

2nd Transatlantic Energy Security Dialogue

Security of Supply in Liberalized Energy Markets

Transatlantic Experiences and
Future Challenges

Conference Report

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1 Introduction

The Global Public Policy Institute (GPPi) was pleased to convene the second “Transatlantic Energy Security Dialogue” session in Berlin on Friday 25th May 2007. Coming approximately four months after the excellently received opening conference (*Energy Dragons Rising, Global Energy Governance and the Rise of China and India*), GPPi once again took up a timely topic: *Security of Supply in Liberalized Energy Markets, Transatlantic Experiences and Future Challenges*. The institute welcomed more than 30 participants from government, industry, non-governmental organizations (NGOs) and civil society organizations. The conference was made possible by a generous grant from the German Marshall Fund of the United States (GMFUS) and additional financial support from Credit Suisse.

1.1 Event Context

Policymakers on both sides of the Atlantic have traditionally viewed energy as a “strategic sector” of the national economy that could not be left to its own devices, resulting in extensive government involvement either through stringent regulations or public ownership, or both. The past two decades though, have seen fundamental steps being taken toward the reorganization of energy markets in the European Union (EU) and the United States (US).

The first wave of liberalization occurred in the US late in the 1970’s as a reaction to the oil crises of that decade, followed by further deregulation of energy markets starting in 1992. Liberalization in the EU started only in the early 1990’s and faced different challenges. As opposed to the US where energy utilities were, despite monopolistic market structures, in private hands, energy utilities in Europe at this time were in public hands. Resultantly, European markets had to be privatized before they could be effectively opened up to competition.

Today, the European liberalization process is driven to a large extent by a desire to complete the single market in the energy sector and is pushed forward by two principle mechanisms: (i) deregulation of national gas and electricity markets to allow for cross border competition and (ii) providing all EU customers the opportunity to choose their energy supplier by the end of 2007. As in the US, this liberalization process is still far from complete and has been characterized by difficult political, economic, social and environmental trade-offs. While most EU member states have transposed the respective Directives into national law, actual implementation varies greatly. In addition, energy markets continue to be regulated by national – rather than one European – regulator. Many EU member states view the energy sector as too important to their own economic development to cede too much responsibility to Brussels.

Despite setbacks and slow progress due to the complex political, economic and regulatory issues involved, political support for the liberalization of energy markets remained strong on both sides of the Atlantic for much of the 1990s. However, at least since the world oil price hikes in 2000 and the Ukrainian gas crisis in late 2005, some analysts and policymakers have started to question the wisdom of energy market liberalization. The

principle question they raise is whether the liberalization of energy markets has the potential to undermine “security of supply,” broadly defined as reliable energy supply at reasonable cost. While it is widely accepted that the privatization and deregulation of energy markets (if properly managed) can generate efficiency gains, some observers have grown concerned that private energy markets may not be able to effectively address a range of issues related to “security of supply.”

Against this backdrop, GPPi organized a conference designed to stimulate discussion on the relationship between energy market liberalization and security of supply. The day’s events consisted of two main sessions, each beginning with a panel discussion and continuing with three parallel working groups. The panel discussions focused on liberalization of energy markets and security of supply: Transatlantic experiences and meeting future energy needs within a liberalized market framework, respectively. Working groups focused on several topical issues, such as the impact of liberalization on long-term contracts in natural gas, investment in infrastructure and grids, energy efficiency and the diversification of supplies to liquefied natural gas (LNG).

The dialogues and outcomes presented in this report shed light upon some of the critical questions associated with the liberalization of energy markets. Instead of providing a chronological presentation of the workshop proceedings, the report identifies three key threads that shaped the discussions:

- Key policy lessons both the US and the EU have learned in liberalizing energy markets and managing security of supply;
- the liberalization of the European energy market and implications of increasing dependence on Russian gas; and
- the implications of energy market liberalization for international efforts to curb climate change.

Chatham House rules were in application throughout the event.

2. Liberalized markets and energy security. Can the market deliver security of supply?

One of the key objectives of this dialogue session was to provide a forum for participants from both sides of the Atlantic to exchange experiences and lessons learned about respective energy market liberalization processes and implications for security of supply. Before turning to the more specific discussion on the implications of energy market liberalization for investments in infrastructure and grids, the report recounts some of the key red threads structuring the discussion on European and American experiences with energy market liberalization.

2.1 *US and EU experiences and perspectives on liberalization of energy markets and security of supply*

Europeans and Americans have proceeded along different timelines and pathways in liberalizing domestic energy markets. During the discussions, participants reviewed the respective experiences, highlighting interesting similarities but also pointing towards important differences in experiences with and perspectives on the nexus between liberalization and security of supply.

The US embarked on the path of energy market liberalization in electricity, gas and oil in reply to the oil shocks of the early 1970's. At the time there was a firm belief that deregulation, an issue at the front and center of the Carter Energy Policy of 1977, would form a critical pillar of energy security for generations to come.

The successive liberalization of electricity markets took the lid off price controls, thereby increasing competition and also enabling the creation, where it was agreed on, for Independent State Operators (ISOs) to coordinate, control and monitor electrical power usage within state boundaries. It is within the arena of electricity generation and supply that the US has most recently suffered large energy shocks (California in 2000 and New England in 2003) bringing concerns over market liberalization back into the limelight. Some pressing questions were thus raised during the workshop proceedings. What can be done to prevent severe disruption of supplies within a liberalized market framework? And, what are the key lessons learned from the California and New England crises?

