JOHN ROBERTS

no 3

XENOPHON PAPER

ENERGY COOPERATION AMONG THE BSEC MEMBER STATES

TOWARDS AN ENERGY STRATEGY FOR THE BSEC

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OCTOBER 2007

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PREFACE

Energy security has become one of the most pressing issues of our times, along with its close relative cousin, global warming, induced by human activities. As the world demand for energy grows, we come to realize that the planet's traditional energy resources are not infinite as they still seemed to be a couple of decades back. With China and India steadily rising in the East, as major energy importers and consumers, we may be witnessing a revival of old-fashioned 'Mackinderian' geopolitics on a global scale. In the absence of an internationally agreed framework for relationships among producer, consumer and transit countries, individual nations seem to be locked in fierce competition for access to, or control of, energy resources, markets and routes involving state actors and private interests alike.

The wider Black Sea region is emerging as an increasingly important player in the global geopolitics of energy. The region is home to two major energy actors, Azerbaijan and more particularly Russia, the foremost energy producer in the world. It is also the main conduit for rich hydrocarbon resources originating in the Caspian basin and the northern portion of the Middle East. As a result, practically all the states of the wider Black Sea area and their representative regional body, the Organisation of the BSEC, have a vital stake in the development of this new energy hub and reap the potential benefits that go with it. The EU, the leading energy importer in the world, which recently extended its borders to the shores of the Black Sea, finds itself at the centre of an energy debate immediately affecting the BSEC countries. At a time when serious efforts are being made toward enhancing interaction and cooperation between the BSEC and EU institutions, the issue of energy security acquires special significance in both economical and political terms.

The ICBSS is proud to have persuaded John Roberts to apply his widely acknowledged expertise in global energy issues to a regional study and produce this contribution which takes a detailed look at the potential for energy cooperation in the BSEC area. The paper covers important aspects of national and international energy politics in the BSEC area, notably through an examination of relevant sectors (oil, gas and electricity), highlighting the issues that could have an impact on the delicate balance of interests in the Black Sea region. The author explores a number of ways in which the BSEC can use its resources and strategic location for the collective benefit of its member states, with special attention being given to the BSEC's main partner, the EU. The paper aims to capitalise on recent positive international developments touching on energy security by emphasising the available opportunities for further cooperation.

We, at the ICBSS, are confident that this additional high-quality expert contribution will provide new interesting elements for structuring the energy security discussions among policy-makers as well as academics and scholars of the BSEC area in a broader international context.

Dimitrios Triantaphyllou
Athens , October 2007

INTRODUCTION: THE BSEC AND THE NEW GEOPOLI S OF ENERGY

The world is currently living in an era in which the ability to produce oil is only slightly in excess of actual demand. This means that whenever there is a crisis in a producer country or along some key transport artery, there is immediate concern as to whether this might signify at least a brief period in which demand has to be curtailed. Moreover, since this implies there is a lack of spare capacity to absorb shocks, it means that every time there is a shock, oil prices will likely increase. And whilst they will then fall a little as the impact of the shock recedes, most of the gains seem to remain in place. In terms of prices, it seems that tightness of the market, accompanied by periodic actual or feared shortages, results in a turn of events which might loosely be described as three steps forward, one step back.

Given the noted difficulties in separating out the specific energy elements, particularly in cash terms, in the trade balances of various BSEC countries, there are two key factors to bear in mind. One is that, in general, the proportion of trade conducted by BSEC countries amongst themselves is quite reasonable, commonly amounting to around one fifth or one sixth of a country's global trade (*see Table 1.1 Trade within the BSEC*). The second is that in all cases for which the International Monetary Fund maintains statistics (it does not yet issue full trade figures for Serbia), Russia is by far and away the most important source of imports for its BSEC colleagues, a direct function of its role as a supplier of both oil and gas. It is perhaps particularly noteworthy that most of the trade carried out by the countries with the highest dependence on trade relations with their BSEC colleagues, Moldova and Georgia, is with energy suppliers; Russia and Ukraine in the case of Moldova; Russia and Azerbaijan in the case of Georgia.

Elsewhere, the extensive reliance on energy imports has led a number of energy consumers, notably the European Union (EU), to look at major changes to their energy policy based on the principles of energy efficiency (involving either absolute reductions in demand for some fuels, or reductions in the anticipated increase in demand for specific fuels) and diversification of energy supply. This has, in turn, given rise to concern in producer countries that they require improved security of demand, to match consumer aspirations for improved security of supply.

For the BSEC, a key factor is that these twin concepts of energy security – security of both supply and demand – came together at the St. Petersburg G8 Summit of July 2006, a summit hosted by the foremost energy producer in the BSEC: Russia. Moreover, the summit produced a detailed Plan of Action for Global Energy Security containing a number of goals and actions of specific interest to BSEC member states, not least since the BSEC constitutes a grouping that embraces all three main aspects of energy security: producer countries requiring security of demand; transit countries that play a major role in terms of security of both demand and supply; and consumer countries that require security of supply.

Moreover, since so much of the G8's action plan consists of common sense approaches to energy

security issues, whole sections of the plan can be applied to a BSEC as well as a G8 context, thus cementing, rather than fracturing, relationships between BSEC energy producers, energy consumers and transit countries.

This study of Energy Cooperation among the BSEC Member States, intended to contribute to the development of an energy strategy for the BSEC, will thus seek to utilise the G8 conclusions, not least since they also represent the best prospect for a consensus between the two most important political determinants of energy development in the BSEC area: the European Union and Russia. This is not to discount the importance of various external factors, notably global energy markets, the presence of major energy producing neighbours in both the Middle East and the Caspian, and global environmental issues. But the European Union's influence in terms of the shaping of both regional politics and economies, and Russia's fundamental role in the provision of energy both to the region and through the region, notably to the EU, remain dominant factors in shaping the energy context for most BSEC member states. At a time of considerable strain in EU-Russian energy relations, an obvious goal for BSEC nations – including Russia itself – is the transformation of EU-Russian energy relations on the basis of cooperation, not confrontation.

a. The New Geopolitics of Energy

The ever-present threat of curtailed energy deliveries, formerly in oil, more recently in gas, comes against a background of a sustained increase in overall energy demand. Moreover, even though energy prices have soared in recent years – indeed, in the case of oil, tripling since 2002 and rising five fold since the nadir of 1998 – the anticipated major damage to global economic growth has not occurred. In large part, this may relate to the fact that the governments of many of the world's biggest energy consumers were already imposing high taxes on domestic oil consumption, so that increases in international prices appeared relatively limited by comparison. In any event, overall energy demand seems to remain set on a strong upward trend, primarily because of sustained economic growth in such major developing countries as India and China but also because of US persistence with low domestic gasoline prices.

b. New Actors

These actors not only have a general impact on the overall geopolitical climate, but also a direct impact on the BSEC region. Chinese companies are engaged in developing Azerbaijan's energy resources; Indian companies want to purchase Azerbaijani crude via Turkey and also to invest heavily in Turkish petrochemicals development, which is closely tied to Turkey's role as a major transit country for both Azerbaijani and Iraqi crude and, prospectively, for Russian crude as well. At the same time, the United States (US), the EU and, within the BSEC itself, Russia, all remain major investors throughout the energy chain.

c. New Concepts of Energy Security

Energy security has many components, including the balance of supply and demand, the physical safety of supply sources and the physical safety of transit systems. Until recently, the market aspect of energy security was invariably identified with the issue of security of supply; however

the extensive pressures on Russia regarding its energy development, particularly in gas, have led to an increasing focus on security of demand. This point was spelled out by President Putin at the G8 summit in St. Petersburg in July 2006, and specifically endorsed by his G8 partners in their Energy Security Declaration of July 16 (*see Annex XI*).

The logic of EU fears concerning supply security and Russian concerns for demand security would appear to favour long-term arrangements based on the concept of mutual interdependence in energy matters. Indeed, this was the basis of the original understanding concluded between the Russian government and the EU in 2000, the so-called Putin-Prodi initiative. Since then, the geopolitics of global energy have changed significantly, but in the Russia-EU context – and thus in a BSEC context as well – these changes have served only to heighten the argument that Russia, as the world's biggest gas supplier, and the EU, as the world's biggest gas importer, both stand to benefit from a long-term strategic accord concerning Russian gas flows to the EU.

At the same time, such varied events as the development of the Atyrau-Novorossiysk and Baku-Tbilisi-Ceyhan pipelines; the Russian gas sales agreements with most of its BSEC partners; the plans for the development or expansion of new oil and gas pipelines; and even the Russian-Ukrainian gas supply contretemps of January 2006 and the Russian disputes over gas with Belarus and Georgia a year later, in all demonstrate that there is increasing energy interdependence both amongst the BSEC member states themselves and in terms of their role as suppliers or transit countries with a major stake in overall EU energy security. What is less clear is how well this interdependence is understood, and whether the response to increasing interdependence will be efforts to achieve greater national control over energy activities at the expense of multi-national cooperation.

d. The Global Energy Balance

What is clear is that there is constant pressure on producers to keep up with rising demand. And while the world does not face a crisis in terms of the volumes of crude oil available for ultimate exploitation, it does face significant problems in that, in general, producer countries have not yet raised the level of investment in production capacity sufficiently to ensure there is not only an ability to meet sustained demand increase projections but also to provide at least a modest margin to ensure demand could still be met even in the event of major problems in one of the major producer nations. Nor is it clear that projected investment profiles will ensure the development of such a margin. Producers are increasing output, but most of these increases constitute either a reaction to recent increases in demand or are intended to offset specific falls in supply, such as in Iraq, Nigeria and Venezuela. With the possible exception of Saudi Arabia, OPEC producers in particular – and OPEC producers account for 73.1% of the world's proven oil reserves – are not in a position to implement programmes to ensure the world will once again operate with a significant margin between supply and demand for several years to come, if ever.

In effect, such a margin probably amounts to around two million barrels a day – the amount of crude oil exports that are traditionally generated by such producers as Iran, Iraq, Kuwait, Nigeria, and the United Arab Emirates. The world has not enjoyed such a margin of prospective available

supply over actual demand for almost three years. In sum, the world does not so much face a crisis involving 'the end of oil' – a decline in oil available for physical production – as a crisis of investment, a lack of forward planning by which current and prospective supplies can be made available to meet anticipated production increases.

Against this background, the emergence of any new producer or the ability of any existing producer to augment production significantly takes on major commercial and, indeed, strategic, significance. Thus Azerbaijan and Russia, of the BSEC member states, play a disproportionately large role in determining how evenly the world's oil market is balanced. Similarly, two other BSEC member states, Turkey and Ukraine, play pre-eminent roles in the core issue of energy transit.

For all the rising importance of gas, which will be discussed below, it is oil that retains its crucial importance. The world's automotive economy depends on oil: 97-98 per cent of all the world's automotive transport runs on oil. The world's industrialised countries may be seeking to harness gas, or electricity, for automotive transport, but apart from the occasional nuclear-powered vessel, electric-powered truck, fuel cell-powered bus, or compressed natural gas taxi – which collectively do much to reduce urban pollution – this remains a world powered by oil. And, in particular, the world's militaries, and the global aviation industry, remain totally dependent on oil.

But oil is a fungible market. That means at least that if one producer is beset with problems there is a reasonable prospect that the remaining producers will not only be able to continue to produce themselves, and perhaps to produce a little more to make up for falling output elsewhere, but can rely on their output helping to serve what is essentially a global market.

e. An Increasingly Fungible Gas Market

Gas however, is not yet a global market. But the importance of gas is growing steadily and, indeed, there is a prospect that in Europe the gas market is becoming pretty much a fungible market: a consequence of increased volumes of Liquefied Natural Gas (LNG) arriving at various destinations in the European Union. LNG has already achieved one striking result; holding at bay previously anticipated increases in demand for pipeline gas, notably from Russia.

f. National Champions

A background of seemingly persistently tight energy markets naturally prompts both energy policymakers and corporate executives to search for new ways to gain advantage, however marginal. The most common approach has been that of national champions – companies to which state support is available, sometime overtly, sometimes behind-the-scenes. Both producer and consumer nations have espoused this approach, but in Europe, as ever, the issue is also posed as a debate on whether there should be European champions rather than national champions. The September 2006 campaign by Germany's E.ON to take over Spain's Endesa became an intergovernmental battle as the German and Spanish governments sought to promote the interests of what they deemed to be national champions. In contrast, the European Commission, in the form of Competition Commissioner Neelie Kroes, expressed in its unhappiness at the planned bilateral settlement of the takeover dispute by stating that unjustified measures to

prevent cross-border mergers are banned, and that what was required was 'European champions, not artificial national champions.'[1]

While France, Germany and Italy all see their major energy companies as national champions, with Spain worried for the same reason that the takeover of Endesa meant the loss of a national champion, only Britain of the major EU economies has failed to trumpet the concept. Maybe that is because two of the world's biggest multinational energy companies, BP and Shell, are wholly or partly headquartered in London.

