consuming state can dispense with a foreign-policy energy strategy for the foreseeable future.

This kind of strategy can have a resource-nationalism orientation and emphasize bilateral or coordinated energy procurement diplomacy, but it can also include the application of pressure. A number of states have chosen this option and if this approach prevails, it is likely to result in stronger states exerting their influence at the expense of weaker ones.

A strategy can also take a multilateral approach aimed at making the international energy system equally advantageous for exporting states, large-scale consumers, and newly-industrialized and developing countries. But in this process two fairly new developments need to be considered. On the one hand, the balance of power between the main actors in the international energy system has shifted: the listed energy corporations in the West no longer dominate the scene; rather the national energy companies in the producing countries control production and reserves and these in turn are controlled by governments and will keep Western corporations at a distance.

On the other hand, the attempts by OECD states to impose on the international energy system a liberal regulatory framework favorable to the industrialized nations have failed. If the world is not to disintegrate into two opposing blocs and groups of nations, a new attempt must be made to negotiate the development of a governance structure that is acceptable to producing and consuming countries alike. Two scenarios describe the differences between a world of resource nationalism and a world whose energy system is based on multilateral regulations and balance mechanisms. Germany has the potential to assume a key role in the multilateral scenario.

I. New Geopolitics and Energy Security

After the shock waves of the 1973 and 1979/80 energy crises had receded, the subject of energy security disappeared from the political agenda for almost two decades. It was left to the private corporations to secure energy supplies and they reliably provided adequate quantities wherever energy was needed. There were no sudden supply shortages, interruptions of supply were inconceivable, and prices were low. When in 1998 oil prices (and the gas prices coupled to them) began to rise following a dramatic fall to a "historical" 9.50 US dollar per barrel, nobody was at first perturbed. But prices continued to climb. In 2000 they had more than tripled and there were mass protests against the resultant rise in petrol prices in several EU countries. The next massive price increase occurred in 2002, and in July 2006 a barrel price of 78.40 US dollars documented the highest nominal rate ever reached.[1]

By then, however, under the influence of ever increasing headlines prophesying doom and disaster, the prevailing view was that securing energy supplies was one of the central political challenges of the new century and would remain so in the long term. Robert Skinner of the Oxford Institute for Energy Studies (OIES) stated that the 15–20 year timeout period for energy security policies was now well and truly over.[2] In their attempts to secure energy supplies, governments everywhere are relying on national energy policies often implemented in opposition to or competing with other countries since viable and effective multilateral cooperative approaches to secure energy supplies do not exist. Added to this, the market economy concept of the international energy system is increasingly being challenged. State intervention in the energy sectors of key export countries occur more frequently, and re-nationalizations and in some cases nationalizations are occurring. The politicization and sometimes even militarization of energy relations is gaining impetus in important consumer countries. The new unilateralism and increase in state intervention have triggered a cost-boosting race for access to oil and gas stocks and have set in train a risky "game" involving a resurvey of the world. Fears of an impending "Cold War" over energy and the danger of hot "resource wars" are prevalent.[3]

Regardless of how topical the subject of energy security has since become, the question remains as to what contribution the multilateral system and, more specifically, Europe can and should make to meeting the new challenges. There is no legal basis for a common European energy policy. Responsibility lies with the individual member states and attempts by the Energy Commissioner to coordinate the policies of 27 states and direct them towards common strategic objectives are continually being undermined by resource nationalism on the part of the individual member states. It is quite obvious that many countries have opted for direct economic, political, diplomatic, and perhaps also military "persuasion." Cooperative efforts, either in the European context or with the aim of creating multilateral governance structures directed at secure energy supplies for all, are not seen as a priority for achieving security of supply. Neo-realistic tendencies are frequently being resurrected in the application of energy relations and these are directed at the expansion of influence and the development of positions of power, with cooperation being sought only if it appears to offer advantages.

The requirements of environmental protection, however, are impinging on these unilateral tendencies in energy foreign policy. Not only is the need to reform national energy

1] Adjusted for inflation (2004 dollars) the barrel price at its historical peak in January 1980 was well above the current level of 94.30 US dollars. (James L. Williams: Oil Price History and Analysis, WTRG Economics. Energy Economist Newsletter 2005; accessible at: www.wtrg.com/prices).

2] Robert Skinner: Strategies for Greater Energy Security and Resource Security, Oxford Institute for Energy Studies. Background Notes, June 2006, p. 3 (accessible at: www.riia.org/sustainabledevelopment).

3] Sascha Müller-Kraenner: Energiesicherheit. Die neue Vermessung der Welt, München 2007, pp. 37ff; Frank Umbach: Europas nächster kalter Krieg. Die EU braucht endlich ein Konzept zur Versorgungssichereheit, in: IP (International Politik) 61, No. 2, pp.. 6ff; Spiegel Spezial 5/226: Kampf um Rohstoffe. Die knappen Schätze der Erde, Hamburg.

systems emerging from the ever broadening political consensus that global warming is a pressing problem for the international community, but also the need for more international cooperation on energy matters.

The relevant scenarios reveal that fossil fuels will be vital for energy supply for decades to come, yet environmental protection is not possible without a realistic cut in the use of fossil fuels and without the development of alternative energy sources. Energy systems must be radically reformed and the pollution of the atmosphere by greenhouse gases reduced in every national system (by increased energy efficiency, diversification of energies used, development of renewable energies, and improvement of the environmental compatibility of fossil energies by technical advances). But all national environmental protection measures will remain futile without the cumulative effect achieved by broad international cooperation and coordination. "The internal and the external must be one," emphasize Wolfgang Sachs and Hermann Ott. "It is no longer possible for effective foreign policy to confine itself to defending so-called "national interests": via a number of feedback and cascading mechanisms, national interests today embrace the wellbeing of everybody on this planet."[4]

All energy concepts – whether the EU Commission's Green Paper of March 2006, the US Government Energy Plan of 2001, or the German or Japanese governments' position papers – have a three-goal dimension: economic, environmental, and security-policy.[5] In Japan this is termed the three E's: *energy security*, *environmental protection*, and *economic efficiency*. The German formula is almost identical: an energy policy should bring about security of supply, environmental compatibility, and economic efficiency. The three dimensions are interrelated and each on its own involves much more than the energy problem alone.

The present article does not offer a broad analysis of the energy problem and the various aspects of energy policies with all the interconnections involved, but concerns solely energy security. Thus the analytical focus is on only one of the three dimensions in the triangle of objectives. This does not mean that the scope of the issue is being unduly narrowed, however; it is simply an attempt to make a clear analytic distinction between the various layers of the problem, which are often confused in debate. Thus, for instance, environmental protection, if it leads to a reduction in the use of fossil energies, can

impact on countries' energy security situation, but environmental protection does not automatically lead to energy security, at least not in the short or medium term. An increase in energy efficiency (involving a "domestic energy source") can undoubtedly influence the security of energy supply. But in the short or medium term, it does not automatically result in energy security: even if a political decision were taken today to reform the energy system in the direction of a dramatic reduction in the use of fossil energy – which is not likely – there would be a transitional period of several decades with a energy security problem resulting from the relationship, tensions, and problems between the small group of countries producing fossil energies and various groups of consumer countries. The level of action chosen thus depends on the time perspective envisaged. In the short term, energy security is linked to the management of sudden supply shortages. In the medium term, it is concerned with the setting up of regulations and a governance structure for the international energy system and the management of conflicts with deeper implications. In the long term, energy security is also dependent on how climate change is handled and on ways of dealing with the prospect of depleting oil and gas reserves and on progress made in the technological reorganization of the energy system. As the measures to

4] Wolfgang Sachs/Hermann Ott: Öljunkies auf Entzug, in: IP (Internationale Politik), 62, No. 2, February 2007, p. 14.

5] Commission of the European Communities: Green Paper. A European Strategy for Sustainable, Competitive and Secure Energy, Brussels 8.3.2006 (COM(2206) 105 final); National Energy Policy Development Group: Reliable, Affordable and Environmentally Sound Energy for America's Future, Washington 2001.

tackle long-term problems have no effect on the short- and medium-term problems to be solved, this vital sector is not included in the approach adopted here.

Hence the pragmatic definition of energy security used in the Clingendael Report will serve as the basis for what follows. This refers solely to the short- and medium-term perspectives. According to the definition of this study carried out by the Clingendael International Energy Programme (CIEP) in the Hague for the EU (DGTREN), energy security is understood to be the minimization of the risk of energy crises using the tools of politics.[6] In this context energy crises are prolonged disturbances of the balance between supply and demand that provoke price leaps and negative repercussions for the economies affected. Energy security policy aims to prevent supply bottlenecks and even interruptions in supply. This involves not only crisis management and geopolitics, but also sustainability in the way international markets are designed and in terms of security architecture. Prior to a detailed discussion of political options, scenarios, and the available courses of action, however, we shall first take a look at structural changes and more recent development trends in the international energy system.

I.1 Structures, Transformations, and Trends in the International Energy System

One thing most states have in common is that they cannot cover their energy requirements from their own sources. An overwhelming majority of the 193 countries in the world rely on a dwindling group of exporting countries that have an abundance of energy resources. Oil and gas show the most marked imbalance. Most exportable production and usable reserves are accounted for by the unstable regions in the "strategic ellipse" stretching from the Persian Gulf to the Caspian Sea and North West Siberia, and the importance of this region will grow with the depletion of the oil and gas reserves in the European OECD countries. Reserves of coal, on the other hand, are equally distributed around the globe.[7]

The international energy system acts as intermediary between supplies concentrated in a few countries and broad demand. A gigantic machinery of energy production, processing, and distribution supported by annual investments in the triple-figure billion range ensures that every year four billion tonnes of liquefied, 4.6 billion tonnes of solid, and 3,000 billion cubic metres of gaseous energy carriers are available[8] and are conveyed from their production sites to consumers often far away. Barely one third of primary energy production worldwide is traded interregionally and 60% of crude oil production. In terms of value, trade in energy accounts for 10% of world trade. Interdependencies within the international energy system are on the increase, something that is demonstrated inter alia by the fact that energy trading is growing considerably faster than energy consumption.[9] Energy prices and oil prices in particular are regarded as key economic prices.[10]

6] Clingendael International Energy Programme (CIEP): Study on Energy Supply Security and Geopolitics. Final Report, The Hague 2004, pp. 36 ff.

7] But not even major exporting nations are independent of external energy supplies. Russia, for instance, has to import electricity, natural gas, and coal; Iran petrol; and the United Arab Emirates petrol and natural gas.

8] Federal Ministry of Economics and Technology: Energiedaten. Nationale und International Entwicklung, Berlin 2006; T 33 ff (accessible at: www.bmwi.de/Navigation/Techniologie-und-Energie/Energiepolitik/Energiedaten.html.

9] European Commission, Directorate-General for Energy: Energy in Europe. Economic Foundations for Energy Policy (The Shared Analysis Project); Special Issue, Luxemburg, December 1999, p.38; International Energy Agency: World Energy Outlook 2002, Paris 2002/2, p.70f.