Two fundamental points were made. Firstly, it was argued that a fully liberalized market with an increased number of ISOs could have prevented the blackouts. And secondly, it was emphasized that the market is always susceptible to bad policies, bad regulation as well as human mismanagement and greed. Failures to secure security of supply within a liberalized market framework, it was maintained by some participants, have not been a result of market failure but a consequence of one or more of the above-mentioned forces. The Enron scandal, for example, was cited as proof that corporate greed had manipulated and destabilized the poorly regulated electricity market in California. Similarly, it was argued that in New England a lack of sufficient liberalization (rather than too much of it) allowed for certain actors to develop vested interests that could cause supply shortages during unusual demand patterns. During an especially cold winter, extreme pressure on the electricity grid accompanied by related increases in price would normally

have been enough to signal a switch away from gas fired power stations. False signals were purposely transmitted to the market with catastrophic consequences.

In parallel, participants also noted that the liberalization of gas markets in the US has also generated overall positive results. Free from the shackles of price controls, the US natural gas market increased sizeably during the past decades. The initial stages of market liberalization had increased competition, improved the pipelines infrastructure and significantly improved US self-sufficiency, a key concept of the President Carter's drive for increased energy security. Regulated by the Federal Energy Regulatory Committee (FERC), country-wide pipelines were constructed with open access guaranteed for every operator. Resultantly, remarked participants familiar with the US experience, a surplus of natural gas developed in the United States with historically low prices to boot.

Finally, regarding oil, it was emphasized that the aforementioned Carter program did not just liberalize the oil market, but also successfully established a Strategic Petroleum Reserve (SPR) as a means of giving both state and private actors greater control over mitigating short-term supply disruptions. However, the process of liberalization that accompanied the SPR, though it resulted in better use of existing supplies, did not generate more financial investment in vital downstream infrastructure such as refineries. This is now having negative repercussions on energy security with refineries working at almost maximum levels just to meet current demand. This is coming to bear greatly upon the downstream sector within the United States which is struggling to increase refinery capacity in line with forecast demand. Subsequently, the market, as witnessed in the aftermath of Hurricane Katrina, is ever more vulnerable to disruptions in refinery locations. Energy security, from this perspective, has been damaged by an inability on the part of the multitude of actors present in the free market to invest in downstream infrastructure.

European experiences, perspectives and challenges concerning the development of a liberalized energy market capable of delivering on security of supply vary markedly from those of the US. Though liberalization has been quite extensive in some places – most notably in the United Kingdom and the Nordic Countries – the rest of the Continent is some way behind. This reality was frequently commented upon, with broad agreement that Europe faces many challenges if it is to complete dual goals of deregulating national gas and electricity markets to allow for cross border competition and providing all EU customers the opportunity to choose their energy supplier by the end of 2007.

A fundamental starting point, and one that was shown to be severely lacking, is investment and development in the necessary energy infrastructure. The Nordic market provides a shining example as to how integrated energy infrastructure enables a liberalized market to function correctly, providing optimal energy security for end consumers in the process. Both industry and government representatives presented data on the effects of a severe drought on hydro electric production in the Nordic region and the pressure this put on the market to allocate increasingly scarce resources. The integrated grid system in place to link Nordic country electricity supplies was able to react to correct information and signaling in order to direct electricity to those most in need. The lesson learned here is that energy security can be enhanced within a liberal market framework, especially one where the information is correct and market actors honest.

Development of a Europe-wide transmission infrastructure is merely one of many facets of European energy markets that must be improved in order to assure greater energy security. Energy needs follow the example of deeper economic integration in the EU. This means overcoming an entrenched post-World War Two vision of energy providers being, as one participant commented, a public good that needs to be government controlled. Nation-centric approaches to the energy market impede market liberalization and result in the existence of several national regulators – rather than a single European regulator.

However, there appears to be growing support for liberalization in Europe. Europe, many participants observed, is on the right path, despite great variations in the implementation of energy market liberalization in member countries. Critical challenges lie ahead, however. Several participants questioned the ability of a liberalized energy market to deliver results on climate change prevention and the parallel issue of investment into renewable energies. There was uncertainty as to the nature of regulation that would be required to fulfill climate change protection ambitions. In fact, the very nature of the regulation environment in Europe was of concern, especially as a failure of sufficient regulation had allowed certain forces to ferment in California that eventually resulted in a full blown energy crisis and severe shortages of supply. The second outstanding European concern, dependence on Russian gas supplies and how liberalization may weaken energy security in this context is addressed further below.

2.2 *Giving the liberalized energy market what it needs: infrastructure and grids*

Infrastructure must be sufficiently developed in order for the market to deliver on security and respond correctly to emergency signals and protect customers from potential supply deficiencies. Whether the question concerns electricity grids, cross-continental pipelines or key infrastructure for liquefied natural gas the market environment must be beneficial to investors, and the infrastructure in place must be embraced and utilized by policy makers. With the liberalized market removing the state from the equation, two formative questions were raised during the workshop discussions: If the market works so well what is the need for regulation? And; do competitive markets provide for adequate investment?