In the Black Sea context, the question is not whether individual Black Sea countries – with the obvious exception of Russia and the possible exception of Azerbaijan and Turkey – can develop their own national champions for energy, but whether they desire, and possess the capability to develop policies intended to frustrate the ambitions of other countries' national champions. The issue goes to the very heart of what constitutes contemporary capitalism in the age of the mixed economy, in which the lines between state-controlled and state-influenced companies become increasingly blurred.

1 'Germany and Spain warned over private deal on energy takeover,' Guardian, London, 9 September 2006.

CHAPTER 1
THE BSEC SITUATION

The tripling, quadrupling or even quintupling of world oil prices in recent years, together with a continued tight market and extensive debate in both producer and consumer countries concerning energy conservation and diversification, make it extraordinarily difficult to anticipate where global demand will stand in five years' time, let alone a quarter of a century from now.[2] Both the International Energy Agency (IEA) and the US Energy Information Administration have produced their own assessments of how oil supply and demand might develop between now and 2030, but these tend to be based on assumptions that prices will, on average over this period, prove to be substantially lower than current rates of around $60 per barrel, let alone recent prices of up to $70.

Moreover, quite apart from the impact of higher energy prices, which should eventually produce at least a somewhat less profligate use of energy in such low price gasoline markets as in the US and Canada, there is an increasing interest in the need for greater energy efficiency per se. This is particularly true of the European Union, where it would appear that policymakers in the European Commission are moving increasingly to see whether they can set in place the kind of energy use strategy outlined in the International Energy Agency's World Alternative Policy Scenario (WAPS) of late 2004.

a. Projections on Supply and Demand up to 2030

In its standard reference scenario for 2004, the IEA anticipated that world primary energy demand – comprising coal, oil, gas, coal, nuclear, hydro, biomass, and other renewables – would rise from 5,536 million tonnes of oil equivalent (mtoe) in 2002 to 16,487 mtoe in 2030, an average increase of 1.7% per year. Under the WAPS, however, primary demand would still grow by an average 1.3% a year, but this would yield a total figure for 2030 of 14,654 mtoe, some 10% less than the main scenario assessment. This would largely take the form of using less coal, a reflection on the 2004 assumption that the process would be driven by essentially environmental concerns. A year later, when the IEA's 2005 study was issued, the overall WAPS estimate remained fundamentally unchanged, while the Reference Scenario saw demand reaching 16,271 mtoe, down a little on the 2004 assessment. By 2006, however, the IEA considered that were WAPS policies to be generally adopted, demand in 2030 would be no more than 15,405 mtoe, with oil at just 103 million barrels

2 How rapidly prices have risen depends on the starting point—and the method of calculation. A reasonable assessment is to say that over the 14-year period 1985-1998, Brent dated crude averaged around $18.49 a barrel in money of the day – and that this probably equates to around $25 in 2006 dollars. In 1998, when Brent briefly dipped to below $10 a barrel, it averaged $12.72 for the year. Oil prices then rose steadily, with Brent reaching $78.12 in August 2006 and again touching $71.74 in June 2007. The average price for 2006 was $65.14. The figures used for this footnote come from the BP Statistical Review of World Energy (June 2007) and the monthly reports produced by the International Energy Agency.

a day (mb/d) (*see Table 2.1: Global Energy Demand According to Various IEA Scenarios*).[3]

Such forecasts, however, hide significant changes in potential oil usage, particularly in the European Union. The mainstream 2004 reference scenario anticipated global oil usage rising 1.6% per year from 77.0 million barrels in 2002 to 121.3 million barrels in 2030. But under the alternative scenario it was projected to grow by much less, reaching only 108.5 mb/d in 2030. A year later, the main reference scenario estimated that by 2030, world oil use would total 115.4 mb/d, a 5.9 mb/d fall on the previous year's comparable calculation. This fall was matched by the estimate given for oil demand under the WAPS scenario, which was just 103.3 mb/d for 2030, 5.2 mb/d lower than the counterpart 2004 estimate. However, in addition to these two assessments, the 2005 study included a third, based on the concept that leading producers, notably those in the Middle East, might not make the kind of financial investment in production facilities that would enable reference scenario levels to be attained. Under what it called the Deferred Investment Scenario (DIS), the IEA postulated that by 2030, supply constraints might limit global oil demand to 105.3 mb/d. Moreover, the senior IEA officials presenting this report in London made it clear they anticipated that a combination of the DIS and WAPS scenarios would probably play a greater role in determining energy demand in 2030 than their supposedly mainstream reference scenario. 'We have found we are going to see elements of all three, elements of the WAPS, elements of the DIS, and some residual from the Reference Scenario,' IEA Deputy Director William Ramsay said.[4]

The price issue is, of course, also relevant in this context. And while it is not the purpose of this paper to make any attempt to forecast prices, any maintenance of current price levels will only add to the pressures limiting energy demand, and oil demand in general, envisaged in the WAPS and DIS.

b. External Energy Impacts

In terms of the BSEC, perhaps the most important element of this approach is the prospective impact on the EU. The IEA's 2004 reference scenario notes that EU demand totalled 13.6 mb/d in 2002 and was expected to rise by 0.5% a year to 15.6 m/d in 2030. But under the alternative scenario, a 14% cut in oil use is anticipated, which means oil demand would total around 13.4 mb/d in 2030, a little less than current levels.[5] The IEA noted that European oil savings would be greater than those for any other area of the industrialised world.

The IEA has also postulated similar trends for gas, with global demand for natural gas projected to grow from 2,622 billion cubic meters (bcm) in 2002 to 4,900 bcm in 2030, a 2.3% average annual increase. In the WAPS scenario, the 2030 total would be cut to around 4,400 bcm. Again,

3 The policies included in the WAPS are set out on pages 168 and 169 of the IEA's World Energy Outlook 2006.

4 Platts Global Alert, 7 November 2007.

5 International Energy Agency (2004), World Energy Outlook 2004, Paris, November. In this context, the IEA assessments are for a 25-member state organization.

the savings in Europe would be comparable. The reference scenario postulates an average annual growth in EU demand of 1.8% taking annual totals from 471 bcm in 2002 to 786 bcm in 2030. Under the WAPS scenario, European Union demand in 2030 would total around 695 bcm, almost 12% less than under the Reference Scenario.

Of course, nothing can be taken for granted. But what the alternative scenario, the Deferred Investment Scenario and the possibility of sustained high prices for both oil and gas all have in common is that they indicate the world may well be heading into a fresh era, as in the 1970s, when the growth rate of energy demand in general, and of oil and gas in particular, slows down significantly. In particular, with regard to European gas, the accelerated pace of LNG developments, and thus the ability of LNG suppliers to serve the European market, has already contributed to a more fluid European market than might have been expected even five years ago. This has profound implications for Russia, which may find its assessments of likely gas demand for Russian gas imports to be somewhat higher than assessments made by EU analysts. In particular, this might cast doubt on its own major prospective investment programmes, notably for development of Yamal peninsula gas, to be piped to the EU. The Russian decision to develop Shtokman, the giant offshore Arctic Ocean field, as input for pipeline gas, instead of the original proposal for shipping it out as LNG, clearly indicates major revisions in current Russian thinking concerning gas development. But whether this thinking is based on an assessment of European demand, rather than on a wish to ensure the field is essentially developed by Russian companies, remains unclear.

In terms of the BSEC member states, it seems likely that many of them will follow whatever pattern of demand behaviour emerges in the European Union. In particular, this is likely to be the case in Turkey, by far the largest essentially energy consuming nation in the BSEC (Russia excepted). As the economies of the BSEC member states grow and as their trade with the EU expands as a result of membership for some and prospective eventual membership for most or even all of the others, so, too, can their energy patterns be largely expected to mirror those of the EU. There will, of course, be exceptions to this, notably the two major existing BSEC energy producers, Russia and Azerbaijan. But high prices and still constrained budgets make it likely that most BSEC member states will move to adopt policies aimed at curbing the growth in energy usage in order to save scarce foreign currency. This is, of course, already a major issue in those countries – notably Ukraine, Moldova and Georgia– which have hitherto received gas from Russia, or via Russia, at prices markedly below those paid by their wealthier EU neighbours or colleagues.

c. Internal Energy Dynamics

As well as being buffeted by global and European market forces, the energy affairs of many BSEC member states are impacted by their relations with the BSEC's own producer members: Russia and Azerbaijan. As with all bilateral relations, these have enjoyed a mixed history, but at least there is a basis for developing or reviving energy cooperation between Russia and its BSEC customers. In particular, as the BSEC member states draw closer to the EU, especially the BSEC member states who were signatories to the Energy Community Treaty in October

2005 – Serbia & Montenegro, Albania, Romania, Bulgaria and Greece – they are already creating the legal framework for an integrated energy market based on EU regulations and practices.[6]

6 Negotiations with Turkey are ongoing for joining the treaty at a later stage. As of June 2007, Turkish officials were still citing technical reasons, rather than political differences, as their reason for saying it would be difficult for Turkey to sign up to the ECT. The principal Turkish concern is a desire to be 'more than a petrol station' for the EU, but to constitute a major hub for energy trading. Montenegro's position currently appears to be anomalous. Serbia and Montenegro – at that time single independent state – joined the BSEC in April 2004. However, as of July 2007, Serbia was listed as a member of the BSEC, whereas Montenegro is not. Although it was not until May 2006 that Montenegro voted in a referendum for independence from Serbia, the Energy Community Treaty of October 2005 already listed Montenegro and Serbia separately as Adhering Parties to the treaty.

CHAPTER 2
POLICIES, INSTRUMENTS AND PROGRAMMES

a. Introduction

There are two imperatives that Black Sea countries need to consider in seeking to develop common approaches to energy. The first is that their approaches have to conform with EU rules and regulations – not least because a number of BSEC member states are already members of the EU, or are due to join the EU, or are aspirant EU member states. The second is that since one BSEC member state, Russia, is the world's largest gas producer and, from time to time, the world's largest oil producer as well, great care has to be taken of Russian sensibilities in energy issues. This chapter also takes a further look at a key component of the regional energy equation: Turkey's role in European energy thinking.

There are problems for the BSEC in that while EU regulations are a *sine qua non* for BSEC energy cooperation, EU energy aspirations – in other words the development of future EU energy policy – may run counter to Russian aspirations. There is a need to ensure synergies between BSEC and EU energy development, as laid down in proposed standard project documentation forms.[7] However, achieving such synergies, whilst also keeping Russia on board, will require political will as well as technocratic agreements in the energy field.

This chapter seeks to set out the main EU parameters within which the BSEC will have to operate; the principal policies on which the EU is now embarking; The BSEC's own policies and aspirations in the energy field; and Russia's current energy policies.

In terms of seeking a way through the minefield of potential EU-Russian discord over energy policy, the chapter not only looks at continuing efforts to progress the EU-Russia energy dialogue, but focuses particularly on one energy arena in which both the EU and Russia were seen to be acting in harmony: the promulgation of the G8 Plan of Action for Energy Security, launched at the G8 Summit in St. Petersburg in 2006.

b. EU Policies

The EU's current policies and aspirations are set out in various major documents. These include: The EU's Green Paper of March 2006 (for full text, see Annex III); The Conclusions of the EU Council on 24 March 2006 (*see Annex IV*); and the Conclusions of various EU Councils, notably those of June 2006 and March 2007 (*see Annex VI*).