10] One group of experts, including Joseph Stiglitz, is of the opinion that high energy prices are a highly effective economic brake. This would seem to be borne out by, for instance, the global economic slumps in the mid 1970s, early 1980s and 1990s being preceded in all instances over an interval of one year to eighteen months by a sharp increase in oil prices. Another group points to the fact that industrial nations today need 40% less oil for each dollar they earn than in the early 1970s, meaning that IT and service-based companies today are far less susceptible to leaps in oil prices. Individual experts even consider high oil prices to be growth stimulating: Andrew McKillop, for instance, in an analysis for STEM, the Swedish energy agency. McKillop demonstrates that when prices rise the demand for oil increases rather than decreases and stimulates growth. A. McKillop: Price Signals and Global Energy Transition; Ms 2004.

Financial transactions linked to the energy sectors are a major factor in the international monetary and finance system on account of their size alone. The market for "paper oil" that developed in the 1980s with the futures contract markets in New York, London, and Singapore was originally used by market participants for hedging.

Yet recent years have shown that the expectations, assumptions, and speculations of investors in themselves can be the cause of volatility. An amount in the form of futures, options, and other derivates several times higher than the actual quantity of crude oil ("wet barrels") is traded on stock exchanges today, 90% by hedge funds and investment banks which have nothing to do with the oil industry and usually hold their paper oil only for a short period. Market observers talk of a financial market bubble in paper oil, with the total amount invested in oil futures rising between 2000 and 2006 from 40 billion to 140 billion US dollars. The fact that in recent years there has been an increasing tendency to make "bets" on high oil prices has driven up the prices for oil actually traded. Some analysts estimate that the "speculative component" in current oil prices accounts for over 20 US dollars per barrel.[11]

The most important energy carriers, such as oil, coal, and gas, are freely traded internationally, although this is not safeguarded by international agreements. Free trade does not mean that the markets involved are perfect markets, however. On the contrary, on energy feedstock markets distortions caused by cartels, oligopolies, subsidies, and institutional deficits are more widespread than on other markets.[12] A particularly aggravating factor is that on fuel markets an effective allocation of resources is made difficult by restrictions on investment possibilities and technology flows: monopolist state enterprises in both production and consumer countries or equally monopolist "national champions" with state support use their strong position to curb competition.

Despite all the asymmetries, market distortions, and price surging tendencies, the international energy system has functioned tolerably well for some time. This even applies to the current high-price phase which in the view of most experts is not an energy crisis: the balance between supply and demand is not permanently disrupted, there is no sustained volatility, but a gradual dropping of prices which are currently 20% lower than in the previous year.[13] The major disruptions to production occurring since 2003 in Venezuela (due to strikes), Iraq (war), and Nigeria (political instability), and those caused by Hurricane Katrina did not lead to serious shortages in supply.

Because of their reserves and the flexibility of their energy systems, many states that are dependent on imports were able to weather not only supply bottlenecks but also temporary total breakdowns in supply. Nonetheless, developments in the international political energy economy can be observed since the 1990s that indicate an increase in the threat of an energy crisis. These include in particular (a) an inadequate expansion of supply in the low-price phase, (b) a dramatic rise in demand from the newly industrialized nations, (c) growing dependence on fossil fuels, and (d) geographic shifts in supply and a growing concentration on countries in the "strategic ellipse."

11] Cf. Mineralölwirtschaftsverband e.v.: Preisbildung am Rohölmarkt, Hamburg 2004, pp. 35ff; Willi Semmler: Was den Ölpreis bewegt; Spiegel Online, 3.8.2006. The Economist speaks of a "fear premium" of between 10 and 15 US dollars (The Economist, 5.1.2006).

12] According to UNDP (World Energy Assessment. Energy and the Challenge of Sustainability, New York 2000, p. 24) the financing of world energy production is a sector in which there is massive government intervention: fossil fuels and nuclear energy were subsidized worldwide by public funds in the mid 1990s to the tune of 250–300 billion US dollars annually.

13] On the subject of the term "equilibrium" see Frank Hahn: On the Option of Equilibrium in Economics, Cambridge 1973. Equilibrium is assumed when market signals (prices, restrictions on quantity) do not force the actors to adjust their either concepts of reality (theories) or their strategies (policies). According to this theory, volatility and market equilibrium are opposed.

a) Tight Markets

In the low-price phases of the 1980s and 1990s, there was scant investment in expansion of supply and in refinery capacities, although demand was constantly rising. One of the widespread convictions about the international energy system included up to quite recently the idea that there was a surfeit of energy (particularly oil and gas) and that there was no problem for large international companies (Majors) to maintain equilibrium between supply and demand. It was recalled that in the 1980s, industry had forced OPEC to its knees by expanding supplies from deposits outside the cartel (North Sea, Gulf of Mexico, Alaska, West Africa) and thus brought about a drastic drop in prices. After the demise of the Soviet Union they could additionally resort to the Russian and Central Asia reserves not available to them hitherto.

Low prices and growing pressure from the financial markets and shareholders seeking high short-term gains – although investments in the energy sector should be long-term and have a longer "maturity period" – caused the Majors to concentrate in the 1980s and 1990s on oil that was cheap to extract. There was little incentive to develop small, remote fields with complicated conditions and high development costs, although it was becoming apparent that these would be needed in the foreseeable future to replace the slowly depleting major fields. And since high profits could not be obtained from investment in refineries, there was a long period during which no new refineries were built at all.[14] Despite considerable efforts, several large companies were not able to remain competitive in this phase.

Texaco and Gulf were swallowed by Chevron, Amoco and Arco by BP, Petrofina and Elf by Total, and Mobil by Exxon. Even BP is now seen by stock exchange analysts as a potential take-over candidate. The way the Majors have aligned their investment policies to shareholder values has ultimately led to international spare capacity dropping to the lowest mark for the past 30 years,[15] and to refinery capacities[16] falling simultaneously. The market has narrowed and is seen as "tight." Occurrences such as hurricanes, disasters, assassination attempts, unrest, civil wars, and international tensions can cause nervousness on the markets and thus trigger massive price surges, as in October 2005 when one third of the US loading and refining capacity was lost due to hurricanes. And when problems occur simultaneously at several points in the system, supply bottlenecks have to be reckoned with.

b) Demand Surge from Newly Industrialized Nations

High growth rates and successful developments in several newly industrialized nations have also contributed to a narrowing of the market. This has caused world demand for energy, and in particular for oil and gas, to grow more strongly and rapidly than most actors had anticipated.

China, Asia's largest oil producer, meets two thirds of its energy requirements by coal.

14] c.c. Michael T. Klare: Statement on Energy Supplies in Eurasia and Implications for U.S. Energy Security before the U.S. Senate Committee on Foreign Relations, Subcommittee on International Economic Policy, Export and Trade Promotion, 27 September 2005; Robinson J. West: Testimony on Energy Security before the U.S. Senate Committee on Commerce, Science and Transportation, 21 September 2005. West is Chairman of PFC Energy, a former investment banker, government consultant, held high-ranking positions under Presidents Reagan and Ford, and is reputed to be one of the architects of the US offshore oil policy.

15] During several periods in the 1980s and 1990s OPEC reserves, particularly those of Saudi Arabia, had a buffer function on swings in demand. In 1985, OPEC had a spare capacity of 10 million bpd that could be activated or deactivated as required. In the meantime, reserves have shrunk to 1–2 million bpd as the difference is required to cover increased demand. Bassam Fattouh is right in emphasizing the decisive question as being who should bear the costs of keeping reserve capacities (Spare Capacity and Oil Price Dynamics, in: Middle East Economic Survey, Vol. XLIX, no. 5, 30 January 2006). The Majors are apparently not willing to do so, since keeping capacities for minimal use is hardly reconcilable with a shareholder-value orientation.

16] In 1999 these amounted to over 6 million bpd according to PFC Energy and plummeted to around zero in the following years. Investments in transport infrastructure (tanker fleets, pipelines) did not keep pace with growth in demand either.

But in parallel with an economic boom that has lasted now for 25 years, its energy, and in particular oil, requirements have risen. In 1993 China had to import oil for the first time. China is now the second largest oil consumer after the USA, and its import requirement, currently at 40%, is showing two-figure growth rates. From 2010 on China will also be dependent on imports of natural gas.[17]

In addition to China, India and other newly industrialized and developing countries are also contributing to the current surge in demand. None of the relevant energy agencies and neither the Majors nor OPEC recognized demand trends early enough to be able to react and thus prevent the rapid constriction of the market witnessed in recent years.[18]

According to the reference scenario of the International Energy Agency (IEA), almost 50% more energy will be needed by 2030 than is the case today. Over 70% of the additional

requirement will be due to countries outside the OECD.[19] Here per capita consumption in the growing population will continue to rise parallel to successful growth and progress in development, whereas in the industrialized nations the additional requirement will be covered to a significant extent by energy saving and improved energy efficiency.[20]

c) Growing Dependencies

The IEA trend scenario assumes with growing consumption a higher dependence on fossil energy, increased dependence on imports, and dependence on a dwindling group of exporting states.

According to this scenario,[21] current reserves of fossil energy carriers will continue to be sufficient to keep the global economy moving in 2030. The Paris agency believes it to be quite likely that, with prices rising moderately, there will be enough investment in the maintenance and expansion of production capacities to balance supply and demand for primary energy. Nevertheless, all the main risk factors concerning energy security will not only continue but will increase, as described below.

This is initially the case because world consumption of primary energy is growing as though supplies of fossil energy carriers were unlimited and climate change was not occurring. By 2030 it will increase globally by 1.6% annually – in OECD Europe by 0.6%. In Germany, however, it has been uncoupled from economic growth since the 1990s and will drop by a further 10% by 2020.

There is not much likelihood of the worldwide high degree of dependence on fossil energy carriers changing much either. One third of overall demand for primary energy consists of one third oil, one quarter coal, and one fifth gas; 13% renewables can be added to this, including commercially utilized and non-utilized biomass and hydropower, plus 6% nuclear energy and 2% hydropower. According to the IEA reference scenario, the share of fossil fuels – currently at 80% – will increase marginally, although a drop in oil consumption is anticipated. Coal and gas consumption will increase, however. An valorization of coal can be expected, since coal supplies are much greater and more evenly distributed than oil and gas reserves. In China and India the consumption of domestic coal in particular will grow by

17] Heinrich Kreft: Chinas Politik der Energie- und Rohstoffsicherung als Herausforderung für den Westen, in: IPG (International Politik und Gesellschaft), 2/2007, pp. 48ff.

18] Trend forecasts for the international energy system are generally surprisingly unreliable. The oil price development predictions of the past five years were, for instance, all wrong; not one of the 20 leading analysts from US banks and the raw materials industry predicted the tripling of prices that took place after 2002. c.f. Udo Rettberg: Öl-Experten geben Entwarnung, in: Handelsblatt No. 134, 14.7.2006.

19] International Energy Agency: World Energy Outlook 2006, Paris 2006, p. 68.

20] The industrial nations with one fifth of the world population currently account for one half of the world's energy resources.

21] IEA: World Energy Outlook 2006, loc. cit., pp. 53ff

60% by 2030, and in Russia and USA a clear increase in consumption is also expected.[22] If no progress is made in making coal combustion more environmentally friendly by using modern technologies, there will be a sharp increase in the emission of environmentally harmful gases and the likelihood of reaching climate-change goals will retreat into the far distance.