The general hypothesis put forward during the discussion is that liberalized markets help both security and infrastructure investment. At the same time, it was also emphasized that liberalized markets does not necessarily mean that there is no regulation. A key barometer in assessing the role and degree of regulation is the level of competition in energy markets. One participant used the example of the United States, where competition for the building of the pipelines is extensive, to show that, ultimately, increased competition through the process of liberalization and unbundling in the infrastructure market has a positive effect on energy security. In light of successes in the US, the European Union is following suit with the unbundling of energy infrastructure; a sure sign that there is belief in the role of the liberalized market in delivering energy security.

With regard to the need and specific role of regulation in ensuring sufficient levels of investment in energy infrastructure, participants noted that liberalization is accompanied

in some places by market compatible re-regulation designed to protect end consumers from potential adverse effects of a liberalized energy system. Such regulation is usually designed to take into account environmental concerns (e.g. efforts at curbing climate change) as well as regional discrepancies. Regional discrepancies, as noted by a representative, affects regulation; where a single pipeline supplies a given area, the need for regulation is much greater than where there are several pipelines and therefore competition naturally present. As such, regulation need not always be of the blanket variety and needs to be nuanced to suit localized realities.

Whether competitive markets provide for adequate investment was widely discussed, especially concerning the ability of investors in the gas market to identify market opportunities with adequate foresight. The reality, several industry representatives noted during the discussion, is that investment signals are sometimes inappropriate and can lead to underinvestment which in turn can compromise energy security. Issues concerning gas pipelines in Europe have also come to the fore of industry discussion. Some participants pointed out that even though an adequate pipelines system is already in place in Europe it is not efficiently used, and that outside of the UK, Belgium and the Netherlands there has been no major investment in pipelines over the past decade. As such, energy security is being undermined, with several participants recognizing that Europe does not have the infrastructure with which to direct gas supplies from west to east in the case of a crisis that primarily affects in Eastern member states. Thus the western member states in the EU have greater energy security than have many of those that have joined since 2003.

On the question of whether or not the liberalized market provides the correct incentives with which energy security can be enhanced, discussions throughout the event focused on liquefied natural gas (LNG). This opened an in-depth debate about the potential and limits of LNG.

2.3 Liberalized energy markets and LNG. What does the future hold?

Participants from both sides of the Atlantic emphasized that LNG is an energy source of great future potential, with several different and overlapping functions. Energy security can be increased as LNG, shipped from various parts of the world, provides another option to consumers faced with piping gas from areas fraught with geopolitical tension. Climate change can be combated as increased LNG consumption would effect upon the uptake of coal. And, in the long-run, LNG could lure the natural gas market away from long-term contracts by quadrupling in size and becoming truly global in nature.

With these goals in mind, questions were raised that shed light on their achievability. These included: Does a fully liberalized energy market provide the right incentives for market participants to make the adequate investments? Can LNG become a globally traded commodity under present market conditions? And to what extent does public opinion undermine the ability of governments and industry to build new LNG terminals, and what are the implications for the development of the LNG market as a whole?

The basic LNG equation consists of investment in infrastructure both in the source country and receiver country, transportation of liquefied gas and the process of re-gasification in highly specialized plants in port-side areas. Raised at various junctures during the con-

ference, the threefold set of obstacles impeding the development of a single, competitive, global LNG market are market competition, a difficult investment environment shackled by an imperfect market and diminishing local public and political support for the construction of LNG regasification (Regas) terminals.

Referring to the question on market incentives, it is evident that the upfront costs of LNG are great. Participants noted that economic logic continues to cool the development of a more robust LNG market, including fears put forward by other industry representatives present that the LNG market may currently be overheated and will not undergo the expansion that many politicians would like to see. Reductions in oil and gas prices, a sign of increased competition in the market place, may lead to this change, as will progress on the renewables front. Simply put, there is an understanding that should the present market conditions favorable to LNG abate it will be difficult to sustain investment as end prices will no longer be competitive enough to keep the market locked into an upward curve.

During a separate discussion, though one that leads nicely from that penned above, the dynamics involved in investment into liquid natural gas, the inefficient combination of market foresight and investor confidence were remarked upon. Building pipelines and regasification (Regas) terminals respectively takes several years with investors speculating on the nature of the market ten years from the time initial investments are made. The market, observed an industry representative, does not stand still and information can never be perfect.

One conclusion is that LNG is hindered by the fact that the market and its corollary investment environment are by no means 'perfect'. It was debated whether the imperfection was human inability to adequately project the state of the market at the time investments will be rewarded, or whether it was simply a natural fact of gas and LNG markets. The latter point, raised by various participants, explains why eliminating long-term contracts as a dominating feature of gas markets will prove to be very difficult, if not impossible.

Based on the twofold conclusions of stronger market position for other energy sources and an imperfect investment environment another marker is revealed: There is no guarantee that the liberalized market can foster diversification of supplies. The liberalized market cannot simply jump start or boost an energy source that faces so many unyielding challenges. According to some participants, the aforementioned drive for greater diversification of supplies that stems from a widespread belief in LNG growth is, for now at least misguided and, critically, energy security is potentially compromised, or at least not improved, by the inability of the LNG market to blossom. Liberalized markets may well strengthen existing major energy sources at the expense of aiding increased consumption in smaller contributors to the overall energy mix such as LNG.