7 The Russian power company, RAO-UES, drafted what it termed a form for 'Standard application for funding a BSEC project' and submitted it to the BSEC energy working group meeting in Istanbul in June 2004. The reference is Annex IV to BS/EN/WG/R(2004)2.

In terms of the impact of these policies and aspirations on the BSEC, the EU's commitment to three issues in particular needs to be taken into account: conservation of energy, diversification of energy supplies and the development of a pro-active policy on new energy sources.

i) Conservation of Energy

Throughout Europe, both inside and outside the EU, there is an immense focus on conservation of energy. This mainly focuses on energy efficiency but also reflects concerns of specific fuel scarcity, especially at times of crisis. The most prominent reasons for this focus are the tightness of energy markets, particularly in terms of global oil supply and demand but also current or anticipated shortfalls in gas supplies; the need to address the environmental consequences of relying on fossil fuels, in particular, rising carbon dioxide levels and combat human-induced climate change; the three year climb in international energy prices (itself , in large part, a function of the tightness of energy markets); and security of supply, concerns that supply sources or transit routes for EU energy imports are currently at risk or might reasonably be expected to be at risk during the next 25 years or so.

A focus on energy conservation, and in particular, on energy efficiency, makes sense because, though painful at the time of initiation, it can usually be achieved with little damage to underlying growth and, indeed, often contributes to such growth. The EU's Green Paper of March 2006 lists various recommendations aimed at improving energy efficiency and the EU Council's Statement of 24 March 2006 endorses these points.

In October 2006, Energy Commissioner Andris Piebalgs sought to put flesh on the bones of the Green Paper when he unveiled an ambitious plan to cut EU energy consumption by 20% by 2020, thus saving 100 bn a year. In March 2007, the European Council formally endorsed the concept of an integrated climate and energy policy based on three principles: increasing security of supply; ensuring the competitiveness of European economies and the availability of affordable energy; and promoting environmental sustainability and combating climate change. The March 2007 Council specifically approved what it termed a comprehensive energy Action Plan for 2007-2009, to be followed by a new energy action plan to start in 2010 (*see Annex XII European Council Action Plan, Energy Policy for Europe*).

ii) Diversification of Energy Supply

Both the Green Paper and the 24 March 2006 Council Declaration also lay great stress on diversification of energy supply. In particular, they look to augmenting EU gas supplies from two regions, North Africa and the Caspian. Implicitly, the goal is a reduction in dependency on Russia.

However, the references to the Caspian and North Africa require quite different approaches. Commercial companies, working with the governments and state energy companies of such current or potential North African gas producers as Algeria, Egypt and Libya, are already expanding the network of pipelines across the Mediterranean which will enable greater volumes of North African gas to reach the EU. In addition, Egypt's development of LNG export facilities

means that Egyptian gas can also reach markets in Europe by sea as well as, prospectively, via the pipeline intended to link Egypt with Turkey, and which has already reached northern Jordan (*for a full list of prospective Eurasian gas resources which might reach Europe via pipeline, see Table 3.1: Potential Eurasian Gas Suppliers to the EU Market)*.

But the Caspian – with which the BSEC is obviously concerned in view of the passage of Caspian energy to Europe via BSEC member countries – is a very different matter, for exports from Caspian producers require resolution of a variety of very different issues. To begin with, exports from Turkmenistan, the Caspian state with the largest proven gas reserves, require the presence in Ashgabat of a government that is not only in a position, in energy resource terms, to deliver a major volume of gas to EU customers, but is actually prepared both to implement and to honour such an agreement. In the final years of President Niyazov's rule in Turkmenistan, Brussels and Ashgabat were at odds over a range of issues, not least of which was Turkmenistan's human rights record. Although the EU remained interested in developing a transCaspian gas pipeline from Turkmenistan to Azerbaijan — indeed one of Niyazov's final meetings was with EU special envoy Pierre Morel — any agreement for a Turkmen gas sale to Europe via a new transCaspian gas pipeline remained remote so long as Niyazov was in control. The question now is whether the new Turkmenistan government in office in the wake of the February 2007 presidential election will live up to election promises to ensure a more stable investment climate.

Kazakhstan, however, is potentially a very different case. The government is committed at least to exploring the concept of a transCaspian gas pipeline that would enable it to export gas to hard cash markets in Europe without having to rely exclusively on Russian transit pipelines. Kazakhstan is anticipating a major increase in gas production, not least as a result of increased output of associated gas as a consequence of its rapidly increasing oil production.

Kazakhstan produced 23.5 bcm of gas in 2005 and expects to produce 27.5 bcm in 2006. However, officials have said publicly that their goal is to double production to 52.5 bcm in 2010 and then raise it again to 79.4 bcm in 2015. While Kazakhstan domestic consumption is also expected to increase, the authorities are clearly looking to export gas both to China and to Europe. In this context, it should be noted that the US Trade Development Agency, working in coordination with the European Union, is financing a study for a gas pipeline from Kazakhstan to Azerbaijan, where it would link up with the newly constructed South Caucasus Pipeline system which links Azerbaijan, Georgia and Turkey. At the same time, the European Union is funding a complementary study on how best gas might be brought to EU member states – and perhaps Ukraine – once it has reached the South Caucasus.[8] In effect, the US and the EU are working together to test the technical feasibility of constructing a system that would enable Kazakhstan to supply gas to the EU and Ukraine without having to rely on transit through Russia. Gas from Kazakhstan might initially be shipped via a transCaspian Pipeline

8 The basic elements of the two studies, and the way in which they were intended to complement each other, emerged during a conference on 'Eurasia Energy Security: Market Access & Investment Policy; Forging the Link' organized jointly by the International Energy Agency and Georgian President Mikheil Saakashvili of Georgia. The conference was held in Tbilisi, Georgia, from 19-21 June 2006.

to Baku, and thence via the South Caucasus Pipeline to Turkey, from which gas can then be forwarded onwards to Greece, via a new line currently under construction. Moreover, in all probability, further lines will connect Greece with Italy (an extension of the Turkey-Greece line) and Turkey with Bulgaria, Romania, Hungary and Austria (the Nabucco Project). It should also be noted that private sector interests in Georgia too are seeking to develop a gas line along the Black Sea seabed from Georgia to the Crimea, to serve both Ukraine and the EU. In its March 2007 Energy Policy for Europe, the European Council specifically endorsed the 25-30 bcm/y Nabucco line as a 'priority project' intended to carry Caspian gas to Europe. It should be noted, however, that Russia's Gazprom is also promoting a 30 bcm/y project which would seek to serve similar markets via a line following much the same route. This project, known as Southstream, was discussed in March 2007 in Italy between Italian Prime Minister Romano Prodi and visiting Russian President Vladimir Putin. Italy's Eni formally endorsed the project on 24 June 2007, saying that one of its subsidiaries, Saipem, would conduct a feasibility study, based on a route that envisages Russian gas carried by subsea line across the Black Sea to Bulgaria and thence through the Balkans to Croatia, with one spur then heading for Italy and another for Austria.

iii) A Proactive Policy on New Energy Sources and a Fresh Look at Nuclear

The EU's third line of approach is reliance on new energy sources. These include a variety of renewable forms of energy and, for some EU member states, possibly a new generation of nuclear power stations. In this context, a key concern for Black Sea countries whose energy structures were developed by or with the assistance of the former Soviet Union is the operational safety of existing nuclear reactors. This is too big a subject to be discussed in this paper, but it is worth noting that continued reliance of many BSEC member states on power derived from Soviet-model reactors has, despite the Chernobyl disaster, ensured there is still a very strong pro-civil nuclear power lobby in these states. This is particularly true for Armenia and Bulgaria.

c. EU Instruments

The European Commission, the EU's executive authority, possesses two main instruments in its drive to achieve many of its goals and ambitions in terms of energy efficiency and diversification of both energy sources and types of energy.

i) The Single Market

Internally, it has the development of a single energy market throughout the EU, a goal set out in various EU Directives though currently being implemented in fits and starts, rather than as a smooth process. From a supplier and transit perspective – the issues which mainly concern the BSEC member states, notably Russia – the single market is important because the supplier of energy products to one country in Europe will no longer have any control over where the supply is delivered to once it reaches the EU or EU-regulated areas. However, in practice, it may take some years before all the EU countries actually commit themselves to the full scale harmonisation of energy trade required to have an effective single market.

ii) The South East Europe Energy Community Treaty

Externally, and with specific regard to the BSEC, the most important element is the Energy Community Treaty (ECT).[9] This treaty, signed in Athens on 25 October 2005 and which entered into force on 1 July 2006, embraces many of the BSEC members and can be regarded as the most concrete expression of a BSEC's own desire to establish a regional energy market in South Eastern Europe and to coordinate and promote 'within a common framework of activities the process of establishing open energy markets in the BSEC Region and in the Balkans,' as a BSEC working group declared in 2002.

The October 2005 Treaty, generally known as the ECT but sometimes referred to as the Southeast Europe Energy Community Treaty (SEECT), was originally aimed at the integration of Southeastern Europe into the EU energy nexus but is now also open to countries in other parts of Europe. In practice, the ECT, modelled on the EU's own founding act, the 1950 treaty that established the European Steel and Coal Community, extends the EU's internal market for energy into the whole of the Balkan peninsula, with the notable exception of Turkish Thrace. The absence of Turkey was unexpected. Turkey was one of the major participants in the process of drafting and presenting the treaty but ultimately decided against actual signature. This rejection meant that a treaty expected to ensure EU rules extended all the way to Turkey's borders with Syria, Iraq, Iran and the South Caucasus in practice fell some way short of its original objectives. In particular, it means that Russian gas reaching Turkey, instead of being subject to the same rules as Russian gas delivered to EU markets, now lands unencumbered by current or prospective EU regulations concerning onward delivery to third countries.

The ECT's main goals are to create a stable and regulatory market framework capable of attracting investment; to create a single regulatory space for trade; to enhance security of supply; to improve the environmental situation and to develop electricity and gas market competition on a broader geographical scale in accordance with EU Directives 2003/54 for electricity and EU Directive 2003/55 for gas. The intention is that its development will harmonize network access rules, facilitate cross-border trading, mitigate congestion problems that impede free trade, and also secure the operation of interconnected systems and the creation of a common legal and economic energy framework.

For the treaty signatories, their common objectives include a determination to stimulate and underpin the secure supply of energy, especially electricity and natural gas, to their citizens, and to secure economic growth and investment in South East Europe (SEE) by improving the availability, efficiency and reliability of network energy sources at reasonable cost. The parties seek to achieve this objective through promoting greater regional integration, the creation of a compatible regional energy market, competition and increased trade within the SEE region and between it and the European Union internal energy market. The ultimate aim is to have a single

9 The signatories to the Energy Community Treaty on 25 October 2005 were: Albania, Bulgaria, Bosnia & Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Montenegro, Romania, Serbia and the United Nations Interim Administration Mission in Kosovo (UNMIK). The treaty entered into force on 1 July 2006 with ratification by the European Union, Albania, Bulgaria, Macedonia, UNMIK, Romania and Bulgaria.

regulatory space for electricity and natural gas trade in the region that will help as a prototype for the whole EU in its way towards the ultimate goal of creating a single Internal Electricity Market in Europe.

For the EU, the treaty has both practical and political implications. Andris Piebalgs, the EU Commissioner in charge of energy who signed the treaty on behalf of the European Union, declared the ECT 'will enhance security of supply and give support to a strategically vital sector.' European Commission President Jose Manuel Barroso termed the ECT 'a major achievement for peace and stability in Europe,' with the EU noting that this was the first time ever that this group of states and territories had signed a legally binding treaty, and describing the treaty as 'a milestone in reconciliation after the wars of the 1990s.'[10]

In the wake of the ECT signing, the EU itself, referring to the signatory countries, declared: 'This means that the relevant *acquis communautaire* on energy, environment and competition will be implemented there. Market opening, investment guarantees and firm regulatory control of the energy sectors will be enhanced.'[11] Inter alia, the treaty will ensure an agreed policy framework for the World Bank and the European Bank for Reconstruction and Development (EBRD) support to infrastructure investments – including an estimated $30 billion (bn) required to bring the region's electricity sector up to EU standards by 2015 – and to expand natural gas networks so the region can develop an intermediate gas market between the Caspian Sea and the European Union. The treaty process – and what matters, of course, is not the treaty itself but the extent to which it is implemented – will also focus on a range of social and environmental issues, including deforestation caused by extensive reliance on fuel wood, wetlands degradation caused by misuse of hydropower, higher than average mortality rates due to winter cold, and environmental degradation from emissions in old power stations.