The growing importance of natural gas in the international energy mix is due to power stations in many countries being switched from coal or oil to gas because their combustion emits fewer pollutants. But in the case of natural gas, this is a temporary solution at best. With a statistical lifetime of 60 years,[23] gas supplies will outlast oil reserves, but gas too will reach its maximum level of production within a few decades. Added to which gas is expensive, as high investments in pipelines are protected by long-term supply contracts which either fix gas prices or tie them to oil prices. There will not be an international gas market with free price formation until the development of an infrastructure for liquid national gas (LNG) has made further advances and the separation of oil and gas production and of oil and gas trading has been completed.[24] Because natural gas is largely transported through pipelines, it is the energy carrier with the greatest dependence between consumers and producers and hence susceptibility to crises.

Commercially exploited renewable energies, such as wind, solar, geothermal, and tidal energy, will amount to only 2% of world primary energy by 2030 in spite of high growth rates – in OECD Europe 4%. If the biomass and hydropower is include, the figures rise to 14% and 15% respectively. By 2030 the share of renewables in providing electricity and long-distance heating will grow worldwide to 13% – in OECD Europe to 21%. (In Germany the share of primary energy consumption accounted for by renewables was 4.6% in 2005; it is expected to rise to 10% by 2020.) Even if progress is made, for reasons of climate change or energy security, in further lowering the use of fossil energy and in making much more use of renewable energies, energy security will not be attainable without securing supplies of fossil fuels.[25]

d) Geographic Shifts in Production

Developments are further complicated by signs of a shift in production locations. A production plateau or onset of a decline in production is already under way in all production areas for oil and gas outside OPEC, Russia, and some successor states of the Soviet Union. Oil production in the USA is at the same level as in 1940, with a declining tendency. North Sea oil is running out, Great Britain is already dependent once more on imports. Thus the regions of the "strategic ellipse" from the Persian Gulf to the Caspian Sea and North West Siberia are continuingly gaining in relevance for world energy supplies. Just five states – Saudi Arabia, Iran, Iraq, Kuwait, and the United Arab Emirates – have over 60% of economically extractable oil reserves; in Europe, Norway alone will be able to maintain its position as an energy power in the medium term. The US Department of Energy estimates that by 2025, 32% of world oil production will come from the Gulf Region, 13% from Africa, 14% from Latin America, and a further 14% from the states of the former Soviet Union.[26] Similar geographic shifts in energy supply are visible for natural gas. One third of all proven gas reserves are in Russia and the countries of the former Soviet Union, a further third in the Middle East, one half of which is in Iran.

22] Currently two thirds of the energy market are covered by coal in China, in India one third, and in the USA one fifth. In China three quarters of electricity supplies are from coal, and in the USA one half.

23] World Energy Outlook 2002, loc. cit., p. 113.

24]Currently 20% of natural gas production is traded on an interregional basis. By 2020 it will be 45%. One quarter of gas traded is liquid gas or LNG. Cf. John V. Mitchell: Renewing Energy Security, The Royal Institute of International Affairs, July 2002, p. 11; idem: A New Era for Oil Prices, The Royal Institute of International Affairs, August 2006, p. 27 (accessible at www.chathamhouse.org.uk)

25] World Energy Outlook 2006, loc. cit.

26] U.S. Department of Energy. Energy Information Administration: International Energy Outlook, Washington 2005, R1.

In several countries these shifts mean that their present reliance on imports for energy supply will increase even further. Germany currently obtains (not counting uranium) 62% of its energy requirements from abroad (97% of its mineral oil, 83% of its gas, and 61% of its coal requirement). One half of the EU's current energy requirement is covered by imports and by 2030 the import share will rise to 70%. In the case of crude oil the import share will rise to 90% by 2030. The EU's imports of natural gas will double, for not only is production within the EU declining, but at the same time the market share for natural gas in on the increase. At the moment 54% of gas supplies are imported; by 2030 reliance on imports will have risen to 80%. Dependence on individual suppliers will also grow. In the case of Germany, the importance of Russia will continue to increase: 37% of Germany's natural gas supplies come from Russia[27] and 40% of gas imports for the EU as a whole – seven EU states obtain 100% of their natural gas from Russia. Algeria, too, plays an important role for supplies to Europe, with 30% of EU imports. It is connected to Italy and Spain by pipelines and in the states of southern Europe has a market share of 40–60%.

e) Ways Out of Dependence

In security terms, high dependence rates and especially dependence on a few suppliers is risky. The antidote would be diversification, but the options are limited and not very enticing. In the case of natural gas, alternatives to Russia and/or Algeria would be Iran, the Middle East, and the states bordering the Caspian Sea. But import infrastructures are oriented towards Russia, making this option merely theoretical – at least for as long as there is no existing LNP infrastructure. On the other hand, none of the alternative suppliers offer greater political stability and less supply insecurity than the present major suppliers. Diversification that does not include Russia is also difficult to imagine as gas from the Caspian Region would probably be conducted by Russian companies through Russian territory in order to get to Europe.

I.2 Peak Oil and Security of Supply

There is little doubt that consumption of energy and in particular oil will rise rapidly over the coming decades. Experts do not agree, however, on how long oil and gas reserves will last if supplies expand at the same rate.

The oil price explosion of recent years was seen by many as a prelude to an ultimate oil crisis, in the course of which sooner or later "we would run out of oil." Since the Shell geologist King Hubbard correctly predicted in the 1950s that US oil production would reach its peak in 1970 (peak oil) and then decrease,[28] , there has been disagreement on when the physically inevitable zenith of global production would be reached, marking the onset of a pronounced fall in production from this point on.[29] The adherents of the peak oil theory see confirmation for their assumption that we have already passed the peak in the fact that supplies currently seem to react only weakly and haltingly to the undoubtedly strong demand impulses. The US Department of Energy, for instance, calculated an elastic reaction in supplies and set aside 24.1 million bpd for anticipated oil production from Indonesia, Iraq, Nigeria, Saudi Arabia, and Venezuela.

27] Federal Ministry of Economics and Technology/Federal Ministry of the Environment, Nature Conservation and Reactor Safety: Energieversorgung für Deutschland. Status Report for the Energy Summit of 3 April 2006, Berlin 2006, p. 12.

28] According to King Hubbard, the progress of production in an oil field can be described with a bell-shaped curve. First, oil is extracted that is easily accessible and cheap to extract and the productivity of the field rises. After around one half of the reserves are depleted, from the depletion mid-point, production becomes increasingly more difficult and expensive and output falls. Even though economic and political factors can influence the form of the curve, it is still considered by the adherents of the peak oil theory to be a satisfactory model for the development of world production despite its conceptually weak statistical foundation.

29] Robert L. Hirsch: The Inevitable Peaking of World Oil Production, in: Atlantic Council Bulletin, Vol. XVI, No. 3 October 2005.

In fact, the five countries only achieved a daily production of 18.9 million barrels.[30]

There are in addition a number of developments that "peak pessimists" like to use as evidence. One of these is the fact that for several decades no really big fields like the Mexican Cantarell complex or the legendary Saudi Ghawar field have been discovered.[31] Today one half of global oil production comes from 102 fields with a daily production of over 100,000 barrels which have been exploited for over 20 years; 14 giant fields that supply one fifth of world production have even been in operation for an average of 43 years. All these fields are showing signs of depletion; production is falling – in some cases dramatically.[32] Furthermore, for some time now twice as much oil has been produced annually than new reserves found.[33] The reserves of most large private oil companies today no longer grow by means of exploration and new projects but by mergers and purchases. The quantities of reserves reported by some OPEC states are also possibly exaggerated. In the 1980s, Abu Dhabi, Iran, Iraq, Saudi Arabia, and Venezuela reported far greater new reserves than the actual quantity of oil found; OPEC quotas were based on the amount of reserves.

The extent of concern aroused by these developments is, however, ultimately based on belief. On the BP website, where the peak oil theory is classified as "unsuitable" for forecasting global oil supply, the experts are divided into three groups; the pessimists, the optimists, and the realists. Peter Davies, BP's chief economist and publisher of the renowned Statistical Review of World Energy, belongs to the optimist group and is of the opinion that oil will "never" run out. The geologists of the Association for the Study of the Peak Oil belong to the pessimist group, as do the authors of numerous successful books, some of whom merely reshuffle well-known indicators and present them in various apocalyptic guises.[34]

The decisive question to be asked in connection with reaching maximum production is, however, how much oil is left. Current estimates are based on two of the total three billion barrels still being available. According to most experts, economically extractable reserves – those reserves

calculated according to the America's Securities and Exchange Commission (SEC) definition of economic efficiency which can be produced with current technology – will last for 45–50 years. But since production for many companies is viable below the economic efficiency limit set by the SEC and companies are constantly developing new reservoirs and extracting more from the fields with modern technologies, the lifetime of reserves tends to be under- rather than overestimated. It was always be subject to upward adjustment: in the 1980s it was 29 years, at present it is just under 50 years. According to most studies the peak will be reached between 2020 and 2025 after which, after several years of production at a plateau, world oil output will decline, possibly by one quarter in the first 20 years.[35] The timing of the production maximum and the length of the plateau will be influenced by technological developments in field exploitation, new findings, the price level, and government policies on promoting transitional and alternative energies.

30] Klare, loc. cit.

31] Shaybah, one of the newer fields, in operation since 1975, produces at half a million bpd less than one tenth than the world's biggest oil field, the Saudi Ghawar field, discovered in 1948 and with a daily production of 5.5 million barrels. Cantarell in Mexico produces 2 million barrels per day.

32] International Energy Outlook 2002, loc. cit., p. 100f.

33] Cf. The Economist, 12 April 2006: Oil Companies. Improving Their Fieldcraft, see also: West, loc. cit.

34] Cf. inter alia Kenneth Deffeyes: Beyond Oil: The View from the Hubbard Peak, New York 2005; David Goodstein: Out of Gas: The End of the Age of Oil, New York/London 2004; Richard Heinberg: The Party's Over: Oil, War, and the Fate of Industrial Societies, Gabriola Island (Can.), 2005, 2. revised. and expanded edition, dt: Munich 2004; James Howard Kunstler: The Long Emergency: Surviving the Converging Catastrophes of the Twenty-First Century, New York 2005; Matthew R. Simmons: Twilight in the Desert. The Coming Saudi Oil Shock and the World Economy, Hoboken 2005.

35] The Federal Institute for Geosciences and Natural Resources expects the production maximum for conventional oil to occur between 2015 and 2020, while the US Geological Survey reckons with a peak in 2024.

From this we can conclude that the market today is not tight because the global production maximum has been passed. Availability of reserves will not – for the time being – stand in the way of an expansion of supply in pace with growing demand. The problem of the production maximum nevertheless deserves attention, since one thing is sure: there is not much time left. Calculations by the Washington consulting company PFC Energy show that the oil branch could reach its plateau between 2015 and 2020 at a daily production of 95–100 million barrels (2005: 82 Million bpd),[36] even if it proved possible to utilize the value of heavy oil, oil sand, and shale oil and other unconventional fossil fuels.[37] When the plateau has been reached and demand continues to rise, part of the demand will either be eliminated by the price or will switch to any other sources available. If this occurs at very short notice and unexpectedly, serious economic and social upheavals can be anticipated. Oil will still be available and essential in the international energy system for decades after the peak, yet from a certain point on, the oil sector will lose its ability to react flexibly to increasing demand and hence its function as a demand buffer for the entire energy system.