The development of a truly global LNG market, as was frequently mentioned by several participants, is also effected by a lack of social and political support, especially in Europe, for Regas plants. The phrase "not in my back yard" (NIMBY) characterizes the current attitude of public opinion toward LNG, and especially Regas terminals. On both sides of the Atlantic, expansion of the LNG market has been much championed by energy analysts and political leaders under the banner of diversification of supplies. How-

ever, participants were worried that local fears of impending disaster are dampening local political will for providing necessary permits for the construction of new terminals.

2.4 Future challenges

The path ahead on both sides of the Atlantic is undoubtedly one of market liberalization and competition enhanced by regulation. In the United States this is already the norm, though as the discussion thus far shows, further liberalization and re-regulation are required to prevent manipulation of information for self-interested reasons such as those seen during the critical four hour period prior to the electricity crisis in New England in 2003. Several participants noted that in the EU, the inability of member states to act coherently and follow a singular policy path is undermining the process of liberalization. Resultantly this fragmented approach is weakening security of supply as the internal market pulls in different directions and, as several participants noted, member states retreat into the shell of protectionist behavior. Furthermore, non-developments prevent the EU from dealing with outside suppliers in a more decisive way in order to secure energy supplies.

An industry representative spoke at length during a discussion on the process of liberalization in Europe stating that liberalization was one the one hand touted as a crucial policy imperative in order to create a national champion yet then aborted so as to protect this company from outside competition. Such a policy, the speaker continued, was harming competition on a European level, potentially threatening supplies to the end consumer. Reactions to this, and other comments throughout the day, show that this view was strongly supported by several others.

Despite the inherent dangers of not embracing liberalization, another industry representative argued that the policy of national champions and protection against outside competition was a wholly rational policy built on both a game theory basis of optimal gain and a socially embedded concept of energy as a public good which should be delivered through a centrally administered and easily identifiable system. This outlook combines both the political understanding as to why protection of national industries is a good and why there is often little public support for seismic changes. The post-world war II era, it was argued here, has seen energy utilities portrayed as an integral part of preserving national wellbeing and stability; it is proving a hard task to overcome this. In short, some countries were not willing to relinquish the upside of the old system in order to move toward a new liberalized playing field.

3 Life in Russia's shadow. How can Europe overcome security of supply fears emanating from its neighbor?

Debate and discussion on the topic of European energy security and Russia appeared across the board from panel debates and working group presentations to open discussions. On the whole, the discussion was directed by those fearful of Russian involvement both within the European energy market and Russia's impact upon the energy security of individual EU member states. Two key issues structured that discussion.

The first issue focused on the involvement of Gazprom in the downstream sector within the EU. Several participants, especially those representing businesses active in the industry, stimulated interesting debate as to how cross-ownership can best be regulated and managed within liberalized energy markets. Further debate broke out on the question of reciprocity and whether there can be reciprocity in the energy market between the EU and Russia in the coming years. The second issue focused on the dependence of some EU member states on Russian gas. Many EU member states receive upwards of 80% of their natural gas from Russia, with some members totally reliant on Moscow. To what extent does energy market liberalization further deepen that dependency? And what can European policymakers do to manage downsides?

3.1 Changing roles, can there be reciprocity?

Replies to questions on how to regulate cross-ownership and the debate on reciprocity were loaded with caution, with many participants weighing in on the side of pessimism and acceptance that the market was currently dominated by the sellers – in this case Russia. This has been a relatively new development and is not just limited to Europe or to gas; it is a reflection of current developments in global energy markets on the whole. By nature this market is leaving consumers if not at an actual loss then in fear that “energy actors” such as Russia may be able to dictate terms.

One participant opined that Russia was neither ready nor willing to accept market rules for downstream or upstream industries, thus leaving Moscow and its state owned companies as the key benefactor in both cases. This would hold especially true if the EU upheld rules of liberalization toward *all* competitors, as would be the case in a fully liberalized market. On the pessimistic side, participants envisioned threatening reductions in European energy security if Russian players were allowed into the Common Market at the same time as European players were being excluded from the Russian upstream sector. Justification of this point was made using examples of the media and the press in Russia to show that Moscow will disobey free market rules as and when it feels fit to do so.

Further to this “pessimistic” picture, it was added that Russia was now in a historically strong position *vis á vis* energy supplies to the EU. In that context, it was questioned whether Moscow needed reciprocity at all. Aided by high prices and diminishing indigenous supplies, the “tough game” Moscow is playing is, at least according to some participants, considered here to stay with the “sellers” market giving it all the powers it needs to be able to dictate terms.

In reply, more normative guidance was offered that “if you can’t beat them, join them”. The adage, one participant opined, should be applied to both upstream and downstream sectors providing, in the process, the power of interlinking EU interests and incentives with those of the Russian Federation. Russia would not hinder supplies if it felt that its own vital interests, including the financing of social policies at home, were threatened by hostile and non market based actions in the energy market. This approach was echoed by those calling for an improved consumer-producer dialogue which would bring about win-win situations. Conclusively, this approach suggests that it is possible for a reciprocal relationship based on market rules to develop and that European actors could use Russian requirements for security of demand to do so.