The treaty also serves to highlight the strategic role that many BSEC states play in the transportation of energy to current EU member states. 'From the strategic point of view, the treaty creates a supply route for gas into the European Union from the Middle East and the Caspian region and this will eventually increase competition in the core EU markets and reduce dependency on single sources of gas. European Union companies that have invested at the far end of the supply chain will be able to better export to the EU,' the EU believes.[12]

Over the next few years, much will depend on whether Turkey, with which negotiations are proceeding, signs up to the ECT. Ukraine has also expressed interest in signing the accord, whilst extension to the South Caucasus countries, Georgia, Armenia and Azerbaijan, would be a logical next step. But Russia, as ever, remains an enigma. As with the Energy Charter Treaty, which Russia has signed but declines to ratify, and the Energy Charter Treaty's Transit Protocol, which remains stalled despite three years of negotiation to settle Russian and EU differences, Russia seems far

10 Piebalgs, Barroso and EU comments all from EU press release, IP/05/1346, Brussels 25 October 2005. Available from http://www.europa.eu.

11 Ibid.

12 Ibid.

more interested in bilateral agreements under which it says it will honour the principles of a treaty or agreement rather than signing up to the treaty itself. In practice, this means that whether Russia eventually participates in a common energy market embracing its fellow BSEC states will depend on the totality of its relations with the European Union, notably on settlement of the vexed issue of the terms of access of Russian gas not just to the EU as a whole, but specifically to individual EU member states and, in a BSEC context, to individual signatory states to the Energy Community Treaty.

d. Other EU-BSEC Energy Connections

The most concrete example of potential BSEC-EU cooperation concerns the development of a Black Sea Electricity Ring, which would connect all the sea's littoral nations with each other. This is an ambitious project, not least since the power systems of South-East Europe operate on parallel and synchronous mode in accordance with the west European Union for the Co-ordination of Transmission of Electricity (UCTE) network whereas Russia, Ukraine and other former Soviet states belong to the Interconnected Power System/ United Power System (IPS/UPS) group of power systems. A full assessment of this project is provided in the supplementary chapter on electricity development but at this stage suffice it to say that the project appears to have general support amongst BSEC member states, with Russia voicing nonetheless reservations concerning technical aspects of its implementation.

When a BSEC energy working group met at Alexandroupolis on 2-3 March 2005, to draft recommendations for the BSEC Energy Ministers' meeting on 4 March, it carefully noted that the issue had been discussed, rather than approved. The relevant passages of the working group conclusions ran:

> '9. Following the presentations, the Working Group had a general discussion on the issues of interconnection of electric power systems in the BSEC Member States with respect to improving and developing their networks to achieve integration into the Trans-European Energy Networks (TEN) and establishing the electric energy exchange with a common economic benefit. In this connection an issue of establishment of common rules for generation, transmission and distribution of energy, based on international law was highlighted.
>
> 10. The delegation of the Russian Federation emphasized the need of synchronizing operations of TEN and Electrical Networks of CIS Countries that were currently apart due to existence of technical barriers and asked for preparation of a feasibility study with this respect.' The working groups at Alexandroupolis also identified other points of complementarity between the EU and the BSEC. These included a project for development of an EU-BSEC Network for Energy Policy and Research while the Ministerial meeting agreed 'to continue active cooperation with the relevant General Directorates of the European Commission, the United Nations Economic Commission for Europe on energy-related issues and with other energy related international institutions;' and 'to explore the possibilities of cooperation between the BSEC

Member States and the future Energy Community in South East Europe, Mediterranean countries and regional initiatives.'

Implicitly, the BSEC member states are looking to secure considerable external finance to implement development of the Black Sea Electricity Ring and other energy projects. At Alexandroupolis, the working groups stated that 'delegations emphasized the crucial role of the International Financial Institutions (IFI) in the development of projects of high regional impact, particularly that of EBRD and EIB. They also welcomed the involvement of BSTDB (the Black Sea Trade and Development Bank) in financing the energy sector of the BSEC Member States.'

e. Programmes

i) The EU-Russia Energy Dialogue

The EU and Russia constitute one of the world's greatest partnerships – if partnership is the correct word to describe a relationship which involves the transfer of vast amounts of energy amidst an increasingly strained political environment. Russian gas accounts for around one-third of total EU consumption, whilst the EU accounts for almost three-quarters of all Russian gas exports – and a still-higher proportion of its actual export earnings (*see Table 3.2: Key Factors in EU-Russian Energy Trade*). The fact that the European Union, the world's second biggest gas consumer, is located next door to Russia, the world's biggest gas producer, makes it eminently sensible for the two parties to determine how they can best serve each other's requirements.

Since both the former Soviet Union and Russia, as its principal successor state, have long been energy suppliers to the EU, with energy issues raised at a number of meetings between officials from the EU and Moscow, it can be argued that the origins of an energy dialogue go back at least to the 1980s and the construction of the first gas pipelines from the Soviet Union to West Germany. Indeed, it can be argued they go back still farther to the first tentative openings towards détente in the 1960s and 1970s. Commercial energy links also cover the last four decades.

But in formal terms, the start of what is generally termed the EU-Russia Energy Dialogue essentially dates back to 30 October 2000 when, following a summit meeting between the EU and Russia in Paris, the Putin-Prodi initiative was launched by Russian President Vladimir Putin and the then President of the European Commission, Romano Prodi. The EU declared at the time that it had started work on developing an energy partnership, noting Russia's statement at the end of the summit that 'it was prepared to work towards improving the Union's long term security of energy supply and, as President Putin stated, to put the emphasis on balance in relation to prices and quantities.'[13]

The EU said that for its part it was prepared to mobilise European technical assistance to facilitate European investments in transport and energy sector production. 'Specific measures should be carefully studied whether they concern a precise legal framework for investments in the energy sector, questions relating to taxation or a guarantee mechanism for investments. These measures

13 Commission of the European Communities (2000), 'Towards a European Strategy for the Security of Energy Supply,' *EU Green Paper*, Brussels, November, p. 74.

should be finalised within the framework of a cooperation and partnership agreement between the European Union and Russia,' it declared in a Green Paper.

The Putin-Prodi initiative was intended to reflect the complementary nature of the EU's underlying energy relationship with Russia, namely that the EU is looking to boost its energy security through reliable imports while Russia is looking to boost its energy security through sustained exports. Within the dialogue, one goal is to identify a series of projects of common interest while another is to find a mechanism to guarantee EU energy investments in Russia. The dialogue is also intended to cover such potentially contentious issues as the regulatory framework within Russia, energy efficiency, and technology transfer. Overall, as envisaged in 2000, the initiative was clearly intended as the forerunner of a more concrete mechanism whereby EU investments would help Russia develop its upstream and transmission infrastructure, while Europe would reap the benefit in the form of long-term supply agreements.

In practice, the agreement has so far failed to yield concrete results, not least because the tripling of oil prices and the accompanying rise in gas prices in recent years has, at least in the short term, greatly boosted Russian state finances. This, in turn, has encouraged it to pursue increasingly an energy policy based on resource nationalism, under which the state not only secures profits from the development of natural resources in the form of taxes and/or royalties but also ensures that the state, or at least domestically domiciled companies, control their development.

Resource nationalism impinges on EU-Russian energy relations in several ways:

1. It creates a distorted market with regard to foreign participation. This is already happening, with Russia now saying that foreign companies should not hold a majority stake in Russian energy enterprises.

2. It enables and encourages aggressive moves to capture external markets, using profits gained from domestic monopolies to fund acquisitions in more open markets.

3. It provides the means for state or state backed companies to carry out projects aimed at challenging competitive access to external markets, not least through use of ownership of pipelines.

4. It means state direction of the domestic energy transit infrastructure to the extent that third party transit access is limited.

5. It enables the domestic energy industry to pursue long-term strategic goals at the cost of short-term gain; however it may also prompt the host government to view the energy industry as a short-term cash cow which the state might need to milk. Neither approach fits well with the kind of corporate commercial principles on which the EU and other international energy companies operate. In both resource nationalism and market economics, there is a balance of short-and long-term factors, but they are very different in each case.

In particular, the EU and Russia remain at odds over the key issue of transit terms, notably for third parties. This subject was initially one of the problem areas in Russia's drive to secure membership of the World Trade Organisation. For its part, Russian concerns about transit led

to its rejection in December 2003 of the Energy Charter Secretariat's Transit Protocol and subsequent confirmations that it is not prepared to ratify the original Energy Charter Treaty, to which it is a signatory, without first securing substantial changes to the separate Transit Protocol. Russia's position essentially rests on the view that since it holds a virtual monopoly on transit routes for most Central Asian gas exports, there is nothing wrong with it exploiting this position by securing gas on favourable terms. In addition, it believes that calls by the EU for it to open its pipeline systems to Central Asian producers should be matched by European willingness to give Russia greater flexibility to determine for itself just what happens to Russian gas when it enters the EU. It should be noted that Russian opposition to the Energy Charter Treaty and in particular to the Transit Protocol really firmed up in the wake of the EU's determination that the member states of the EU should be considered as a single entity in terms of constituting an energy market, whereas previously the Transit Protocol had been structured to treat the member states on an essentially individual basis. Under the EU's intended single energy market, Gazprom will lose all control over what use is made of its gas – including prospective on-selling to additional purchasers, once it has entered either the EU, or territories adhering to the Energy Community Treaty.

Although both Moscow and Brussels have from time to time stressed the importance of the EU-Russian Energy Dialogue, the language is muted. In their fifth report on the dialogue, issued in November 2004, the two sides noted:

'The current situation on the international energy market underlines the importance for both the Russian Federation and the EU of further progress in the Energy Dialogue, recognising the damaging consequences that the sharp rise in oil prices can have on the world economy. In this context, it might be useful to jointly examine the contribution that strategic stocks can make to enhancing the stability of the oil market.'[14]

What may be noteworthy is that this muting of language precedes the event generally held to have signalled a deterioration in EU-Russian energy relationships: the Russia-Ukraine gas imbroglio of late 2005 and the attendant brief cutback in Russian gas deliveries to EU customers (and some non-EU customers as well, notably Turkey), on 1 January 2006. Thus when EU Energy Commissioner Andries Piebalgs spoke on 30 October 2006, in the wake of a further round of the EU-Russia Energy Dialogue in Moscow, he specifically urged both sides to improve mutual understanding and trust. But he also made it clear that the relationship had to be mutual: 'Russia needs the European Union just as much as the European Union needs Russia,' he declared.

Piebalgs was addressing the core issue of the EU-Russia relationship, the gas relationship. Russia is a major supplier of oil to Europe, but oil is an essentially fungible commodity; the market is global and the impact of production increases or decreases, whether by a single producer or a group, are in practice felt around the world. And invariably, when market conditions tighten and prices rise, as they have since 2003, it is the poorer countries that suffer most, rather than the EU.

14 Commission of the European Communities and Russian Ministry of Energy (2004), 'EU-Russia Energy Dialogue', Fifth Progress Report, Moscow and Brussels, November, p. 3.

But gas is different. The rise of LNG is helping to develop a global gas market, but three-quarters of all gas physically traded across borders is carried by pipeline, usually under long-term contracts between a specific supplier and a specific customer. In considering Russia's massive gas exports to the EU, it is important to note that for Moscow to act on its determination that it makes strategic sense to diversify its export markets – essentially by supplying China, Japan and Korea – then it not only has to secure the long-term contracts required to justify the investment in development of new production facilities, but must also construct the infrastructure necessary to deliver the gas.

Thus while Russia in 2005 supplied the EU with close to 140 bcm of gas, or more than half of net EU gas imports and equivalent to almost 30% of total EU gas consumption, it is considerably reliant on the European market for its exports. Indeed, the EU accounts for three quarters of all Russian gas exports and more than 90 per cent of its gas exports outside the non-Baltic states of the Former Soviet Union (FSU). In addition, the way in which LNG is changing the gas market is likely to benefit the EU as a consumer much faster than Russia as a producer. For while Russian LNG export prospects, in the wake of the decision not to proceed with the development of the Arctic Shtockman Field as an LNG export project, remain limited to the troubled Sakhalin projects in the Far East, the EU is developing or planning multiple major LNG import facilities. In simple terms, the EU looks set to diversify supply sources much faster than Russia looks set to diversify export markets.