Preparations for this situation are not yet far advanced. But slowly the debate is changing. BP is starting to present itself as "beyond petrol," President Bush has made a pledge to overcome America's "oil addiction," and in many quarters billions are being invested in the development of energy technologies for the low-oil age, even though this is only a fraction of the 20.000 billion US dollars that the IEA calculates will flow into energy supply with fossil energies in particular by 2030. The leisurely pace at which those responsible are acting borders on negligence. The fact that data on known reserves are unreliable does not mean that the pessimists are wrong and that the limited supply of geological resources is not a problem. We just do not know when exactly the problem will become apparent. If a risk cannot be excluded, it is logical to invest sufficient sums in precautions, something governments and individuals do automatically in the case of other risks. States maintain armed forces, for instance, not because they know a war will occur but because the consequences would be disastrous if it did occur and they were not equipped for it.

If the peak is reached earlier than expected, the world will drift into a chaotic transitional phase. Robert L. Hirsch, a seasoned energy expert with no tendency to apocalyptic visions, has supplied details on how this might develop in a report for the US Energy Department that submits all existing studies on peak oil to secondary analysis.[38] The Hirsch Report calls on those responsible to face up to this "classic risk management problem." His recommendation: damage limitation should be started as soon as possible, as at least 10–20 years of intensive effort on the supply and demand aspect are called for prior to attainment of the production peak if the necessary changes in the international energy system are to be effected. A broad-based preventive program of this kind is so far without precedent.

I.3 The Shift in the Balance of Power between Energy Market Actors

There are few markets that exhibit such grave distortions as the international energy market, in which cartels, oligopolies, subsidies, and government intervention determine

36] West, loc. cit.

37] Unconventional oil (heavy oil, sand oil, oil shale, deep-sea oil, polar oil, and liquid gas /NGL) could not be produced cost effectively until recently and were not included in most reserve estimates. Whereas one group of experts, including Robinson West, includes unconventional oil in the lifetime calculation and does not expect any notable overall change, others expect technical progress to make possible better exploitation of existing fields (enhanced recovery) and being able to begin exploiting deposits hitherto untouched because of high extraction costs. If "expensive" and above all "unconventional oil" is included in the calculation, there would be "ample reserves" for the coming decades. Cf. Michael Bräuniger/Klaus Mathies: Langfristige Entwicklungen auf dem Markt für Energierohstoffe, in: Wirtschaftsdienst, No. 8/2005, pp. 528ff.

38] Robert L. Hirsch/Roger Bezdek/Robert Wendlding: Peaking of World Oil Products: Impacts, Mitigation, and Risk Management, Washington 2005.

developments. Key market functions are fulfilled in spite of this, since the international energy system has so far ensured that demand impulses meet production, and investment in energy resources is sufficient in order to produce and start trading with the quantities that are required to cover global import needs. This is not usually at competitive prices. Costs of production average approx. 10 US dollar per barrel, and in the Middle East less than half of that, but the market price, geared to the most expensive producer, is currently between 60 and 70 US dollars. The difference – in oversimplified terms – is described in theory as an economic rent and would not exist without the cartel policy and the oligopolistic structures.

For many decades Western energy companies were not only the dominant protagonists of the international energy market but simultaneously the bodies that owned the largest proportion of energy rents. This made it easier for key market participants such as the USA and the EU states to accept reliance by their energy systems on an economic and trade system full of defects but ultimately predictable, and to develop an interest in its viability and future development while at the same time being able, if necessary, to use political muscle to enforce their energy interests. Yet with the new, growing fear of supply bottlenecks and shortages, there is a danger of powerful states lapsing into neo-mercantilist concepts of foreign trade. This makes competition for energy a zero-sum game in which it is vital to be on the winning side. Not only in the USA is there a growing temptation to split up international markets in response to growing import dependence, making exclusive relations with dependent suppliers the basis of supply security and, if necessary, squeezing out competitors, as demonstrated by China and its resource relations with Africa. Geopolitics and the free market thus increasingly turn into opposing forces.

Oil, gas, and coal are still in the main being traded freely, however, although this is not secured in international agreements. The fact that a significant part of this trade is carried out in the form of long-term supply contracts does not mean that there are restraints on trade or competition, given that these contracts usually include re-negotiation clauses and cater for price adjustments in the event of fluctuations on the raw materials or end-product markets. Trade with fossil energy carriers is expanding. In the past 20 years it has grown at twice the pace of energy production – in the 1990s even at three times that rate[39] – and will make a further massive leap forward in coming decades, both in absolute terms and in terms of share of production. The share of supra-regional net trade in global supply will increase from 45% for oil today to 58% by 2030, from 16% to 28% for gas, and from 9% to 14% for coal.[40] Energy trade listed on stock exchanges will probably expand faster than the portion realized via long-term contracts. This means that mutual dependencies within the international energy system will continue to grow.

Unlike trade, investment and technology flows in the energy sector are subject to considerable restrictions. The flow is curbed by the governments of exporting countries which either reduce the scope of action of foreign companies or exclude them from certain projects or the entire market. In the 1960s, seven listed multinationals (the Majors or IOCs /International Oil Companies) controlled 85% of the world's oil and gas reserves. Many oil producing countries tried to regain control of their raw material resources by means of nationalization in the 1960s and 1970s. But many governments lost interest in their energy companies in the low-price phase of the 1980s and 1990s, and energy sectors were reopened to foreign investors, although this did not happen anywhere to a great extent. The trend to open up seemed to gain in impetus world wide after the demise of

39] European Commission, Directorate-General for Energy: Energy in Europe. Economic Foundations for Energy Policy (The Shared Analysis Project), Special Issue, Luxemburg, December 1999, p. 38.

40] International Energy Outlook 2002, loc. cit, p. 70f.

the Soviet Union. Yet the wind has changed again. Resource nationalism is experiencing a renaissance in a number of natural resource exporting countries, and more and more governments are acting in an appreciably more restrictive manner. IOC cooperation in joint ventures, for instance, is cancelled, concessions are withdrawn, and sometimes there are even expropriations.

The private energy companies account for around one half of world oil production, but they now have access to only 23% of world reserves and only 6% of this access is unlimited. The greater part of proven reserves is in the hands of state-owned companies (National Oil Companies, NOCs) and is ultimately controlled by governments. Thus the energy supply of importing countries and future developments on international energy markets depend to a great extent on a small group of NOCs and the governments behind them. And the power of the NOCs is growing. Several of them, driven by high energy prices, are in the process of challenging the Majors. ExxonMobil is still the world's largest company and in 2005 made exorbitant profits totaling 36 billion US dollars. But more and more NOCs are successfully placing themselves at the top of the relevant company rankings. Gazprom, Petrochina, Petrobras, Sinopec, Rosneft, and Lukoil are already amongst the 15 largest energy companies in the world.[41] Taking oil and gas output alone, there are seven state-owned companies among the ten largest producers and the best placed private company, ExxonMobil, is number five. Five small NOCs (Saudi Aramco, Kuwait's Petroleum, the Iranian NIOC, the Algerian Sonatrach, and the Abu Dhabi National Oil Company) together account for one quarter of world production.[42]

It should be noted that both the degree of control by governments and the politicization of NOCs varies considerably from one country to another. Companies such as Statoil (Norway), Petronas (Malaysia), or Saudi Aramco (Saudi Arabia), for instance, are regarded as efficient, competitive companies in terms of an entrepreneurial logic. In the case of others – such as the Nigerian NNPC or the Venezuelan PDVSA – ideological orientations and political stipulations largely determine company decisions. The main task of state-owned energy companies is to supply the rentier state with funds for its budget, which includes in particular the alimentation of corrupt clientele systems and the assumption of state responsibilities in the areas of infrastructure and social policy. In 2005, for instance, the Venezuelan PDVSA had to spend around 7 billion US dollars to finance state programmes in the sectors of education, health, food supply, and job creation.[43]

Many NOCs play a special role in their governments' pursuit of geopolitical aims. Venezuela, for instance, has been able to buy considerable influence in the region by subsidizing a number of Latin American states with cheap oil and has been able so far to prevent the formation of an alliance against the "Bolivarian" left-wing populism of President Chávez. The Russian gas and oil giants Gazprom and Rosneft are regarded as "willing henchmen" of the Kremlin[44] in expanding Russian influence in Europe and Asia and in the positioning of Russia as a superpower. The internationally operating Chinese energy companies have one explicit foreign policy raison d'etre: to secure Chinese energy security.

The NOCs do not compare favorably with the independent oil companies in many ways. They invest less in exploration, develop a smaller proportion of their reserves, their tech-

41] PFC Energy 50. A ranking of the World's Largest Listed Firms in the Oil and Gas Industry, January 2007; accessible at: www.pfcenergy.com; cf. also PIWs Top 50: How the Firms Stack Up (accessible at: www.energyintel.com).

42] Valerie Marcel/John V. Mitchell: Oil Titans. National Oil Companies in the Middle East, London/Washington 2005; Valerie Marcel: Investment in the Middle East Oil: Who Needs Whom? Chatham House Report, February 2006.

43] David R. Mares/Nelson Altamirano: Venezuela's PDVSA and World Energy Markets: Corporate Strategies and Political Factors Determining its Behaviour and Influence (Case Study from the research project "The Changing Role of National Oil Companies in International Energy Markets," Rice University, James A. Baker III Institute for Public Policy, and the Japan Petroleum Energy Center), Houston 2007, Ms., S. 46 (accessible at: www.rice.edu/energy/publications/nocs.html).

44] "Putins willige Handlanger. Der russische Gasriese Gasprom wird aus dem Kreml gesteuert. Seine Geschäfte bleiben undurchsichtig", in: Die Zeit, 27.4.2006.

nology is not so modern, their management is at times less coherent, and they handle information more restrictively. One of the chief findings of the most comprehensive research project to date on the role of the NOCs in international energy markets (produced by Rice University in Houston, Texas, together with the Japan Petroleum Energy Centre, and including 15 case studies and the development of theoretical models) was that the average technical efficiency of NOCs reached just 60–65% of the efficiency of the large independent energy companies.[45] Since all NOCs are swimming in money because of the high energy prices, there is little incentive to increase efficiency.

The decisive question for importing states is whether, in the new geographic energy-supply scheme, NOCs will play their part in ensuring that enough is invested in production capacities to meet foreseeable demand. In its two most recent reports the Paris Energy Agency expressed the first doubts concerning whether investment would be sufficient in the medium term to cover anticipated demand.[46] An investment gap of several billion dollars is yawning. In several major producer countries there are signs that investments will not even suffice to meet medium-term supply commitments, let alone contribute to meeting growing global demand. Russian gas and oil production is said to be dangerously underinvested, as is the Iranian oil sector. The Venezuelan state-owned company PDVSA has drastically scaled down its replacement investments and has not reached its OPEC quota for years. With mismanagement and corruption, the Indonesian state-owned company Pertamina has managed to reverse the status of OPEC member Indonesia to that of a net exporter, despite adequate reserves. These are only a few examples. Following their experience with overcapacity and low prices in the 1980s and 1990s, many NOCs are understandably reluctant to invest: they fear over-investment much more than loss of business. As long as additional revenues are possible without expanding capacities or intensifying production – as happened as a result of price increases in recent years – incentives to raise investment quotas are low.