Further avenues of opportunity were taken up by several other participants. Russia requires, according to one argument put forward, greater investment in upstream sectors for which financial capital cannot simply be generated by projected income levels. Maximal exploitation of Russian gas fields would require the skills and experiences possessed by European (or other Western) companies. Crucially, therefore, a future of increased European (or generally Western) involvement in Russia was in the best interest of all actors. It is especially the case, noted another participant, as technology for extracting the gas is becoming critical given maturing fields and increased global demand.

Greater substantive discussion turned to what powers the European member states possess that may enable a better producer-consumer relationship or dissuade Russia from politicizing energy and cutting off supplies from former members of the Soviet Union and Warsaw Pact.

3.2 *How can liberalized energy markets help EU member states improve security of energy supply from the Russian Federation?*

Despite the gloomy assessment of the status quo by a range of participants, and an equally prevalent range of fears expressed by others, some participants argued that Europe’s bargaining power remains a relevant factor in dealing with Moscow and securing energy supplies for all EU members. This bargaining power is strengthened by the dynamics of the liberalized market that, in effect, buttress the massive consumer market that Europe represents for Russian energy exports. Energy security for Central and Eastern European end consumers would be enhanced, it was argued, in two main ways. Firstly, by embracing liberal market dynamics which would establish leading European companies as major suppliers for these countries. Secondly, the creation of infrastructure and market for alternative energy sources as a means to diversify away from Russian gas. Both policies effectively utilize the massive market that European consumption represents to Russia and the belief that no rational policy coming from Moscow would disrupt supplies and risk losing the countries most vital source of income.

The debate on the positive role of the liberalized market on energy security was sparked by the following question: Should Poland and the Baltic State Countries of Latvia, Lithuania and Estonia sell off their existing energy companies to bigger European competitors, effectively becoming 100% dependent on large European suppliers? A direct and sobering answer was that ‘no’, it was not a good idea to ever be 100% dependent on any supplier, but in the case of European energy security the situation at present is clearly not

optimal. Thus, as the discussion developed, it was clear that in case liberalization would be further embraced by governments the main losers in the equation would be small and medium sized energy companies within the countries most vulnerable to the politicization of energy by Moscow. These companies would simply be bought out by bigger European competitors under the guidelines of an open competitive market; a situation that may well erase the post-world-war two equating of state owned energy companies as the deliverers of a public good.

Even so, having large European energy companies wading into new European markets would be good for energy security, it was emphasized by some participants. The rationale for this argument was expressed as being one whereby Russia would not antagonize, by means of cutting off supplies, EU neighbors if the major energy companies operating in these countries originated in large and powerful member states. What would traditionally have been an issue between Russia and, for example, Poland would become an issue between Moscow and several major European capitals. Such a situation would severely hurt Russia's international image and important relations with powerful members of the European Union and key global institutions. Subsequently, both representatives of industry and civil society concurred that in all likelihood end consumers in vulnerable countries were not in danger as long as their home countries did not hold on to national monopolies or even champions and allowed for takeovers by large European energy companies – so called “European champions”.

3.3 Towards a Single European Voice in Energy?

As a means of protecting its Eastern fringes suffering purposefully orchestrated gas shortages from Russia, several participants emphasized that the EU needs to strengthen internal coherence and forge a single voice to effectively project external energy policies.

Establishing strategic gas reserves (SGR) was put forward as one possible option. An SGR would have security of supply dynamics similar to the strategic petroleum reserves with the key difference being that the Commission could hold the stocks. With the Commission potentially headed by a European energy minister having powers to hold and administer stocks centrally, the running of an SGR would be part of an “Energy NATO”, specifically functioning for the benefit of European energy security. However, there remain many serious logistical problems that would need to be overcome such as where and how the SGR would be stored and exactly what area size the SGR will cover. Furthermore the smooth application of SGR mechanisms will require a clear set of rules and regulations.

Developing a common European energy policy toward Russia with the intention of better securing supplies would also include improving the pipeline infrastructure. It was already emphasized above that the liberalized market can provide for correct incentives into infrastructure investment, even though the market is not always ‘perfect’. With an eye on potential complications in gas supply from Russia, it was agreed that an improvement in west-to-east gas pipelines would certainly bring with it a positive correlation of results in the energy security of the EU's easternmost members. Participants showed concern that not enough money had been invested into these critical pipelines.

4. Responding to human induced climate change

In recent years, climate change has risen to the top of policy agendas, in Europe but increasingly also in the US. In 2005, the EU introduced a greenhouse gas emissions trading system as one means to respond to the climate change agenda. It also seems likely that a 'cap and trade' system will be introduced in the US in the foreseeable future – a tangible and serious achievement in the eyes of many present at the event. At the same time there are significant investments going into both the renewable energy sector and the development of better technologies to reduce emissions from fossil fuels. Finally, measures to increase energy efficiency are gaining renewed attention.

Worryingly though, present market conditions are shifting in favor of coal for electricity generation with potentially disastrous consequences for growth in CO₂ emissions. Not only is coal an abundant source on both sides of the Atlantic but the technology and infrastructure behind bringing coal fired energy to the market place is comparatively cheap. These factors are about to bring the post-industrialized world to the cusp of a 'coal century'. A coming coal century would at best cause a revolution in technology and at worst destabilize the whole process of combating climate change. With climate change increasingly becoming an issue of security and "national interest", climate protection needs to be seen as a component of energy security.