But the EU-Russian relationship may be facing an even greater problem than the issue of diversification of Russian gas deliveries: scarcity of supply. One of the most controversial issues of 2006 was the way in which Gazprom sought to ratchet up the price of gas exports to FSU countries from highly subsidized arrangements to something approaching the prices paid by mainstream European customers. While this led to considerable controversy concerning the timeframe within which Gazprom sought to make some very large increases – often double and sometimes more than three or four times the previous price – by the end of 2006 there were concerns that one possible reason for some quite dramatic price increases was that Gazprom itself wished to cut back on gas deliveries to FSU customers in order to be able to fulfil commitments to well-established commercial customers in the EU and Turkey.

In effect, the question confronting EU analysts as they seek to ascertain Gazprom's ability to contribute to prospective EU demand, is whether the Russian gas giant is in a position to satisfy simultaneously the demands of three very different types of customer: those in the EU (and Turkey and Switzerland), who pay hard cash for their imports; the FSU states who pay somewhat less and whose only option – if they are to continue purchasing gas from Gazprom – may be to pay for it in the form of ceding ownership stakes in their own internal gas networks and facilities; and the highly subsidised customers within Russia itself, a country whose citizens use more than two-and-a-half times more gas than those of the EU, not least because they pay so little for it.

This may be one reason why, in December 2006, at the same time as Gazprom was seeking to negotiate to raise the price of gas sold to Azerbaijan and Georgia from $110 per thousand cubic metres (tcm) to $230/tcm, and to cut the volume of gas delivery to Azerbaijan from 3.5 bcm in

2006 to just 1.5 bcm in 2007, a Gazprom subsidiary, Gazinvest, was actually seeking to purchase some 3 bcm of gas from the consortium developing Azerbaijan's new Shakh Deniz gasfield.

It is against this background that solutions will have to be found to some of the most complex questions of the EU-Russia energy relationship. These include:

- Whether Russia's desire for access to individual national markets within the EU can be squared with the EU's efforts to develop a single energy market (both within the EU and extending to countries which have signed up to the ECT);
- Whether western corporate investment within Russia, particularly concerning the remaining production sharing agreements in Sakhalin and the Tyumen Oil Company's joint TNK-BP venture with British Petroleum, can be squared with Moscow's apparent determination to ensure a majority shareholding for state – or at least Russian – companies in major oil and gas ventures.
- Whether Russia will continue to rely on its ability to use its near monopoly on gas transit for Central Asian gas to secure imports of gas from Turkmenistan, Kazakhstan and Uzbekistan at prices considerably below those which it obtains for its own exports to hard cash markets in Europe; or whether the EU will either find some way of securing Russian adhesion to both the Energy Charter Treaty and, in particular, the Transit Protocol; or whether the EU can help Central Asian countries develop alternative ways to bring their gas to European markets at prices approaching those which Russia earns for its own gas exports.

Overall, if Russia is indeed facing problems in terms of making its own gas available for export without an intensified reliance on imports of lower-cost Central Asian gas, then this will only serve to intensify EU fears that Moscow currently lacks a coherent investment programme that would ensure that Gazprom – and other Russian gas producers currently barred from directly exporting their output – can meet long-term EU import needs.

The EU Energy Commissioner's comments of October 30, 2006 clearly reflect growing tensions between the two as a result of increasing geopolitical struggles over oil and gas supplies and Russia's new aspirations to become an energy superpower. In May of the same year, adopting a resolution on the recently concluded EU-Russia summit at Sochi, the European Parliament adopted a resolution which sought to set out the principles for future EU-Russian energy cooperation.

The resolution asserted that Members of the European Parliament (MEPs) 'regret that the summit failed to secure an agreement on energy and stress as a basis for further negotiations the principle of interdependence and transparency as well as the importance of reciprocity in terms of access to markets, infrastructure and investment, with the objective of avoiding oligopolistic market structures and diversifying the European Union's energy supply.'[15] '…The House calls in this context on Russia to ratify the Energy Charter Treaty and to increase cooperation on energy

15 European Parliament (2006), 'EU-Russia Summit: MEPs regret lack of agreement on energy', External Relations, 15 June, (see Annex VII). Text available at http://www.europarl.europa.eu.

savings and renewable energy.'[16]

As the European Union expands directly with the entry of Romania and Bulgaria and indirectly with the development and prospective expansion of the Energy Community Treaty, the need for both Russia and the EU to make a cool assessment of both the strengths and weaknesses of the two sides on this increasingly tense energy relationship becomes ever more clear.

ii) The EU and Turkey

Turkey plays a major role in EU energy thinking because of its crucial role as a transit country for oil and gas reaching or expected to reach EU member states from a variety of energy producers ranging from Russia and Caspian producers to Iran, Iraq and, prospectively, other Middle East producers and Egypt. These hydrocarbons reach, or will reach Europe via a cluster of major pipelines. These include the original Iraq-Turkey oil pipeline; the newly constructed Baku-Tbilisi-Ceyhan (BTC) pipeline which carries Azerbaijani crude to global markets and will in future also carry Kazakh oil as well; two sets of pipelines – one through the Balkans and one under the Black Sea – that carry Russian gas to Turkey; a six-year-old line that carries Iranian gas to Turkey; and the newly constructed South Caucasus Pipeline, built to carry Azerbaijani gas to markets in and beyond Turkey. There is also the newly-constructed line between Karacabey in Turkey and Komotini in Greece, initially intended to carry Azerbaijani gas westwards but which, because of Turkish construction delays on the SCP and uncertainties concerning Russian gas supplies to both Azerbaijan and Georgia, did not enter full service until July 2007. Advanced planning is also under way for the extension of this line to Italy so that it can fulfil its envisaged role as an interconnector between Turkey and Italy, capable of carrying gas in either direction.[17] Iranian gas might eventually reach European markets via this line, but this will almost certainly have to wait until there is a settlement to the current dispute between the EU and Iran over EU fears that Iran is seeking to develop nuclear weapons.

It also looks as if there will still be much more to come. Turkey is making active preparations to receive pipeline gas from Egypt; it is discussing expansion of the Blue Stream system that carries Russian gas under the Black Sea; and the planned start of one of Europe's most ambitious energy transit projects, the €4.6 bn Nabucco gasline intended to convey gas imported to Turkey from either existing or potential new suppliers to a central, European hub at Baumgarten in Austria via Bulgaria, Romania and Hungary is awaited. In addition, it remains highly likely that the BTC pipeline will in time see its capacity raised from around 1.0 mb/d to 1.6 or even 1.8 mb/d, while the Turkish government earlier in 2006 granted a local company, Calik Enerji, (working with Italian energy giant Eni) a license to develop a new Trans-Turkey pipeline from Samsun to Ceyhan to carry Russian and Kazakh oil to the Mediterranean without recourse to the congested and environmentally sensitive Bosphorus (*the 'Bosphorus Bypass' issue is considered separately in Chapter Four*). In addition, the United States is now beginning to advocate not only that gas from

16 Ibid.

17 The Karacabey-Komotini line and its extension to Italy are usually termed either the Turkey-Greece-Italy (TGI) interconnector, or the Italy-Greece-Turkey (IGT) interconnector.

Kazakhstan should be plugged into the South Caucasus Pipeline but that a new line should be built to link Azerbaijan through Turkey with mainstream European markets to carry Caspian crude oil to market without relying on passage through either Russia or the Bosphorus – or, indeed, any form of Black Sea or Mediterranean marine transport.

Simply by using existing lines to their full capacity, Turkey is likely to find itself the conduit for around five per cent of global oil exports; and if all the new lines get built, it could wind up being the country through which around one-tenth of the world's oil exports are piped, and perhaps though this very much depends on Iran's future as a major gas exporter, anything up to 12 or even 15 per cent of global pipeline gas deliveries.

The sheer volume of global exports is cause enough for not only the European Union, but the world as a whole, to pay serious attention to Turkey's role as a transit corridor. Russia has clearly understood this and in recent years has wooed Turkey with a view to using the newly constructed Blue Stream pipeline, which is capable of carrying 16 bcm of gas under the Black Sea to markets in and beyond Turkey, as the first stage of two potential further pipelines. One would extend across Turkey from Samsun to Ceyhan, and thence under the Mediterranean to Israel; the other, sometimes nicknamed 'Southstream', would seek to emulate the Nabucco pipeline by carrying gas through the Balkans to Hungary and beyond. The line to Israel has been discussed for several years – without significantly progress being made, such as conducting a proper feasibility study – while Southstream (the name is a counterpoint to Northstream, the pipeline from Russia to Germany under the Baltic currently in development) began to emerge as a possibility in June 2006. As of July 2007, however, Russian interest in using Turkey as a staging post for Southstream appeared to have waned, with Russia's Gazprom instead favouring a Black Sea landing point in Bulgaria, as detailed in the agreement signed with Eni on 24 June. So far, however, neither project appears to have commissioned the kind of detailed feasibility studies normally associated with such ventures.

Two years ago, it seemed that if there were one issue on which the European Union and Turkey were already in total agreement, it was energy. But the prospect that Turkey might serve as a corridor for Russian gas exports – and hopes that it might also serve as a corridor for increased Russian oil exports as well – has more recently contributed to EU-Turkish tensions. Turkey had been expected to sign up to the ECT, but although it played a significant role in the negotiation of the treaty, in the end it declined to sign it. Moreover, while the external aspects of the EU's current energy policy are largely predicated on the need for diversification of energy suppliers, particularly in order to ensure that Russian gas sales to the EU take place in as competitive an environment as possible, Turkey's approach throughout 2005 and much of 2006 ran counter to this.

However, developments in the Caucasus towards the end of 2006 appear to have changed Turkish policy once again. On 15 December, Azerbaijan's new giant gas field, Shakh Deniz, began supplying commercial gas into the newly constructed South Caucasus Pipeline which links Azerbaijan with Turkey via Georgia. But as the gas began flowing, talks were taking place in Baku on how to amend the previously agreed distribution of initial gas supplies between the

three countries, essentially because both Azerbaijan and Georgia had grave doubts concerning Russian gas deliveries to their countries in 2007. These doubts concerned both pricing and volumes. Gazprom was asking for $230 per thousand cubic metres, roughly in line with charges applied to Europe's market economies but considerably more than the $110/tcm which it had charged the two Caucasus states for 2006 deliveries. In volumes, Azerbaijan had predicated the start of Shakh Deniz exports to Turkey on the basis that it would still be importing some 3.5 bcm, of gas from Russia, but Gazprom said it was only prepared to supply 1.5 bcm and that Azerbaijan should look to Shakh Deniz to make up the balance. Turkey, which was to have received some 2.8 bcm of Shakh Deniz gas in 2007, has said it will relinquish 1.3 bcm of this to Azerbaijan and 0.8 bcm to Georgia. In effect, Russian pressure has forced a major delay on planned European gas developments, with the first Shakh Deniz gas shipment only reaching Turkey on 2 July 2007, and with further deliveries on to Greece scheduled to start on 10 August 2007. Major deliveries to Greece are expected to start in 2008.