Where many NOCs see little reason to invest in the expansion of production, the stock-exchange listed energy companies in the West are having obvious difficulty in placing investments and developing larger projects. Most exporting countries are no longer dependent on their know-how and capital to capitalize on their energy resources. Some NOCs are now highly efficient and fully equipped with capital. And those who need support can buy equipment, staff, and know-how easily from service enterprises such as Halliburton or Schlumberger without having to commit themselves unduly.

Incidents such as the following show how strongly the wind is blowing in the faces of IOCs at the moment. In August 2006, Dubai nationalized its oil industry. Algeria secured for its national company Sonatrach majority holdings in all joint ventures with foreign companies. Bolivia nationalized the entire energy sector, had the oil and gas fields occupied by the army, and threatened all foreign companies not willing to accept one-sided new terms with expulsion. Since last year the Russian government has been trying to force a consortium consisting of Shell, Mitsui, and Mitsubishi – that has already invested 20 billion US dollars in the development of the world's largest oil and gas project, Sakhalin 2 – into a minority position. In Ecuador in mid-2006 the government confiscated installations of the North American oil company Occidental (Oxy), in which the company had invested nearly one billion US dollars. Also in 2006 Venezuela turned the oil fields of foreign companies into joint ventures with a 60% interest on the part of the state-owned

45] Amy Myers Jaffe: The Changing Role of National Oil Companies in International Energy Markets. Introduction and Summary Conclusions, Rice University, Houston 2007, Ms., p. 15; see also: Stacy L. Eller / Peter Hartley / Kenneth B. Medlock: Empirical Evidence on the Operational
Efficiency of National Oil Companies, Study from the research project "The Changing Role of National Oil Companies in International Energy Markets", Rice University (James A. Baker III Institute for Public Policy) and the Japan Petroleum Energy Center, Houston 2007, Ms., accessible at:: www.rice.edu/energy/publications/nocs.html).

46] International Energy Agency: World Energy Outlook 2005, Paris 2005, p. 95; World Energy Outlook 2006, Paris 2006, p. 72.

PDVSA; when ENI and Total protested, they were expropriated. This year the government forced the operators of the highly successful Orinoco heavy oil project, secured with long-term contracts, to convert their majority holdings into minority stakes. Among those affected are Chevron, Phillips, Total, Statoil, Exxon, MP, and CONOCO. This list could be extended.

One result of the restrictive attitude of many energy exporting states towards IOCs is that the latter are forced to switch to areas in which they have comparative advantages. This is the case where oil and gas are hard to find or where production is technically difficult. Conventional oil that is cheap and easy to produce is playing an increasingly minor role in investment planning. According to a Goldman Sachs study, the Majors will invest 660 billion US dollars in new projects in the coming six years, but only 13% in developing conventional oil fields.[47] Involvement in the use of renewable energies is part of these new projects. It would be an historical irony if the resource-rich countries of the Third World, systematically exploited by the IOCs in the century of oil, should succeed in reserving low-cost, easy-to-produce oil for themselves, thus forcing the IOCs to take on a pioneering role in the valorization of "expensive" oil that is not easily accessible, and also to become "greener."

But before the interfaces between IOCs and NOCs consolidate, they could easily become fluid again. This could happen if expert forecasts that in the coming years supply will grow more swiftly than demand turn out to be true. The tight market could become a thing of the past by 2010 at the latest. Then there might be greater capacity reserves once more and prices could fall. Saudi Arabia is in the process of investing 50 billion US dollars in the consolidation and development of its production capacities in order to build up reserve capacities, enabling it to play its role of "Central Bank for the international oil trade" (West) again. The consulting firm CERA (Cambridge Energy Research Associations) has examined those oil projects worldwide that will enter the market shortly and come to the conclusion that in the next five years production capacity will grow by 20%, meaning that 15 million additional bpd will become available; consumption over the same period is to grow at a much slower rate.[48]

Should the "tight" market phase really come to an end, this would constitute both a danger and an opportunity. The danger is that commitment to developing unconventional reserves, non-fossil energy sources, and new technologies would slacken off. This would be fatal, given the approach of the production plateau and the requirements of environmental protection. The opportunity, on the other hand, would be that, if prices fall, cooperation with the IOCs becomes more attractive for the NOCs. Before this happens, however, the IOCs would first have to undergo a sea change. The advice given by industry experts is to no longer insist on majority holdings, be prepared to make lower profits, and make offers that are more attractive to the host country by including advanced technology components and extra services, such as development of electricity production, creation of refinery capacities, and the like. The times when the Majors could behave like lords of all they surveyed and cream off the best of all the projects are definitely past, to quote one Total manager. Should the big international companies not read the writing on the wall, lack of investment opportunities could leave them as subordinated technology suppliers to the NOCs.[49]

What is quite clear is that even today, the IOCs no longer dictate the rules and are no longer the *rule makers*, but have to accept the rules made by others and have thus become *rule takers*.

47] Cf. Financial Times Deutschland, 7.11.2006.

48] The Economist, 20.4.2006.

49] Economist Survey: Global or National? The Perils Facing Big Oil, in: The Economist, 28.4.2005.

I.4 Resource Conflicts and Market Organization

Relations between the oil and gas producing countries of the Third World and the consumer states are marked by a deep-seated conflict over the distribution of revenues arising from the production of natural resources.[50] This conflict goes back a long way and has gone through many phases. Towards the end of the nineteenth century, the superpowers of the day gained control of the Middle East, their natural resource companies obtained oil concessions, and the governments of the imperialist powers gave energetic support to the rise of "their" companies as global players. Right up until the 1970s the (dependent) territories and states that granted the concessions received only a small portion of the revenue in the form of concession levies (royalties) and taxes. The seven international oil companies (IOCs) that dominated that market agreed on standard prices ("posted oil prices") in confidential oligopoly deals that led to a systematic undervaluing of Gulf oil against US oil.[51]

After OPEC was founded in 1960, the producing countries tried for decades to negotiate better conditions with foreign companies. It was not until this failed that the radical wing gained the upper hand and decided on the autonomous fixing of prices, taxes, and royalties, the introduction of nationalization measures, and control of a large part of the value chain. This agenda was successfully implemented. List prices were increased sharply after a long period of stagnation, and royalties were increased from 12.5% (1960) to 20% (1975) and tax rates from 50% to 85%. Nationalization was swiftly accomplished and by 1974 national shares in oil production among OPEC members were up to 60% and Algeria, Indonesia, Iraq, Iran, and Qatar had nationalized all of their refineries.[52]

The corrections to the distribution formula for rents that were undertaken following the OPEC embargo of 1973 and the disruptions in production after the revolution in Iran and the Iran–Iraq war of 1979/80 did not last for long, however. Intensified energy relations with non-OPEC countries, the promotion of oil production in the North Sea, Alaska, and the Gulf of Mexico, increased use of nuclear energy, the development of strategic reserves, and state support for substituting imports with improved energy efficiency and promotion of regenerative energies transformed the market for fossil energy carriers by 1985 at the latest back to a buyer's market. From then on, oil and gas were viewed for decades as cheap energy carriers, in abundant supply, and were of little security policy relevance. In this phase producing countries tried to reach greater security of demand via agreements with importing countries, without any notable success.

After the end of the Cold War, the OECD states made intensive efforts to further develop the governance structure of the international energy system and achieved much in a very short time. The assumption was that a durable balance could be achieved between demand and supply once it was possible to secure the opening of the energy sectors of the Third World and transition countries to foreign direct investment in a regulatory framework and establish liberal investment conditions. This package, which was a component of the broad globalization project of the 1990s pursued by the USA with the support of Europe, also included the privatization of oil and gas sectors and the strengthening of the role of the IOCs.

50] This theory has been convincingly developed theoretically and empirically in a number of essays and books by Bernhard Mommer, who was Senior Research Fellow at the Oxford Institute for Energy Studies for a number of years from 1995 and now works for the Venezuelan government. A selection: Bernhard Mommer: The Governance of International Oil. The Changing Rules of the Game, Oxford Institute for Energy Studies, WPM 26, Oxford 2000; idem: Fiscal Regimes and Oil Revenues in the UK, Alaska and Venezuela, Oxford Institute for Energy Studies, WPM 27, Oxford 2001; idem: Grafting Liberal Governance on the Oil-Exporting Countries: Will the Transplant Take Root?, Paper presented to the 42nd Annual Convention of the International Studies Association, Chicago 2001, all accessible at: www.oxfordenergy.org.

51] Daniel Yergin: Der Preis. Die Jagd nach Öl, Geld und Macht, Frankfurt 1993 (Fischer TB).

52] Reinhardt Bolz/Manfred O. Hinz/Norman Paech/Karl Wohlmuth: Kooperation oder Konfrontation? Materialien zur Rohstoffpolitik, Bonn 1975, p. xiv ff.

Building on the broad network of existing bilateral investment agreements between production and consumer states, the new catalogue of rules for the energy sector was to be formalized in the Energy Charter (Energy Charter Treaty, concluded 1991, signed 1994, partially in effect since 1998) and in a multilateral investment agreement (Multilateral Agreement on Investment, MAI) on which negotiations took place between 1995 and 1998, before it was put on ice. The rules that were agreed upon as part of WTO negotiations were seen as additional backing. One central requirement of the OECD nations in these negotiations was that producing states should in future relinquish those legal instruments which had hitherto been used to gain revenue shares. This included making their taxation systems investor friendly, doing without royalties, and preferably denationalizing their energy sectors instantaneously.[53] Since then, implementation of the Energy Charter has become as bogged down as the WTO negotiations. The 1990s vision of a governance structure for the international energy system will not become a reality for the time being. The major exporting states reject any further liberalization of energy markets and the application to the energy sector of the World Trade Organisation regulatory system and its arbitration procedures. At the present time there is, apart from diverse informal energy dialogues, no forum of discussion for a universally applicable set of regulations for the energy sector.

It is also problematic that no one at present has even a rough draft of a concept for negotiating a regulatory system that would go beyond the negotiation attempts currently blocked.

Since 2001 it has become increasingly clear that any future regulatory mechanisms and catalogues of rules for the international economy will not match the US concept of globalisation. Russia, China, India, Brazil, and many other states are integrated in the international economy and apply their own rules on market access, investment, and competition, are obdurate about having a strong state, and ignore calls for democratization without incurring sanctions and other disadvantages as a result. The central political issue is therefore: What sort of governance structure would be acceptable to producing and importing countries alike and would do justice to both camps? Is there any point at all in seeking agreement, when dealing with rentier states with superpower ambitions which anticipate only disadvantages from liberalization of their energy sectors and energy relations? In the light of rapidly spreading resource nationalism, is there any chance of reaching a consensus on a concept that envisages strengthening market mechanisms? Also, is a convergence of views between producers and competing major consumers at all conceivable if the powerful OECD countries keep up their mantra-like demands for acceptance of liberal competition and market rules (such as the Energy Charter) before embarking on any further steps towards reaching an understanding? Why should Russian reservations not be discussed in negotiations when not even Norway sees its interests as protected by the Charter and US accession is highly unlikely?