Several timely and pressing questions were raised in this context with the most pressing question being whether a liberalized energy market could successfully facilitate the drive toward climate protection on both sides of the Atlantic: Can the liberalized market facilitate the mechanisms used to drive the battle against climate change? Secondly, are liberalized markets providing the correct signals for climate friendly energy sources to be adopted? To best organize the varying outcomes and opinions, the following sections are divided along the key issue arenas carbon capture and sequestration (CCS) and energy efficiency.

4.1 *Are liberalized markets providing the correct signals for climate friendly energy sources to be adopted?*

To best tackle the above question this section summarizes the arguments and discussions on three crucial issues. Why is the market sliding toward coal; at what price would CO₂ need to be set in order to help climate combating solutions become more prominent on the market; and of what nature should policy makers mold regulation if they are to combat climate change on a free market playing field?

Several participants agreed that on the back of high oil and gas prices and the difficult geographical and strategic areas that gas comes from, the market is currently favorable to coal and nuclear power. This is especially so as coal can be procured for cheap prices. At the same time, demand for energy is also increasing, putting ever greater pressure on easily accessible energy supplies, of which coal has an overwhelming advantage both in Europe, the US as well as in non-OECD Asia. Simply put, the economics says 'go to coal'. An underlying conclusion here, and one that several participants viewed as significantly dangerous, is that unless there is a significant upgrade in technologies, or a signifi-

cant move away from fossil fuels for electricity production – which as of 2004 stood at 65% globally – the current market environment goes against the drive to combat human induced climate change. The liberalized market, on this review, does not possess the signals to make climate change friendly sources competitive, primarily since the ‘real’ cost of CO₂ is yet to be agreed upon. Investors, one participant continued, will require firm policy signals, for example the creation of a price for CO₂ that will enable a credible long-term market based mechanism for combating climate change to emerge.

With a global trading instrument for CO₂ yet to be established, the pricing of CO₂ elicited interesting responses at various times during the conference. The emphasis, it was opined, is on policy makers to adopt a realistic price for CO₂ with the hope that the open market can embrace this figure and aid the drive for sustainable development. There were no signs that market mechanisms would have to be rejected in order for this latter task to be stimulated, though it was noted that there could be ensuing conflict between competing energies, potentially caused by those which benefit from a socio-political environment external to market logics (see discussion on CCS).

Inseparable from the discussion on the role of the market, pricing for CO₂ and the fight to combat human induced climate change is the issue of regulation. Garnering attention throughout the debate was a concern as to the nature of the regulation required in order for climate change targets to be met within a competitive market framework. One participant opined that so-called “little r” regulation (e.g. design rules to enhance competition and innovation) would be the best way to combat climate change. “Big R” policies such as price caps would have negative impacts instead; policymakers could not afford to stifle competition by heavily subsidizing a particular renewable energy or by creating mandatory systems whereby one or another renewable energy must be used above others. According to some participants, such regulation thus restricts the development of science and technological innovation in other sources of energy that could have positive impacts on combating climate change.

4.2 Implications of a coal century: The challenge of Carbon Capture and Sequestration

Though coal is appealing from a market viewpoint, it is highly unacceptable within the challenging framework of tackling human induced climate change. Carbon capture and sequestration (CCS) is the only way forward if we are at the same time to take on rising demand, market economics and climate change. That opinion was upheld universally throughout several discussions and by a range of participants. However, the actual success of CCS is not as clear cut.

CCS is composed of three stages – capture, transport and storage. The first two are costly and the former extremely challenging from a technological point of view. A recent Massachusetts Institute of Technology study in which scientists have described results of carbon capture as “unclear” was referred to here to highlight the difficulties faced by all involved in making CCS a viable option for combating climate change. It could well be, should the outlook of some participants present here hold, that the great hopes of CCS

are, in fact, overblown. There is also the large cost of developing new technology which, it was stated here, will be borne out of industry coffers.

Commenting specifically on the financial burden of upfront investment in technology, an industry representative involved in establishing a pilot project for CCS put a figure for CO₂ cost at circa 20 €/t. CCS, struggling through a merely embryonic existence at present, requires this price band on CO₂ in order to make it attractive to the market and open to the potentially beneficial market dynamics spoken of above. This outlook, the speaker continued, could be endangered by too forceful an implementation of renewables that may be much easier to promote politically than they are to make economically viable. Here the problem does not lie with the nature of the market but with both public and political environments that may disrupt the market at a time when doing so may well harm energy security.

One of the critical crux matters of climate change is to be found here: market economics support coal and nuclear options, yet these are impeded by a NIMBY ('not in my backyard') approach from the general population. This relates to the third and most contentious stage of carbon capture – storage. A large amount of space is required, as well as public trust and a strong legal framework. The latter two have simply not been forthcoming making the former a redundant issue. An often hysterical NIMBY populism has found willing support in local politicians and short-cycle political environments. Taking an anti-CCS, nuclear power and LNG approach has become a tool with which to win votes, even at the behest of energy security. With development in the renewables sector, as a series of participants during various discussions noted, slow in coming, a phasing out of nuclear and coal to suit the climate change agenda could cause massive energy insecurity and social disruptions. In light of these worries it is understandable why several participants agreed that the climate change agenda complicates the process of both energy market liberalization and increasing energy security. The public are interested in environmental issues but ignorant about reality.