The episode has already had two serious repercussions. On the one hand, it has caused Turkey to re-evaluate Russian moves concerning transit across Turkey; on the other it has prompted fresh consideration of whether one reason for Gazprom's tough bargaining stance might be that it not only wants, but needs, to reduce gas exports to Azerbaijan and Georgia if it is to balance its multiple commitments to supply gas to its three key types of customer: the hard cash markets of the EU (and Turkey); the heavily subsidized Russian domestic market; and the intermediate markets found in some of its fellow former Soviet states. One indication of possible Russian supply problems was that at the same time as Gazprom was seeking to reduce its own sales to Azerbaijan, a Gazprom subsidiary, Gazinvest, sent a delegation to Baku to inquire about possible purchase of up to 3 bcm/y of Shakh Deniz gas. As for Turkish energy policy, and whether this will focus primarily on developing a closer relationship with Russia or on seeking to create closer energy connections with the EU and the countries of the Energy Community treaty, this will depend very much on two key factors: the outcome of the 22 July 2007 general election in Turkey and the EU's own attitude towards eventual Turkish membership of the European Union.

f. The Black Sea Economic Cooperation

Although the EU, Russia and Turkey are the most obviously important players on the European energy scene, the BSEC, as a grouping, has its own aspirations and programmes, aimed at ensuring that what it hopes is an emerging Black Sea regional identity will have a significant energy dimension.

i) The BSEC Aspirations and Programmes

The BSEC's main energy goal, as set out by a working group meeting in Istanbul in 2004, is to 'pursue convergence and cooperation of the national energy markets (including all kinds of energy sources - oil, natural gas and electricity) at the regional level in order to establish mutual advantages.' To achieve this, the BSEC talks of developing 'common-interest energy interconnections' and the creation of 'a network in charge of monitoring the development of

projects regarding the improvement and construction of trans-border gas and oil pipelines among the BSEC member-countries and their connection to the domestic gas and oil networks.' It makes clear that all this is to be carried out with a view to cooperation with the EU and ensuring that BSEC projects are incorporated the EU-developed Trans-European energy systems and the Euro-Mediterranean energy partnership.

A year later, at Alexandroupolis, BSEC ministers reaffirmed their commitment to cooperation in energy efficiency and the use of renewables, and stressed the need to enhance security of energy supplies and also to ensure compatibility between the energy plans of BSEC member states.

In essence, the approach is exhortatory. There are aspirations for development of 'new oil and gas production and transportation projects in compliance with international standards and legislation' but, reflecting commercial and perhaps political realities, there is no suggestion that the BSEC itself should be the principal force in either determining what these projects should be or in arranging for their implementation.

In essence, that is because although these projects will often benefit the region as a whole, they are either being developed, or will likely be developed in the future, by companies within individual countries specifically impacted by the project together with those multinationals that have spotted openings in particular markets – which may be much smaller, or much greater, than the overall BSEC market.

Further aspirations include promotion of, and cooperation on, energy efficiency and the environment, and moves towards legal, regulatory and technical cooperation within the BSEC region, along with consideration of various options for a Bosphorus bypass. The fulfilment of these aspirations in general remains beyond the BSEC's current capabilities. But two points should be noted. One is that in the case of one project, the Black Sea Electricity Ring, the role of the BSEC in terms of providing political and technical support should not be underestimated (*See Supplement: A Common Approach To Electricity Development*). The second, however, does illustrate the limits to the BSEC. For while a plethora of options for Bosphorus bypasses is currently under consideration, with few BSEC member states directly sidelined in the ongoing discussions of various routes, the BSEC itself is not involved in either determining what the best route might be, or even helping to develop a framework within which shippers, companies and governments might meet to discuss this issue. In effect, the BSEC is simply not big enough to run the risk of helping to determine which route or routes might make best sense, and thus potentially alienating either of the two big national players in this debate: Russia and Turkey.

ii) The BSEC and Russia

The key element in the BSEC energy relations with Russia is that any interests of the BSEC as a whole are subordinate to much greater currents in both global and regional energy relations. The Russia-EU energy relationship, and Russia's bilateral relationships with such major BSEC importing and transit states as Turkey and Ukraine will determine the framework within which

the BSEC will have to work to deliver its programmes and aspirations. But the BSEC does offer Russia a forum within which it can explain its energy policies and, simply because it is a grouping that comprises such a broad array of neighbours to Russia, the BSEC's own deliberations may come to influence Russian thinking on key energy issues.

CHAPTER 3
THE REGIONAL ENERGY CONTEXT

a. Oil

i) Current and Projected Oil Production in and around the Black Sea Region

Energy development in the BSEC area will be strongly affected by two factors of both global and regional consequence: the development of oil and gas in both Russia and the Caspian. Russian oil is perhaps best viewed as a near constant. There are serious arguments that Russian oil output is approaching a peak, not because of a lack of underground resources but because Russian state companies may not invest enough funds to ensure rising production, although the privatised Lukoil is expected to continue to grow its domestic production portfolio, as well as its assets in Central Asia. The Russian investment crunch is expected in or around 2010.

The US Energy Information Administration (EIA) takes a somewhat more optimistic view. Its most recent analysis, published in May 2007, sees Russia taking production steadily higher, reaching 11.5 mb/d by 2030, 23.7% up on 2005 output. With Russian consumption anticipated to grow slightly more slowly than production, this represents a real increase in export availability. Overall, however, what the EIA terms 'net Eurasia exports' are expected to show one of the biggest surges anticipated in its periodic assessments, the overwhelming bulk of the increase in these exports is actually expected to come from the Caspian region, with Caspian output projected to grow from 2.1 to 5.7 mb/d between 2005 and 2030.

Such figures are, of course, intended to serve as potential guidelines as to what might be produced under certain circumstances, rather than constituting detailed forecasts of what the EIA actually anticipates will happen. Indeed, there are serious arguments that they convey a picture that there will be rather more oil available over the next quarter century or so than many analysts believe. But where they do serve an extremely useful role is in demonstrating what is likely to be the relative importance of different areas. This is where the Caspian projection is particularly interesting. The projected 3.6 mb/d increase in Caspian output between 2005 and 2030 accounts for just over 30% of all the comparable anticipated increase in non-OPEC production over this period, which is assessed at just 11.8 mb/d. The Caspian's 4.3 % rate of growth is higher than any other single area assessed by the EIA in this way, with the comparable assessment for the second fastest growing production region, the West African OPEC producers, put at 3.9% (*see Table 4.1: Russian & Caspian Contributions to Global Oil Supply 2003-2030*).

Moreover, although local demand is also expected to soar, this 3.6 mb/d increase in output to 5.7 would still be likely to yield a steady increase in exports. Overall – and even if these EIA assessments are overly generous – it is still reasonable to postulate that the next quarter century or so will, all things being equal, yield an extra three million barrels of oil available for export.

ii) The Black Sea and Caspian Export Issues

The key questions therefore concern the markets to which this oil will go, and the routes for its delivery. Although the global oil outlook is such that the logical markets would lie in South Asia and the Asia Pacific region, the overwhelming bulk of both existing and projected pipeline capacity out of the Caspian region points westward. The pipeline issue, inasmuch as it impacts on the BSEC, essentially concerns three producers: Azerbaijan, Kazakhstan and Russia. A fourth producer, Turkmenistan, has only a marginal impact on prospective oil deliveries into the BSEC area; its role in gas, however, is much greater.

Azerbaijan's export options all point westwards or, more accurately, in the case of the newly opened Baku-Tbilisi-Ceyhan line, they point southwestward. In strictly regional terms, the impact of this line is that it ensures that the bulk of Azerbaijani oil avoids passage through the Turkish straits.[18] It also contributes to steady economic cooperation between the three countries through which the line passes, Azerbaijan, Georgia and Turkey. But the line does not take Azerbaijani oil completely out of the Black Sea equation. The line from Baku to Supsa in Georgia has a 150,000 b/d capacity, and may well be expanded to 240,000 b/d over the next several years. Moreover, oil deliveries by railcar through the Caucasus to the Georgian ports of Batumi and Poti is expected to continue for many years – at least until there is a completed expansion of the Caspian Pipeline Consortium (CPC) system between Kazakhstan and Russia.

Kazakhstan is very different. By 2010, on the assumption that CPC is expanded as originally planned, it can be expected to have an export capacity of around 160 million tonnes a year (3.2 mb/d), with only one major line, the anticipated 20 million tonnes (mt)(400,000 b/d) line to China, heading east (*see Table 4.2: Kazakhstan Export Capacities 2005-2015*). In other words, as Kazakhstan's major new field, Kashagan, comes on line and as output from its existing giants at Tengiz and Karachaganak expands, the vast majority of this output will head into the Black Sea basin.

Russia is a more complex issue. One of the Russian oil industry's most striking successes in recent years has been the rapid development of the Baltic port of Primorsk, which has successfully limited previously anticipated growth of Russian oil flows into the Black Sea. Russia currently has a variety of genuine options for exporting its oil westwards, including the Baltic, the Druzhba pipeline system to Central and Western Europe, and the Black Sea. But its efforts to ensure development of a Bosphorus bypass – and of one bypass project in particular, Bourgas-Alexandroupolis – indicate that it expects to have very considerable flows of crude into the Black Sea for decades to come. As of 2005, an estimated 121 million tonnes of crude oil was reaching world markets via the Black Sea, to which should be added almost 30 mt/year of oil entering the Black Sea and two-way flow of oil products through the Bosphorus. Overall, Turkish sources estimated crude oil and product traffic through the Bosphorus as running at a rate of around150

18 Turkish Straits nomenclature. This is one of the most controversial issues for any external analyst to address since almost every term succeeds in offending one party or another. In this paper, the phrase Turkish Straits is used to represent the full maritime passage between the Black Sea and the Aegean. The constituent parts of the straits are generally referred to as the Dardanelles, the Sea of Marmara, and the Bosphorus. Turkish sources tend to refer to the Strait of Çanakkale rather than the Dardanelles and to the Strait of Istanbul, rather than the Bosphorus.

mt/y in 2005. One corporate analyst considers that in 2010 the volume of crude oil reaching world markets via the Black Sea will climb to 140 mt/y and by 2015 it will reach 150 mt/y.[19]

This raises the key issue of the evacuation of this crude from the Black Sea. At present, it flows through the Turkish Straits (which also carry rather more modest crude oil flows into the Black Sea from the Mediterranean). While there is now a consensus that there should be one or more Bosphorus bypasses, the question of which specific projects will be developed, and when, remains less clear, even though an official start has been made on one projected route – the Samsun-Ceyhan line – whilst fresh governmental support has been offered to another, the Bourgas-Alexandroupolis line (*this issue is discussed in greater depth in Chapter Four*). At present, all that needs to be noted is that the Turkish Straits currently constitute one of the major energy arteries of the world, and, since the Bosphorus cuts right through the heart of Istanbul and its fifteen million people, this raises severe environmental questions, as does the need to protect the straits, and all other major energy arteries, from possible terrorist assault.

The BSEC's energy infrastructure also includes substantial refining and petrochemical facilities. Romania is a major regional refiner while Turkey is contemplating a new refinery complex on the Black Sea, possibly at Zonguldak. Both Russia and Ukraine have long established refining and petrochemical complexes. These facilities ensure that as well as for crude oil, the Turkish Straits also constitute a major export route for products.

b. Gas

i) Current and Projected Production in and around the Black Sea Countries

Gas occupies a special place in the development prospects of the Black Sea region. It is one of the main motors for growth in two BSEC member states – Russia and Azerbaijan – while the region as a whole constitutes a significant market for output from these producers. Gas is inherently different from oil for two main reasons. The first reason is that projects to develop gas resources mandate a deep level of interdependence, balancing both security of supply and security of demand. This is commonly achieved by means of long-term take-or-pay contracts between the supplier/developer and the principal purchasers, essentially to ensure cost recovery for the project. Gas development also requires the construction either of expensive pipelines or of equally expensive gas liquefaction (LNG) plants so the gas can be shipped to market on purpose-built LNG tankers.

The second reason is that consumers require continuity of delivery. Should oil deliveries be interrupted, vehicles may come to a halt, but they can be restarted once the oil is again available. With gas, restoration of services after a cut-off can require extensive checks on entire networks to ensure there is no damage or risk of explosion. Consumers have to be able to count on guaranteed supplies, or if they are on interruptible contracts, they have to store reserves or be able to draw on alternative supplies.

19 Ruseckas, Laurent (2005), 'Caspian Oil Transportation: Overview and Security Implications,' presented at the Conference on 'Energy Security in the Caspian Basin,' Marshall Center, Garmisch-Partenkirchen, Germany, 26 September 2005.

ii) Repercussions of the Russian-Ukraine Gas Cut-off

In terms of Russian deliveries to the EU – the world's biggest cross-border gas trade – Russia had an exemplary record between the start of this trade in the 1980s and the Ukraine border debacle of 1 January 2006. This paper is not the place to assess the rights and wrongs of that event. Suffice it to say that it has had various repercussions of consequence to the BSEC as a whole.