There will be a chance of reaching an understanding only if reference is made to common interests, and there are such interests. Just as consumer countries have an interest in the multilateral safeguarding of their supplies on the grounds of their reliance on imports, so should producing countries be interested in consensus and continuity if they are to have the reliable and continuous flow of resources required to maintain political stability in their countries. It should be possible to dovetail security of supply on the one hand, and stable demand with relatively constant flows of resources on the other, under one international regime. A common regulatory framework of this kind could have the function of formalizing and stabilizing relations between the actors and, if possible, of reducing the limitations of the market mechanism. It is obvious that overcoming the rent mechanism

53] Cf. Mommer: The Governance of International Oil, loc.cit., p. 38f.

will not be part of the agenda in any negotiations on designing an international energy regime.

The OECD nations will have to offer more to exporting states than just a more favorable splitting of revenue, since this has been the case anyway for some time now. What could be attractive are offers of help in overcoming the "resource curse"[54] in the form of reduction of reliance on resource exports and income from rents, and support in developing economic sectors outside the energy resource area, and also agreements on stabilizing export earnings. One precondition of convergence, however, is that the two sides proceed on the basis that producers and importers have a mutual interest in stability and in the lowest possible level of conflict in the international energy system. There are, however, versions of the new energy nationalism that apply to exporting and importing nations alike where greater dividends are expected from confrontation than from cooperation.

The rules of the international energy system are, however, not something that the OECD nations can decide on together with the energy exporting countries. The system must also work for the "rest of the world," especially for developing countries dependent on energy imports, otherwise rising energy costs would risk an escalation of the North–South conflict. The economies of developing countries are usually marked by oil intensity and tend to react strongly to fluctuations in the oil price. Where OECD nations can in part compensate for the redistribution of wealth brought about by rising oil prices, as part of the oil profits flows back via demand for capital equipment and manufactured goods as well as in the profits of international energy companies and investments by the energy exporters, in most developing countries there is nothing to cushion the effects of rising energy prices. Oil prices mean more in countries with a low per capita income because the oil bill has greater significance.

Whether a country can still afford the oil imports it needs to maintain its production and transport depends on whether the foreign currency required can be acquired either by increased export earnings or by loans. Even before the rise in oil prices, many developing countries had to use one third or more of their export earnings for energy imports. Since then high prices have acted as a brake on growth or have exacerbated debt problems. Thus the debt relief that is part of the IMF and World Bank initiative to reduce the debts of the HIPC states (Highly Indebted Poor Countries) is not able to compensate for the rising costs of oil imports for 14 out of 19 oil importing African states.[55]

54] The OPEC nations have increased their income from exports from 100 billion US dollars to 340 billion US dollars since 1998, but the additional purchasing power has increased the tendency of many of these states to live above their means. In a broad-based comparative study in 1995 by Jeffrey Sachs and Andrew Warner, this phenomenon is referred to as the resource curse. Some features of this are the alimentation of intricate clientele networks and corruption, the inability to reduce social exclusion and poverty, and the failure of attempts to create conditions for solid growth outside the resource sector (cf. Jeffrey D. Sachs/Andrew M. Warner: National Resource Abundance and Economic Growth, NBER Working Paper No. W5398, December 1995, accessible at: http://ssrn.com/abstract=225459). The latter is also due to high earnings from resources distorting structures and in particular reinforcing the tendency of the resource sector to spread at the cost of other branches, virtually choking the economy. High earnings from exports also raise the exchange rate and thus additionally weaken the international competitiveness of export sectors other than the resource sector (economists use the expression "Dutch disease" in discussing this symptom). Since rent income in resource exporting states is largely not used productively and mainly channeled into government expenditure, these states are just as dependent on oil supplies as the importing countries. An additional factor is that services and liabilities grow at a pace with increasing earnings and if prices drop, can be reduced only with difficulty. This was behind the severe crisis in the 1980s when the oil income of the Gulf States dropped dramatically. A reduction of government expenditure proved a risky undertaking domestically, since broad sectors of the population were accustomed to state beneficence, and a complete stoppage of benefits to neighboring states with low oil supplies as part of the petrolist system entailed foreign policy risks.

55] African Development Bank: High Oil Prices and the African Economy, Concept Paper for the ADB Annual Meetings, Ouagadougou, Burkina Faso, 2006.

II. German and European Political Approaches

II.1 Background: Trust in the Market and Unsystematic Interventions

In the post-war period, up to the late 1960s, the prime objective of German energy policy was to obtain cheap energy for export industry. This was achieved first by subsidizing coal mining. Soon, however, German coal proved to be too expensive by international comparison. In the course of the 1950s the advocates of a consistent liberalization and deregulation of the economy asserted themselves against the proponents of autarchy and protectionism, and in 1956, with the explicit intention of putting coal under pressure from competition, tariffs on heating oil imports were abolished. Oil became the dominant energy carrier.[56]

In the 1970s, the question of security of supply came to the forefront for a while. The German government had set the stage for diversification of sources and reduction of import dependence in two important ways even before the onset of the oil crisis. It had started to subsidize the construction of nuclear plants and the linking of the West German market to Soviet gas production was placed in a foreign policy context. In a spectacular three-cornered deal, Mannesmann, financed by Deutsche Bank, supplied the pipes for the first pipeline connection with the Soviet Union. In return, Ruhrgas AG was supplied with Soviet gas from 1973 on. Wintershall and VNHG also concluded long-term gas supply contracts with Soviet companies. The USA, however, regarded energy relations with the dominant communist power with marked displeasure.

In the 1980s, the worldwide advance of neoliberal approaches in economic policy also led to a (further) surge of liberalization in Germany.[57] In the energy sector, however, efforts at deregulation and attempts to strengthen competition did not penetrate below the surface; the monopoly structures were not overcome. Up to the mid 1990s, the energy sector was excluded from the cartel and price control ban and exempted from abuse controls, which led to the Federal Republic being divided into supply zones with one monopoly each. The paragraphs in the Competition Act (GWB §103 and 103a) that made this exemption possible were not revoked until 1996. But the monopoly structure in the transmission and distribution networks for grid-bound energy has still not come to an end.

Although there was great reluctance on the domestic front to entrust energy supply to the market, confidence in the market's ability to organize international resource flows was absolute. The assumption was that the international energy markets worked well enough to satisfy German import requirements. The pursuit of globalisation and the accompanying commitment to liberal investment and trade conditions in WTO negotiations and in other international forums replaced any specific energy security policy. The organization of the production chain from the source to the end product, including in politically unstable regions, was seen as a job for the private sector, requiring at the most occasional well-meaning support from governments but not systematic political intervention.

In addition to the economic and competition angles, environmental protection has been of central importance in energy security since the 1970s. The demands and initiatives of civil movements and NGOs led at the political level to new institutional arrangements and to the formulation and implementation of environmental goals; in 1976 environmental protection was formally declared a political and administrative cross-sectional

56] Rainer Karlsch/Raymond G. Stokes: Faktor Öl. Mineralölwirtschaft in Deutschland 1859–1974, Munich 2003, pp. 303 ff, 323 f.

57] As early as the 1960s the German economic structure was seen as the "most liberal … economic structure in the entire industrialised world," Karlsch/Stokes, loc.cit., p. 323.

responsibility for the executive sector.[58] In energy policy, environmental compatibility acquired the status of an independent objective. This was institutionalized in 1986 in the form of the Federal Environment Ministry whose responsibilities now include renewable energies, atomic safety, and environmental protection (BMU). The BMU has less influence on energy policy than the government department with the main responsibility, the Federal Ministry of Economics and Technology, whose main energy policy task is to secure energy supplies at acceptable prices but which also looks after energy research and the nuclear energy sector.

Overall liberalization and environmental protection dominated the energy policy agenda in a unique tandem for over two decades. Security of supply played a subordinate role. Whereas two dimensions of the energy policy objectives triangle – environmental compatibility and economic efficiency – were institutionalized into government departments, there was no necessity for an analogous institutionalization of energy security. It was not until the end of the 1990s – and even more so since 9/11 – that in Germany, as in many other energy importing countries, the conviction has gained recognition that market orientation and environmental standards alone are not enough to guarantee security of supply. There was a call for governments to play a more active role.

II.2 Outline of Current Energy Foreign Policy – German Themes and European Processes

The EU Commission and some EU states, such as the Netherlands and the UK, are well advanced with analysis and debate on the foreign, security, and geopolitical dimensions of energy security and have brought these to a preliminary conclusion with the publication of the results in strategy documents. In Germany, this process is still continuing but the results of the discussion and consultation processes between the actors are due to be presented this year.

Tenets, positions, and themes are nevertheless emerging from the process of shaping German foreign policy that could indicate the outlines of an energy security concept. At the centre of energy foreign policy is the securing and diversification of sources, especially for oil and gas. This includes the fostering and advancement of existing strategic partnerships, for instance with Russia and Algeria, and talks with the Caspian states and Iran, among other things to explore the possibilities for such partnerships or to pave the way for them. Simultaneous dialogues at the bilateral and multilateral level with supply and transit countries and with other major consuming countries, including the newly industrialised states, also form part of this procurement diplomacy.

A further energy foreign policy theme is the creation of a valid international regulatory framework for relations between consuming, producing, and transit countries. Efforts to this end are concentrated on the implementation of the Energy Charter Treaty (an agreement between 53 European and Asian states plus Australia) and its trade annex, with which application of WTO rules in the energy trade are to be enforced. The Charter process has, however, been stymied for some time now because key protagonists such as Russia, Norway, Japan, Australia, and Turkey have not ratified either the Treaty and/or the trade annex and will presumably not do so in the foreseeable future.

A further major topic in German energy foreign policy is the fostering of energy efficiency and renewable energies in the international context by means of technology and know-how transfers, and cooperation in an international programme of action and in a network

58] Martin Jänicke/Helge Jörgens/Kirsten Jörgensen/Ralf Nordbeck: Germany, in: OECD, Governance for Sustainable Development. Five OECD Case Studies, Paris 2002, pp. 115ff.

in existence since 2005 that is endeavoring to make progress on the further development of renewable energies at the political level. German foreign policy's explicit support for the application of international environmental and climate change agreements is also linked to energy security. There are similar links in many themes related to classic security policy and crisis control.[59] German involvement in defusing crises and overcoming conflicts in the Middle East, Iran, and Central Asia is increasingly being justified in terms of energy security considerations.

The prime political instrument for the achievement of energy security is the formation and shaping of strategic partnerships or special relationships with key production and transit countries. A network of partnerships is intended to foster mutual dependencies, making the international energy system as interdependent as possible and thus ensuring a common interest in trouble-free energy relations. Foreign Minister Steinmeier has put forward a proposal for developing relations with Eastern and Southern nations in particular that involves entering into a dialogue based on clearly defined rules designed to gradually build up confidence and reduce tensions. A methodological archetype for this attempt to create a culture of dialogue and stability could be the CSCE talks in Helsinki. One precondition for the functioning of this planned system of cooperative security is the presence in the partner countries of strong, globally competent private energy companies (national champions) capable of representing national interests effectively in the international competition for energy.[60] Relations with Russia – a country working towards unilateral European dependence on Russia and not for interdependence – will be the touchstone of the interdependence concept.