Resultantly, two of the questions posed; what can Germany do to avoid a “coal century” and what is the attitude of the general public toward “clean coal” provide starkly contrasting answers. If a solution is not found, markets and consumers may well have to face up to the reality of missed climate change targets or increased energy disruptions and energy insecurity.

A sizeable shift toward CCS can only be achieved, it was concluded, provided the general public accepts the particular processes used in obtaining energy as much as the price and ethics involved. CCS will be more expensive given the costs of technology, transportation and storage but this, should it function, will be a small price when compared to the downsides of climate change.

At the polar opposite of CCS and nuclear energy, energy efficiency has the backing of the public and the politicians. It is clearly a resource worth exploiting that will also come to have a positive impact on energy security for all transatlantic actors.

4.3 Energy efficiency: A resource worth exploiting?

Energy efficiency, as pointed out by an NGO representative, has already enabled cut backs in energy consumption that would otherwise be twice the 1990 levels. Such facts help explain why energy efficiency is so well received – and back on the policy agenda in both the United States and the European Union. A highly stimulated discussion on the role and value of energy efficiency in contemporary society revealed a clear conclusion: energy efficiency is good in and of itself. It is highly respected by a range of consumers from families, for example in middle America, intending to cut energy costs to those devout on tackling climate change and even to those worried about energy security and broader “national interest”. The revealing state of affairs, noted a participant humorously, has put US neoconservatives in bed with climate change awareness campaigners. Clearly the value of energy efficiency to both ends of the political spectrum at a time of global warming, high oil prices, war premiums and heightened foreign policy tensions is great. It is further aided, commented several participants, by the aforementioned factors of slow development in the renewables sector and present market favorability for coal and nuclear energy.

A key formative question during the discussion on energy efficiency was: What transatlantic opportunities exist for energy efficiency? One potential avenue of greater transatlantic cooperation on energy efficiency concerns product standards. However, though this may be a normative ideal it is certainly not one that can be achieved easily. It was pointed out that differences between product standardization processes and institutions are very significant. On both sides of the Atlantic product standards institutions are embedded in over one-hundred years of work that, when analyzed closely, deviate considerably from one another. Transatlantic opportunities will thus be limited to achieving targets set at forums such as the G8, that may well come to include a unified face in persuasive diplomatic efforts to bring China and India into a post-Kyoto protocol but will not involve deeper integration on the issue of energy efficiency.

Despite the wealth of support for energy efficiency it was notable to hear participants comment on the lack of financial return for utility companies. Incentives exist for both inventors and manufacturers in generous measures yet energy providers are losing out. The dynamics of energy efficiency negatively affect their income. An interesting example was given here of energy providers buying energy-inefficient light bulbs direct from the supplier and proceeding to give them away as a means of making sure they reach the market and boost energy consumption. It was further noted that the size and power of such companies enables them to lobby strongly against regulatory and other government bodies.

Efficiency should also be broadened, it was opined, to include grids and infrastructure. The creation of “smart grids” would serve to boost energy efficiency as they allow for optimal placement of sufficient energy to those areas of the grid most in need. Resultantly such energy catastrophes as the electricity grid closure in New England in 2003 could be avoided. As could the frequently cited price spikes specific to liberalized markets. “Smart grids” provide an insight into the not-too-distant future where investment in infrastructure meets energy efficiency with the end result being all round increases in energy security.

Annex I: Conference Program

24 MAY 2007

07:30pm **Informal Dinner**
Restaurant Aigner am Gendarmenmarkt

25 MAY 2007

08.30am **Arrival and Registration**

09:00am **Welcome**

- *Jörg Himmelreich, Senior Transatlantic Fellow, German Marshall Fund of the United States*
- *Jan Martin Witte, Associate Director, Global Public Policy Institute*

09:20am **PANEL DISCUSSION (I)**

Liberalization of energy markets and security of supply: Transatlantic experiences

This panel will introduce the dialogue session with an assessment of the impact of energy market liberalization on security of supply in both the EU and the US. Speakers will discuss consequences of liberalization, and highlight perceived best practice approaches to regulation of liberalized energy markets with a view to safeguarding security of supply. Questions raised will include, among others: What are the potential downsides of liberalization with regard to security of supply? What are appropriate (tested, successful) policy mechanisms (i.e. regulatory measures) with which these downsides can be managed effectively? How can regulatory mechanisms avoid undermining market processes?

Panelists:

- *Richard R. O'Neill, Chief Economic Advisor, Office of Markets, Tariffs and Rates, US Federal Regulatory Commission (FERC)*
- *Rolf Hempelmann, Member of Parliament, SPD*
- *Enno Harks, Political Adviser, BP*

10.30am **Q&A**
Coffee break

11.00am **WORKING GROUP SESSION (I)**

Regulation challenges in liberalized energy markets in the US and the EU

The first working group session will zoom in on a variety of policy issues at the nexus of liberalization and security of supply. The first working group will focus on the relevance of long-term contracts in natural gas markets for ensuring security of supply while the second two will address challenges of investment in and security of infrastructures and grids.