- Firstly, it has given enormous impetus to the EU drive for a more diversified energy mix and a more diverse set of suppliers; and to Russia's drive to develop alternative gas delivery systems to European customers that would avoid transit through the Ukraine.
- Secondly, it has encouraged all those suppliers of other forms of energy to the EU, or who would wish to expand their own share of gas sales to the EU, to argue that Russia is no longer a reliable supplier.
- Thirdly, it has raised questions about Russia's role in gas transit and its reluctance to ratify the Energy Charter Treaty and to sign up to the Charter's Transit Protocol.
- Fourthly, it has both raised questions concerning Ukraine's prospective gas policies, ranging from its handling of Russian gas purchases and transit of Russian-supplied gas across Ukraine to its desire for alternative gas supplies and new pipeline systems that would enable it to access Caspian gas without this gas transiting Russia.

iii) Gas Pipeline Issues

These issues all impact on other BSEC member states in various ways. The EU's interest in developing alternative supply systems constitutes an obvious boost to the prospects of the proposed Nabucco gas pipeline from Turkey to Austria. This would cross Bulgaria and Romania before entering Hungary and then reaching Austria. It also makes it more likely that the planned 8 to 8.8 bcm/y Greece-Italy gasline on which construction is due to start in June 2008, according to a statement by Greek Development Minister Dimitris Sioufas on 28 January 2007 will indeed be built as a second stage to the newly-built Turkey-Greece Interconnector.

These lines were the subject of various presentations at the BSEC energy ministers' meeting in Alexandroupolis in March 2005. Greece and Turkey jointly presented a project for a gas pipeline to connect producers in both the Caspian and the Middle East with customers in Western Europe through the territories of the BSEC member states. This appears to have focussed on the Turkey-Greece-Italy Interconnector, currently in development. There was also a proposal from Albania that this line be rerouted into Albania; a route that Albanian officials argue would offer an easier sea-crossing to Italy whilst also taking advantage of Albania's now-emptied gas reservoirs for strategic storage. At the same time, a Swiss company, EGL, has completed what it calls "basic engineering work" for what it calls the Trans Adriatic Pipeline (TAP), a 10 bcm/y line which would link Greece, Albania and Italy. EGL clearly envisages Iran as the source of gas for this project; on 4 June 2007 it announced it had concluded a 25-year agreement with the National Iranian Gas Export Company (NIGEC) for delivery of 5.5 bcm/y of gas to Europe via the TAP. More recently,

Russia has signalled interest in using this line to export Russian gas to Italy and other southern European markets, an approach which has drawn strong criticism from Washington. As of mid-2007, Russia's emphasis appears to have switched to developing its own Southstream project to supply Italy via Bulgaria and the Central Balkans.

Assertions that Russia is not a reliable energy supplier will impact on the BSEC in other ways. There will be renewed efforts to see whether gas from the eastern side of the Caspian can reach European markets without passing through Russia, and a renewed drive to assess the prospects for bringing gas from such countries as Iran, Iraq and Egypt to Europe via Turkey and the proposed Nabucco system.

In this context, Russia is also showing great interest in developing alternative pipelines. This was also demonstrated in June 2006 with an extensive effort to get Hungary, Turkey and various Balkan states on board for the Southstream project and its subsequent success in securing Bulgarian and Italian support for the line. What is not clear, however, is the impact that Russia's decision to start Southstream in Bulgaria, rather than Turkey, will have on proposals for its existing Blue Stream line to Turkey to be extended south to Turkey's Mediterranean oil terminal at Ceyhan in order to provide feedstock for a proposed new petrochemical complex and, if some Turkish and Israeli planners are to be believed, to provide the input for a new gasline from Ceyhan to Israel.

Russian reluctance to ratify the Energy Charter Treaty and to sign up to the related Transit Protocol highlights two key points. One is that the Charter and Protocol, which are endorsed by all the other BSEC member states, play a key role in determining the legal framework for cross border energy traffic. Secondly, Russian reluctance draws attention to what is perhaps the key unanswered question concerning Russian approaches to the conduct of business with both its neighbours and with such major customers as the European Union: do Russia's energy trade negotiators believe that cross border trade is essentially a component of a zero-sum game or do they accept what is at least the stated EU objective: trade development as a win-win development process?

For Ukraine, and those countries reliant on transit of Russian and/or Central Asian gas through Ukraine, there are also a host of unresolved issues. It will take some time before Ukraine actually pays the full commercial price for all the gas it receives from Russia and Turkmenistan, but even so it faces the prospect of an import bill from Russia, which totalled $12.3-13.6 bn in 2005, perhaps doubling in 2006. However, as and when Ukraine is in a position to pay hard cash and full commercial prices for all its gas imports, at that stage it is likely to seek to diversify its gas imports, to reduce its current dependence on Russia for all its gas imports and some two-thirds of its gas consumption.

c. Nuclear and Renewables

Oil, gas and electricity constitute the major elements of cross-border energy trade in the BSEC. But there are still questions concerning other forms of energy, notably nuclear power and renewables. The region as a whole does not have a particular objection to nuclear power. There is still the legacy of Chernobyl, the 1986 Soviet-era meltdown of the reactor in Ukraine, but most

of the FSU countries within the BSEC ambit remain considerably dependent on their Soviet-era plants for electricity generation. EU and US efforts to improve physical and operational procedures have helped in this, but the EU's goal, that these reactors should cease to operate, still seems a long way off.

Other forms of renewables should constitute at least part of the answer, but while the nuclear power stations provide baseload, the problem with many renewable technologies is that they provide intermittent supplies to a national or regional grid, and therefore may also require storage facilities for power, adding to cost. In this context, the relative poverty of most BSEC states, at least compared to most EU member states, serves as a disincentive for much renewables energy development.

CHAPTER 4
AVENUES OF COOPERATION: POLICY OPTIONS AND RECOMMENDATIONS

a. The BSEC and the G8 Action Plan

The BSEC member states comprise a wide variety of countries, with very different interests when it comes to energy. In seeking to approach the issue of developing a common energy strategy for the BSEC, it therefore makes sense to seek to build on existing plans for cooperation that involve, or impact, major regional players. In this context, the Plan of Action for Global Energy Security adopted at the G8 Summit of July 2006 in St. Petersburg offers a most helpful way forward. This is because it not only contains a wide range of approaches, many of which relate to the requirements of the BSEC member states, but it also carries the endorsement of Russia, the most important energy producer in the BSEC, and of the European Union, the most important influence in the economic development of most of the BSEC region.

The preamble to the Action Plan lists 11 objectives. These are:

- strong global economic growth, effective market access, and investment in all stages of the energy supply chain;
- open, transparent, efficient and competitive markets for energy production, supply, use, transmission and transit services as a key to global energy security;
- transparent, equitable, stable and effective legal and regulatory frameworks, including the obligation to uphold contracts, to generate sufficient, sustainable international investments upstream and downstream;
- enhanced dialogue on relevant stakeholders' perspectives on growing interdependence, security of supply and demand issues;
- diversification of energy supply and demand, energy sources, geographical and sectoral markets, transportation routes and means of transport;
- promotion of energy saving and energy efficiency measures through initiatives on both national and international levels;
- environmentally sound development and use of energy, and deployment and transfer of clean energy technologies which help to tackle climate change;
- promotion of transparency and good governance in the energy sector to discourage corruption;
- cooperative energy emergency response, including coordinated planning of strategic stocks;

- safeguarding critical energy infrastructure;
- addressing the energy challenges for the poorest populations in developing countries;
- promotion of energy saving and energy efficiency measures through initiatives on both national and international levels.

All of these, to a great or lesser extent, are capable of being addressed collectively by the BSEC member states. Even the opening call for investment in all stages of the energy chain requires at least a degree of coordination between BSEC neighbouring states to ensure a degree of synchronicity in the development of energy sources, transmission and markets amongst a mix of supplier, transit and consumer nations in the Black Sea region.

The last point, on addressing energy challenges for the poorest populations in developing countries, can perhaps be twinned in a BSEC context with the larger challenge, contained in Paragraph 5 of the Action Plan, of reducing energy poverty. The BSEC region still contains pockets of energy poverty and ensuring the elimination of these pockets will require the assistance of other BSEC members. The expertise gained in this way might perhaps collectively be put to use in a small programme to help developing countries outside the BSEC. In this manner, the BSEC could demonstrate that its role as a grouping of energy suppliers, transit states and consumers could be put to global use in the furnishing of expertise.

b. Five Actions for the BSEC

Five of the specific actions concerning investment facilitation listed in Paragraph Eight of the Action Plan might also benefit from being addressed in a BSEC, as well as an individual national, context. These are:

1. further save energy through demand-side measures as well as introduce advanced energy-efficient technologies;
2. introduce cleaner, more efficient technologies and practices including carbon capture and storage;
3. promote wider use of renewable and alternative energy sources;
4. establish or upgrade infrastructure for energy transport and storage;
5. expand and improve the efficiency, safety and reliability of electricity transmission facilities and power grids and their international connectivity including, where appropriate, in developing countries.

The first two goals constitute classic territory for cooperation through the sharing of information; what helps to save demand or promote a more environmentally friendly use of energy in one country will likely work in another, particularly when so many share a common origin in Soviet-era development with its reliance on abundant provision, but often wasteful use of, energy for industrial development.

The third goal provides an opportunity for the BSEC to act in an exhortatory role, gathering

and sharing information (as with the first two goals), but also using every available platform to encourage greater use of renewables and alternative energy sources to fossil fuels. The Greek National Centre for Renewable Energy Sources (CRES) is already assessing environmental impacts on energy activities and promotion of renewables energy activities as part of an EU-BSEC collaboration on energy policy and research.

The fourth goal offers a particular opportunity for the BSEC countries in view of the region's globally important role in energy transit. In particular there is scope for collective action in two major fields: in oil, the issue of Bosphorus bypasses and in gas, the issue of supply routes to the European Union from both Russia and non-Russian suppliers in an arc stretching from the Arctic to Egypt.

The fifth goal provides further underpinning for a concept already endorsed by the BSEC, an electricity ring connecting the littoral nations.

c. Harmonisation and Sharing Best Practices

The Action Plan includes a number of other recommendations that can be usefully be tackled in a BSEC context. These include cooperation in energy regulatory regimes (Paragraph 9); reducing barriers to investment and trade (Paragraph 13) and training the energy workforce (Paragraph 14). All these are areas in which the BSEC might usefully seek to develop simple mechanisms to ensure coordination and, where possible, harmonisation, of standards, rules and regulations.

In addition, a range of key issues affecting the entire energy chain, such as energy saving, energy efficiency and the sharing of best practices (all mentioned in Paragraph 17 of the G8 Action Plan) are ripe for address within a BSEC framework, as well as an individual national context. So, too, is the Paragraph 21 recommendation on sharing best practices to promote energy efficiency in the transportation sector. Knowing how well one country is pursuing common objectives can provide a spur to another country to improve its performance. Likewise, the Action Plan's Paragraph 19 calls for 'comprehensive measures to optimize the resource cycle within the 3Rs Initiative (Reduce, Reuse, Recycle),' adding that the G8 will "set targets as appropriate taking account of resource productivity." Why should the BSEC not do the same?

d. Critical Infrastructure

One area of concern to the G8 also has a particular resonance for many BSEC members: the G8 call for promotion of international cooperation to tackle threats and vulnerabilities to critical energy infrastructures. In Paragraph 41, the Action Plan calls for G8 experts: 'to meet as necessary to examine and make recommendations on addressing the many challenges in securing energy infrastructure and deliver to the Russian Presidency at the end of this year a comprehensive report on:

- defining and prioritizing the most important vulnerabilities among energy infrastructure sites, and share methodologies for assessing and mitigating them;
- assessing potential risks of terrorist attacks;

- developing a compendium of effective security response best practices across all energy sectors within our countries;
- developing, implementing, and providing to other countries a checklist for the physical security of critical energy infrastructure.'