At the European level, the debate on and formulation of policies and objectives for the energy sector is farther advanced than in Germany. There are finished concepts and catalogues of goals for a common energy policy and a common energy foreign policy, including the Commission "Green Paper,"[61] the "Solana Paper," and the "Energy Package" of early 2007. Here too the idea underlying all conceptual and strategic statements is that the greater the mutual dependence between the parties, the better the international energy system functions. The European vision of a system of myriad interconnections and dependencies is in contrast to the US concept, which has its vanishing point in the greatest possible reduction of energy dependence.[62]

No matter how far advanced the EU's energy policy concepts may be, none of them have so far been implemented. There has been no significant progress either in the liberalization of European energy markets as foreseen in the single market packages of 1992 and 2003 or in the alignment of positions vis-à-vis third parties so that the community can speak "with one voice." There are still 27 energy policies and 27 energy foreign policies, often contradictory, and all key energy policy competences are still the responsibility of the individual member states. In the EU context, all concerned continually emphasize the outstanding importance of a common energy policy and a coherent foreign policy in relation to energy, but as soon as practical implementation is called for the Commission's initiatives are thwarted and member states resist any attempt to curb their national competencies. An open debate on takeover blockades in the case of Suez – Enel or Eon – Endesa, for instance, has to date been unsuccessful, as has any serious tackling of the

59] "Energiesicherheitspolitik ist auch Friedenspolitik," Walter Steinmeier, 16.2.2007, www.auswaertiges-amt.de/diplo/de/Infoservice/Presse/Reden/2007/070216-Energiekonferenz.html .

60] At the BDI Raw Materials Congress the German Chancellor advised companies to invest more in foreign holdings. She offered to back up these investments with federal guarantees and untied loans. Financial Times Deutschland 21.3.2007.

61] Commission of the European Communities, Green Book, see Note 5.

62] The reduction of dependence is already called for in the 2001 National Energy Plan. Since then this demand has been repeated with growing urgency. The influential conservative columnist Tomas Friedman, for instance, wants to reduce the USA's import reliance as much as possible with uncompromising promotion of "green" energies and has no qualms about attacking the automotive industry. The Pentagon recently even co-financed a study by the energy saving Guru Amory Lovin.

problem of growing dependence on Russia, never mind finding a common position on the Union's most important energy supplier. The latter is not in the offing either because relations between Russia and EU countries are determined by bilateral agreements. Tensions between resource nationalism on the part of member states and the European energy strategy are also manifest in the question as to whether national sovereignty can or should be curtailed when energy mixes are determined. European energy policy will not be able to manage in the longer term without specification, such as setting a minimum percentage of regenerative energies and limits for fossil fuels, but the objections of many member states to this type of intervention appear insurmountable at the moment.

Yet the Commission does have the option of taking initiatives, as it did in the sphere of energy efficiency. It has at its disposal instruments from the single market policy area, responsibilities for trade issues, authority in environmental policy, and also financial tools that can be put to use in the energy policy sector. Implementation and institutionalization of many energy dialogues (EU-OPEC, Gulf Cooperation Council, southern Mediterranean states, Southeast Europe, the Baltic region, Norway, Gulf of Guinea states) are an important step in the direction of a cooperative security system. But whether or not the vision of initiating and integrating its neighbors into the single EU energy market and creating an area with common rules going beyond the scope of the Union succeeds will depend largely on whether it will be possible to make progress with the single energy market itself, something that is far from completion.

No matter how important the Commission's initiatives may be, the Union will not get any nearer to a common energy policy without a commitment and readiness to reach a consensus on the part of governments. The member states alone can overcome the coordination and implementation deficit and Germany could play an important role here. To quote the opinion of an IEA evaluation just issued: "Only a handful of countries can have as dramatic an impact on global energy policy as Germany."[63]

63] International Energy Agency: Energy Policies of IEA Countries – Germany – 2007 Review, Paris 2007, p. 7.

III. Scenarios between Competing Blocs and Multilateral Market Regulation

The soundest and most frequently cited energy scenarios are those of the International Energy Agency (IEA) of the OECD, which are updated annually on the basis of newly obtained data on production and consumption. In a trend scenario up to 2030, the Agency assumes that developments will continue as hitherto without any interruptions or erratic movements and that the industrial and newly industrialised countries will make no major changes to the energy policy concepts. The IEA alternative scenario reflects the possible effects of environmental protection policies.[64] In this scenario, dependence on imports of oil and gas diminishes as a result of the implementation of environmental protection measures, but in both scenarios it is nevertheless assumed that the energy systems of most OECD states will continue to rely on oil and gas imports to a high degree after 2030 and thus will remain geopolitically vulnerable.(c.f. I.1). The implications of major geopolitical and geoeconomic changes and disruptions for the scenarios is dealt with only marginally.

In the case of the scenarios presented here, the main focus is on geopolitical and geoeconomic perspectives and risks for the period up to 2020.[65] In 2020, one half of oil and gas production will come from countries that are currently rated as high risk zones.[66] The geopolitical risks stem from conflicts between states over the control of energy sources and conflicts within states about the acquisition of natural resource rents plus the increasing tendency of exporting states to use energy as a bartering tool. Internal conflicts in producing countries, wars, terrorism, and failing states can jeopardize the energy supply of importing states by short- or longer term shortages in supply, as can unexpected, arbitrary changes in the export policies of some states. On the other hand, the strategic energy procurement policies of powerful importing states can have destabilizing effects geopolitically, especially if these strategies include the possibility of surrogate conflicts and the direct militarization of energy relations.

In both scenarios it is assumed that oil and gas consumption in the newly industrialised and developing countries will increase significantly and that production locations will shift. Oil and gas production in OECD states will drop markedly and will be concentrated on the regions with large, unused reserves, such as Russia, the Caspian region, the Gulf states, and West Africa. An open question, however, is whether in countries with high levels of reserves equally high shares of production can be expected. If a country such as Indonesia can become a net importer of oil in spite of high reserves (some experts expect a similar development in Iran that has over 15% of world gas reserves and 11% of oil reserves), incongruities could result that would also impact on the overall geopolitical picture. But in the scenarios presented here, as in most other forecasts, it is assumed that the size of reserves is an indicator of the scale of production, even if there could be some regional and transitional imbalances. What is also not considered in the scenarios is the possibility that – triggered by consistently applied environmental policies or radical efforts to reduce import dependence – a revolutionary technology might be developed that would make it economically acceptable to replace fossil energy carriers on a large scale. But experts say that, from today's perspective, this is only a hypothetical possibility.

64] Based on this, NGOs have developed alternative scenarios (cf. EREC <European Renewable Energy Council>/Greenpeace<International>: Energy (R)Evolution. A Sustainable World Energy Outlook, Amsterdam, January 2007), but in these scenarios too the international energy system does not function without fossil energy carriers. Their use is much lower than in the IEA scenario, though.

65] The basic pattern for both scenarios is based on: Clingendael International Energy Programme (CIEP): Study on Energy Supply Security and Geopolitics. Final Report, The Hague, 2004, cf. Note 6; and Femke Hoogeveen/Silbur Perlot (Ed.): Tomorrow's Mores. The International System, Geopolitical Changes and Energy, Clingendael International Energy Programme, The Hague, December 2005.

66] CIEP: Study on Energy Supply Security, loc.cit, p. 85f.

The central factor in both scenarios is the role played by multilateralism and institutionalized cooperation in global policies. In the first scenario, the world splits into two regional blocs competing for resources and markets. Confrontation dominates interaction in the international system and multilateral mechanisms play only a marginal role. Alliances and conflicts between the blocs are the factors that determine international political developments. In the second scenario, it is assumed that the multilateral system will continue to govern international relations in future. Globalisation will continue, not necessarily according to the US neoliberal blueprint, but conducted with heed to the interests of newly industrialised and developing countries. This includes leaving resource allocation as far as possible to the markets, while compensating market failures and asymmetries with negotiated market regulation – something that will be particularly difficult in view of the strong politicization and well entrenched oligopoly and cartel structures in the energy markets.

III.1 Bloc Rivalries and Bloc Conflicts

In this scenario the process of the internationalization of markets has passed its zenith, and the world regions are drifting apart and walling themselves off from one another. Strategic commodities such as energy are traded in bilateral relations or within regional blocs. The blocs are the structuring element in international relations. They include backyards and spheres of influence and satellite states only loosely connected to a bloc. Internally the blocs have a hierarchical structure. Their conceptual foundation is a neorealist security doctrine. Bloc rivalry revolves around control of resource-rich countries which, as at the end of the nineteenth and the start of the twentieth century, come to realize that being rich in energy is a danger for weak nations as this awakens the greed of the great powers. The major powers in the blocs have no qualms about using military intervention to enforce their interests. This threat from without is the motivation for an increasing number of natural resource exporting countries to build up arsenals of weapons of mass destruction. The multilateral system of institutions experiences a rapid loss of influence as actors in international organizations, from UNO to WTO, pursue their own advantages and the readiness to take part in joint initiatives recedes.

The integration process within the EU stagnates, the single energy market is not completed, and a common energy policy is not developed. Some of the larger member states join forces in strategic alliances for energy procurement purposes. Import dependence remains high and leads to an intensive use of nuclear energy and coal. There is a growing tendency for countries to use their own reserves of fossil fuels domestically. The European electricity and gas market interconnectors are cut back.

The transatlantic partnership is weakened because the USA prefers a concept of strategic bilateralism and the European Union as an entity is no longer capable of action. US energy relations are concentrated on the NAFTA states and Latin America, although here left-wing populist governments hostile to the US present a permanent threat to security of resources. As the reserves in its own regional bloc and backyard are no longer sufficient, the USA continues with massive interventions in the Middle East and maintains strategic energy relations with Russia and West Africa. In so doing they are competing with various European states and China. In the Caspian region conflicts develop with Russia and individual European countries.

Russia succeeds in creating a regional bloc and in consolidating its position as a world power. The oil and gas production from the states bordering the Caspian Sea is distributed to Europe via the Russian pipeline system. A diversified distribution structure makes it possible to maintain bilateral supply relations with Europe, Asia, and the USA.

Development of production in the Caspian states and in Eastern Siberia means that oil and gas supplies can be expanded and the "gas gap" of the first decade of the century is a thing of the past.

The Gulf Region remains a bone of contention between the regional blocs. The USA, China, Japan, and the EU states intervene on a large scale but none of the interested parties succeeds in bringing the region under control. Multi-layered conflicts continue here – international, intraregional and internal – and numerous colluding interests. Large-scale consumers who see their security of supply threatened by the conflicts in the region are tempted to intervene militarily. The states potentially under threat react by arming themselves. In West Africa too, the notorious instability provokes attempts to stabilize the oil and gas regions of the country from outside.