WORKING GROUP A

Long-term contracts and natural gas: The impact of market liberalization

One of the key issues in the debate on the nexus between liberalization of natural gas markets and security of supply in both the EU and the

US is related to the impact on long-term contracts and implications for price volatility and levels of investment. Liberalization advocates argue that even if long-term contracts are banned, markets can still deliver on security of supply as long as alternative trading arrangements exist. Opponents posit, in contrast, that without long-term contracts between exporters and wholesalers, increasing price risk would result in less and/or delayed investment, generating security of supply problems. What are the experiences with liberalization of natural gas markets and its impact on long-term contracts in the EU and the US? Did liberalization pose security of supply challenges? How did regulators and the private sector deal with these challenges?

Introduction: *Harry Aas, Director, Gas Marketing Group, Norsk Hydro*

WORKING GROUP B

Investment in infrastructure and grids

Meeting demand capacity; developing an adequate portfolio to deal with input fuel variations; and ensuring interconnectivity through the construction and upkeep of transmission and distribution networks requires substantial investment for ensuring security of supply. Do liberalized energy markets provide the necessary economic incentives for private firms to conduct the necessary investments? What policy mechanisms are needed to counter regulatory uncertainty and underinvestment? Are market price signals strong enough to stimulate adequate and timely investment? How can demand-side insensitivity (failure to alter consumption behaviour) during peak-demand periods be handled?

Introduction: *Anne Neumann, Research Associate, University Dresden, Chair of Energy Economics and Public Sector Management*

WORKING GROUP C

Securing critical infrastructure

A main challenge cited by critics of a liberalized energy market is infrastructure security. What is the appropriate division of roles and responsibilities between the public and private sectors? Who is to pay for infrastructure protection? What is the role for regulation?

Introduction: *Alex de Alvarez, Deputy Director, Infrastructure Security and Energy Restoration, US Department of Energy*

12.15pm **Lunch**

01.45pm **PANEL DISCUSSION (II)**

Meeting future energy needs in the context of liberalized markets: Experiences from the US and Europe

The extent to which liberalized markets will be able to generate an energy mix that is sustainable from a political, economic and environmental point of view is still unclear. In terms of domestic energy resources, a new debate has started about the role of nuclear energy in enhancing security of supply and potentially slowing down climate change. Coal is also back on the agenda. What political implications exist due to resource dependency in the US and Europe? What has been the effect of energy market reform in the US and Europe on demand? How can a balance be achieved between Europe's interest in reliable gas supply and Russia's concern over secure gas demand? Can liberalized markets function in case there is an oligopoly of (external) suppliers?

Panelists:

- *Ulrik Stridbaek, Senior Policy Advisor on Electricity Markets, IEA*
- *Felix Würtenberger, Senior Advisor, Energie Baden-Württemberg (EnBW)*
- *Christoph Tönjes, Senior Researcher, Clingendael International Energy Programme*

03:00pm Coffee Break

03.30pm WORKING GROUP SESSION (II)

The search for energy security: Towards a new energy mix?

In this working group session, participants will address issues pertaining to liberalized markets and future energy supply. The first working group will focus on potential domestic sources of energy, looking specifically at “clean coal” while the second group will concentrate on external sources, particularly the global market (or lack thereof) for liquefied natural gas (LNG).

WORKING GROUP A

Towards energy independence and security? Investing in domestic sources of energy

Some argue that one potential way to address the energy security of future decades is to promote energy independence by relying on energy sources that are abundant in supply and easily controllable, for example “clean coal”. What are the pros and cons of “clean coal”? Given high start-up costs, minimal or nonexistent investment returns in the short- to medium-term, as well as potential regulation uncertainty, what steps can be taken to encourage private investment in these areas? What regulatory steps would be needed?

Introduction: *Wolfgang Dirschauer, Head of Climate Policy, Vattenfall Europe*

WORKING GROUP B

Diversification: External sources of supply

High costs of production, transportation and storage have thus far hindered widespread uptake and use of liquefied natural gas (LNG). Despite these challenges, unprecedented growth in the LNG market is expected in the coming years. What problems and benefits would exist in a fully liberalized, rapid-growth LNG market? How can challenges of infrastructure, security and regulation be overcome to ensure safe and efficient delivery in both the EU and US? Will a liberalized energy market provide the necessary economic incentives to private firms to conduct the necessary investments?

Introduction: *Daniel Muthmann, Vice-President Head of LNG Supply and Liquefaction, E.ON Ruhrgas AG*

WORKING GROUP C

Energy efficiency: A resource worth exploiting

One of the largest “supplies” of energy can be exploited by encouraging conservation mechanisms and requiring greater efficiency standards. As demand among consumers worldwide for electronics and

automobiles increases, cost-effective efficiency standards are and will continue to be necessary to help offset unprecedented demand for energy. What measures can be taken to promote energy efficiency worldwide? What role should governments or international organizations play in penalizing or rewarding businesses and consumers?

Introduction: *Jennifer Morgan, Climate Change Programme Director, E3G*

04:45 pm F I N A L D I S C U S S I O N

Formulating a transatlantic agenda towards liberalized energy markets and security policy

Moderated by *Jan Martin Witte*

05:30pm F a r e w e l l

Annex II: Participant Contact Information

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