In Asia, heightened competition between China, India, and Japan can be anticipated as export-led growth slows down in the wake of regional bloc building and slackening of globalisation, and this leads to growing internal tensions. All three states are dependent both on Russian oil and gas and on supplies from the Gulf but do not have a dominant position in any of the arenas and are thus compelled to form alliances. To strengthen its position and no longer be dependent on the US fleet in the Gulf, China concentrates on naval armament and deploys naval squadrons in the vicinity of the Gulf.

III.2 Multilateral Market Development and Market Regulation

In this scenario globalisation continues to make progress in the sense of an intensification of relations and interaction between states and regions. This process is accompanied by a number of conflicts of a political, economic, social, ethnic, and religious nature, but it is usually possible for the multilateral system of institutions to deal with them, limiting their scope. Coordination of international production and trading systems is left largely to the markets, with negative economic, social and environmental side- and follow-up effects being systematically managed and balanced in a cooperative process in multilateral institutions. The neoliberal US-led globalisation blueprint is replaced by a system that gives greater weight to the interests of the newly industrialised and developing countries. Concerted efforts in shaping globalization result in progress in the reduction of disparities between the First and the Third World. The international community of nations has at its disposal the institutional tools required to maintain macroeconomic stability and to quell local conflicts using means such as military peace missions and the fight against terrorism and drug trafficking. A governance structure for the international energy system is successfully developed which places the functioning of the markets on a basis of multilateral regulations and mediation mechanisms that is acceptable to producing and consuming countries alike.

The integration process within the EU continues and the Union expands as new members join. The neighborhood policy makes it possible to create an area in which rules differ beyond the borders of the member states. The single energy market is completed and the transfer of national competences to the Union brings about a common energy and energy foreign policy. The resource nationalism of some member states that had repeatedly led to tensions and conflicts has been countered by the institutional tools of the Community. Integration with Russia in the energy sector is pursued as a European project and it is possible to create interdependences that go beyond the energy sector. There continues to be a high degree of import dependency on Russia, but this is no longer a significant risk for security of energy supply.

Although US influence over the international competition and regulation agenda has waned, the United States does not exclude itself from international cooperation and acts in a constructive way in multilateral institutions. This makes transatlantic cooperation in the development of international markets and the counteracting of negative effects easier. The USA puts its dominance to use in areas such as peace missions and in establishing good governance. In Latin America the USA extends progress in integrating the northern community it heads to cover the energy sector too. Ways of harmonizing interests are sought with the southern bloc, dominated by Brazil, where the largest part of energy reserves is located. Despite aggressive advancement in the uses of non-fossil energy sources, the US engagement in the Gulf region, Central Asia, and West Africa remains.

Russia has asserted its world power ambitions in relation to the neighboring states of the former Soviet Union and has established itself as a regional power with global pretensions. European solidarity has caused Russia to accept the European interdependence concept for the energy sector. There are numerous Russo-European natural gas, LNG, and crude oil projects in all phases of the production and trading chain. The stock of foreign direct investment in Russia has grown at the same rate as Russian involvement in European nations. The Russian share of global energy production is higher than its share in world reserves; demand from Asia can also be met. Plans are aired to build up reserve capacities in Russia so that the international energy system does not remain exclusively dependent on the reserve capacity of Saudi Arabia.

By 2020, the Middle East and the Gulf states have not come much closer to overcoming their many and varied internal and intergovernmental conflicts. In the case of the big energy exporting states, these are still mainly autocratic rent economies that press ahead with technological modernization but slow down or block the modernization of their societies and the democratization of their political systems. Political Islam, however, has separated itself further and in some countries Islamic parties have come into being whose religious reference point makes them comparable to the Christian Democrats in Europe. In Iraq and Iran the intensity of conflict has weakened and rulers pursue – as in Saudi Arabia – pragmatic policies of securing the financial flows from oil and gas production. To this end all three countries have developed ambitious investment projects in cooperation with energy enterprises from client countries that include all the links in the value chain. OPEC and GASPEC, together with the IEA, play a constructive, apolitical role in coordinating an even supply to the markets. Oil and gas prices are kept in an agreed corridor with the aid of buffer stocks. Most exclusively bilateral supply contracts have expired, since open markets offer more favorable conditions. International conflicts arising from the production, trade, and transport of oil and gas are handled by arbitration bodies in international organizations, although they are not always solved. One remaining hotspot is West Africa, where several multilateral attempts to pacify the energy producing zones have failed.

For China and India, where economic growth has slowed and energy efficiency could be clearly improved, sufficient energy security is provided by concerted access to expanded production in the Gulf and to the expanding Russian and Central Asian production, meaning that the system of strategic bilateral supply contracts can be abandoned in favor of the markets. Like other net importers, both countries take part in diverse investment projects designed to help keep in step supply and demand developments in the international energy system. Both scenarios are worlds apart. From a European perspective, security of supply is greatest in the scenario of multilaterally supported balanced market development. European energy security interests also call for a stance against the progressive weakening of the multilateral apparatus of the institutions.

IV. Political Courses of Action

IV.1 Continue to develop risk-aversion mechanisms

Short-term risks to energy security (disasters, terror, political conflicts) can be controlled by strategic provisions, cooperation, and the institutionalization of solidarity mechanisms. In the case of natural gas, however – as with oil – minimum reserves in the EU nations and rules for their collective use are required. The more developed the integration of the single energy market, the better can bottlenecks or disruptions in supply be absorbed. There are still too few interconnectors on the European gas market and deeper integration would also be an advantage on the electricity market. An expansion of the LNG infrastructure would also contribute towards improving the flexibility of the system. Short- and medium-term measures of this kind are, however, a necessary precondition for energy security but not sufficient in themselves.

IV.2 Initiate a turnaround

Climate change and the threat of a depletion of oil and gas reserves sooner or later call for nothing less than a reorganization of the energy industry system. Preparation for reaching the oil production plateau is a "classic risk management problem" (Hirsch), calling inter alia for the development of transition formulas. Climate change marks the vanishing point because it cannot be halted without a reduction in the use of fossil fuels. From this follows that the development of technological alternatives at acceptable overall economic costs is of decisive importance. Part of this is the utilization of savings potentials as a source of energy.

IV.3 Strengthening multilateralism to reduce risks

Factors such as neorealist concepts and resource-nationalistic zero-sum games, the priority given to bilateral procurement diplomacy in preference to cooperative solutions, and the use of energy as an instrument of power by exporting countries all encourage an increasing politicization of energy markets and pose a considerable risk in light of the myriad divisions and opposing fronts (conflicts between the superpowers, North–South conflicts, conflicts between producers and consumers, and so on). In this constellation, Europe could assume an active role as the catalyst of a fair and effective multilateralism[67] and take the initiative of creating an international regulatory framework to make possible a balancing of the complexity of interests. German commitment to multilateralism would suggest that it take on an initiating function.

IV.4 Complete the single energy market and develop a common energy policy

Europe will have the power to negotiate in the formation of an international energy system only if advances are made in the development and implementation of a common European energy policy. To this end it is vital to create within the EU the legal conditions for a common market and to transfer national competences to the Union. Completion of the single energy market would not only create more internal competition, greater transparency, and lower prices but would also strengthen negotiating positions with third parties and facilitate the formulation of common interests. The inclusion of neighbors in the EU single energy market is also conditional on the internal market working. Germany's political and economic weight means it could play a stimulating role.

67] Dirk Messner: The European Union: Protagonist in a Multilateral World Order or Peripheral Power in the 'Asia-Pacific' Century?, in: IPG (Internationale Politik und Gesellschaft), Heft 1/ 2007.

IV.5 Reactivate the international negotiation process to create a common regulatory system for energy security (synopsis of a multilateral negotiating process)

Urgent attention needs to be given to the deep-seated conflict between countries dependent on energy exports and energy imports – in which the producers have been able to considerably strengthen their position by means of high energy prices, the increased importance of their NOCs, and their control of an increasingly large part of global reserves – and also to the latent conflict between consumer countries. This means that all actors must be included; the Western consumer countries, the producer and transit states, the new large-scale importers such as China and India, and also the developing countries that are dependent on energy imports. What is needed is an international regime, a multilayered system for the reconciliation of interests capable of securing sufficient supplies of natural resources, stable resource flows to the producer countries, and price levels that are also acceptable to economically weak countries. For a system of this kind to function, principles must be established, rules agreed upon, and conflict-solving mechanisms developed.

The balance of power between the actors has shifted and the debate on a complex and ambitious body of rules such as the Energy Charter (the core of which is a liberal investment statute) is making no progress. It is thus necessary to first launch a process of debate and negotiation that makes it possible to clarify the basic issues before going on to talk about universal international rules that limit national sovereignty rights. This process of discussion could start with a review of the current situation and a comparison between the different legal and regulatory systems in the various states, thereby indicating what changes would be needed in each country as a result of the introduction of an international regime. A common definition of energy security should be arrived at through disclosure and examination of the differences, because as long as the European idea of security of supply and, for example, the Russian idea of security of demand are not reconciled, agreeing on common rules is an illusion.

An international forum could be a suitable framework for this discussion process. Whether the International Energy Forum, in which several international organizations and 60 countries participate – including the major production and consumer states – is needed or another construction is something that should be examined. The main thing is for the discussion process to be long-term and to evolve gradually, even if there is initially no agreement on where it should lead to. Before or parallel to the forum process, that is by definition broad-based and complex, and in order to get the process moving, contentious issues could be settled or processed and clarified prior to a formal discussion using as a model the GATT Consultative Group of 18 (CG18). CG18 was a high-powered technical concertation body that met to discuss contentious issues behind closed doors between 1979 and 1987 and was of crucial importance in the preparation of the Uruguay Round.[68] This could be combined with confidence building measures in the preliminary phases based on the example of the process once used in the CSCE process, as proposed by Foreign Minister Steinmeier.

Whether the relaunch of the international negotiation process succeeds or not depends not only on the approach adopted, but also on flexibility and a readiness to compromise. As far as the OECD nations are concerned, in addition to abandoning bully politics, concessions in at least three areas are required. (1) It must be understood that common rules are not an instrument for imposing the interests of private companies in the West

68] Richard Blackhurst: Reforming WTO Decision Making: Lessons from Singapore and Seattle, Center for Research on Economic Development and Policy Reform, Working Paper No. 63, Stanford, August 2000.

on natural resource countries, as was sometimes the case in the transition phase in Eastern Europe. The interests of large energy companies are not necessarily identical with overall global interests. (2) Security of demand means not least the stabilizing of energy resource income, which is closely linked to the stability of international prices. There are ways of proceeding – very seldom used to date – based on the determination in GATT on commodity agreements (Article XXh) and there is a wealth of experience available on multilateral commodity agreements to which reference could be made.[69] (3) The aggressive debate directed against import dependence and in favor of substituting imports with renewable energies and greater energy efficiency has created opposing camps. It would be much more productive to seek ways of involving exports of fossil fuels in efficiency and substitution initiatives.[70]

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69] Manfred Tietzel: International Rohstoffpolitik. Eine Analyse der rohstoffpolitischen Aspekte des Nord-Süd-Dialogs, 2. Edition, Bonn/Bad Godesberg 1978.

70] John V. Mitchell: Renewing Energy Security, loc.cit., p. 23.

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ISBN 978-3-89892-793-2