These are all areas in which the BSEC can collate and deliver its own assessments.

e. The Bosphorus Bypass Issue

The question of Bosphorus bypasses – of the need to find a better way to route oil traffic past the Turkish Straits, rather than through the heart of such a magnificent city as Istanbul – has long been of concern both to individual BSEC member states and to the organisation as a whole. In their June 2004 meeting in Istanbul, the BSEC working group on energy drew up a list of strategic objectives; Objective Nine was: 'To take measures addressing the environmental and safety risks arising from the increasing oil and other hazardous cargo transportation in the Black Sea and particularly in the Strait of Istanbul, the Sea of Marmara and the Strait of Çanakkale/ Dardanelles by considering by-pass options, such as: Bourgas-Alexandroupolis, Bourgas-Vlore, Constanta-Trieste, Kiyikoy-Ibrikbaba, Odessa-Brody and Samsun-Ceyhan.' (*See Annex IX, BSEC Strategic Objectives*).

The logic underpinning the concept of Bosphorus bypasses is unassailable. The Turkish Straits – the Bosphorus, the Sea of Marmara and the Dardanelles – not only have to handle ever increasing volumes of oil exports from Russia and Caspian producers, notably Kazakhstan, but also have to cope with continuous maritime traffic across the straits, notably where the Bosphorus bisects the 15-million population city of Istanbul. As Laurent Ruseckas, formerly the Regional Director of Cambridge Energy Research Associates (CERA), has argued, hazardous cargoes through the Straits, with crude oil constituting the vast majority of such cargoes, already exceed 150 million tonnes per year, with projections that it could reach as high as 190 mt by 2010.[20]

The Turkish government, which de facto acts as traffic policeman but which otherwise has only limited powers under the Montreux Convention of 1936 to control traffic through this international waterway, has applied a traffic monitoring scheme in recent years which has improved safety standards. But, by limiting the times available for tanker traffic and by insisting on strict intervals between tankers passing through the straits, one significant consequence has been increased delays, particularly in winter. The costs of these delays, notably the demurrage costs, have reached the stage where in the peak winter months they rival the likely costs of shipping oil through some of the less costly proposals for a pipeline to bypass the Bosphorus. At present, however, there is still an overall imbalance between the two: on a year-round basis, companies shipping oil through the Straits, for which the Turkish authorities cannot impose significant fees, do not rival the likely charges that would have to be levied by companies seeking

20 Ruseckas delivered several presentations for CERA on Bosphorus issues. He cited the CERA estimate that transit volumes could reach 190mt in 2010 at the ICBSS Conference on 'The New European Architecture: Promoting Regional Cooperation in the Wider Black Sea Area – the BSEC Case' at Milos, Greece, on 6 September 2003.

to secure even a modest return on the construction and operational costs of a Bosphorus bypass.

What this means is that there is considerable room for cooperation between the governments of the Black Sea states to ensure that as one or more Bosphorus bypasses are built, so, too, are agreements put in place that would ensure substantial volumes of oil flow through these new bypasses in order to reduce the pressure on the Straits. However, so long as some tanker operators continue to dispatch their vessels through the Straits for free, whilst others rely on a bypass, those using the Straits will have a significant price advantage of perhaps 50 cents per barrel on a year-round basis. This can be overcome in various ways. One would be for governments simply to direct oil companies to use particular lines, as would appear to be the case with the Russian authorities and the planned Bourgas-Alexandroupolis pipeline; another would be for operators to agree to split their cargoes between the Straits and one or more bypasses, as suggested by the Turkish government in its proposed 'voluntary principles' of 2004.

But which bypasses might be built for operators to use? In the last 15 years, there have been at least 10 significant proposals for bypasses covering a multiplicity of different routes. At present, however, there appear to be five proposals which merit serious consideration. They are (in alphabetical order of the initial port):

From Bourgas in Bulgaria to Alexandroupolis in Greece; from Bourgas to the Albanian port of Vlore; from Constanza in Romania to Trieste in Italy; from Odessa in Ukraine to Brody in northern Ukraine (and thence perhaps to Poland and the rest of Europe); and from the Turkish Black Sea port of Samsun to the Turkish Mediterranean port of Ceyhan. Proposals for a pipeline through Turkish Thrace, from Kiyikoy on the Black Sea to Ibrikbaba on the Aegean, are no longer under serious consideration by the Turkish government, although some private concerns are still promoting the concept.

Assessing the prospects for each of these projects is complex, not least because they do not necessarily serve the same producers, markets or even purpose. The Bourgas-Alexandroupolis, Bourgas-Vlore and Samsun-Ceyhan proposals are classic bypass proposals in that their aim is purely transit. But Constanza-Trieste is perhaps best viewed as a supply pipeline, since much of its custom would come from delivering crude oil to customers en route, such as Serbia and Croatia. Odessa-Brody remains in a league of its own: it has already been built but requires either a connection to Russia's Druzhba export system or a major extension into and possibly beyond Poland in order to function as transit system for crude oil debouching on to the Black Sea.

As of mid-2007, the situation regarding the five main proposed pipelines was as follows:

Bourgas-Alexandroupolis: On 15 March 2007, officials from Russia, Bulgaria and Greece, in the presence of their respective heads of government, signed a trilateral agreement in Athens, to construct and manage a 35 mt/y, 280-kilometre pipeline at an anticipated cost of €709 million. Russian companies, headed by Transneft, Rosneft and Gazpromneft, are to hold a 51% majority stake in the venture, with Greek and Bulgarian interests each holding 24.5%. The Russian stake is both the project's strength and weakness. The presence of such heavyweight Russian

companies, and the strong support for the project given by the Russian government, provide the clearest indication to date that the project will be able to secure guarantees of actual oil input, the Achilles heel of all these projects so long as transport through the Straits is viewed as 'free', in contrast to the tariffs that the bypass projects will have to charge.

On the other hand the Russian insistence on majority control of a project originally envisaged as an equal three-way 33.3% split has caused some dissatisfaction, notably in Bulgaria. Moreover, it casts in doubt the ability to attract Kazakh shareholders – and thus Kazakh oil input – into the system. Kazakhstan's state oil company, KazMunaiGaz, initially assumed it would be able to secure a stake drawn from all three existing partners, but was subsequently advised that Russia would not relinquish any part of its holding and that any Kazakh stake would have to come at the expense of Greek or Bulgarian shareholders. On 14 June 2007 Transneft CEO Semyon Vainshtok said Bourgas-Alexandroupolis 'has entered its active phase' but that there were delays in implementing the March agreement from the Bulgarian side.[21] It also appears that Russian attempts to link development of Bourgas-Alexandroupolis with expansion of the 1,580-km Caspian Pipeline Consortium (CPC) line from Atyrau in Kazakhstan to Novorossiysk on Russia's Black Sea coast was causing further uncertainties. The CPC expansion to 67 mt/y was due to have been undertaken automatically once the line was carrying its Phase One 28 mt/y capacity. That capacity was reached in 2004 but since then efforts to secure its expansion have run into trouble as a result of disputes over whether or not the vital Russian section of this 50-50 venture between state concerns and private companies should adhere to Russian concepts that natural monopolies can charge extra tariffs rather than to the original CPC concept of a relatively fixed tariff structure simply aimed at ensuring recovery of capital and operating costs, with relatively modest royalties accruing to the governments involved.

Bourgas-Vlore: The AMBO Corporation, a US-registered company, has for more than a decade been developing a project that would also start in Bourgas, but which would terminate at the Albanian deepwater port of Vlore. The project, known as AMBO, derives its name from the initials of the countries through which it passes; Albania, Macedonia and Bulgaria. On 31 January 2007, the governments of the three countries signed an agreement in Skopje on construction of the 870-km, 1.2n project, and by June 2007 that agreement had been ratified by all three parliaments. AMBO is known to have held discussions with the US Chevron, which has extensive interests in Kazakhstan, on possible throughput for the line, on which its proponents hope to start construction work in 2008, with completion due in 2010 or early 2011.

Constanta-Trieste: On 3 April 2007, officials from Romania, Serbia, Croatia, Slovenia, Italy and the European Commission signed a non-binding ministerial declaration on this project, which they term the Pan-European Oil Pipeline. Costs are put at between 2.6 and 4.0 bn. Whether the declaration will be enough to enable the project to move into an actual construction phase, currently scheduled to start in or around 2011, is less clear. However the project's consultants have spoken confidently that they have as the all-important assurances of oil to input for the

21 Vainshtok comments: Interfax, Moscow, 16 June 2007.

line.[22] In addition, the support of the European Commission for the project, and its ability to serve both as a supply line to customers en route in Serbia and Croatia as well as to end-users in Italy and beyond, constitute useful points in its favour.

Odessa-Brody: Uniquely, this project is, to a large extent, already built. However, although the 560-km, 50-mt/y capacity line is ready for use, at present it is essentially being used either for storage or for limited deliveries southwards from Russia to the Black Sea, rather than northwards from the Black Sea to Central Europe, the market it was designed to serve. The reason for this is that although the line intersects at Brody with Russia's giant Druzhba export system, which supplies crude oil from Russia to European markets, the Ukrainian authorities have not been able to secure Russian permission for oil coming up from Odessa to be put into the Druzhba systems at Brody. The Ukrainian government's current hopes rest on prolonged negotiations with Poland for an extension to the Polish refinery at Plock and perhaps onwards to a terminal on the Baltic. Although the European Commission is also interested in such a proposal, it is not clear who might finance an extension into Poland – or who would supply the necessary oil for input into the system. The Ukrainians have constantly wooed the Kazakhs to secure Kazakh oil input.

Ukraine has raised Odessa-Brody in a BSEC context. It argued at the BSEC Energy Ministers' Summit in Alexandroupolis in March 2005 that it wanted the project to remain on the BSEC ministers' List of Strategic Objectives as a system for carrying crude oil out of the Black Sea region to European markets whilst Russia wanted it deleted on the grounds that it 'is not in line with the provisions of the Russian-Ukrainian intergovernmental agreement and relevant bilateral commercial contracts which stipulate that the oil pipeline 'Odessa-Brody' will be operated in reverse direction 'Brody-Odessa'.'[23] The Ukrainian response, endorsed by Turkey, was that this was an interim agreement, and that in the long run the goal is to operate the line in the direction Odessa-Brody.

Samsun-Ceyhan: On 25 April 2007, Italy's Eni and Turkey's Calik Enerji held a groundbreaking ceremony to mark the official start of construction on their project to build a 555-km, $1.5bn pipeline from the Black Sea port of Samsun to Turkey's main Mediterranean oil terminal at Ceyhan. Eni, as co-operator of the giant Kazakhstan gas and condensate field at Karachaganak, will certainly be capable of sourcing some liquid fuel input for the line, but the project does appear to have entered the construction stage without public commitments concerning the throughput necessary to make the project a commercial proposition. Senior Turkish, Italian and EU officials were present at the ceremony. The TransAnatolian Pipeline Company (Tapco), the Calik-Eni joint venture developing the project, intends the line to be ready for use as early as 2009. The project has one very significant advantage: it passes through a single country and therefore does not require an intergovernmental agreement. It secured

22 Private communication to author.

23 BSEC (2005), Report of the Joint Meeting of The BSEC Ad Hoc Working Group Of Experts on Electrical Networks and The BSEC Working Group On Energy; Alexandroupolis, 2-3 March 2005. Text available at http://www.bsec-organization.org.

formal Turkish government approval in June 2006.

While Bourgas-Alexandroupolis, Ambo and Samsun-Ceyhan would all appear to be in competition with each other, all three still seem to be making progress inasmuch as they have all secured the requisite intergovernmental (or single government) agreements. But such agreements – which would also cover, inter alia, such issues as ownership shares, capital commitments and revenue distribution – might be termed necessary rather than sufficient to get the projects started. What all of them need is guaranteed throughput, firm commitments by shippers that they will provide oil to go through the line on a regular basis. Proponents of all three projects are actively canvassing participation by shippers. Indeed, all say they have at least secured unofficial commitments but none of them care to reveal their hand until they are assured that they have sufficient commitments to justify the financing of their proposed line (*for a comparison of line lengths, costs and prospective charges, see Table 5.1: Bosphorus Bypass Proposals)*.

Without taking sides, the BSEC can urge shippers to give practical support to the development of Bosphorus bypasses, in the form of throughput commitments and/or project shareholdings. The BSEC should not tell them which bypass to choose; it should insist that they do use a bypass.

The need to reduce traffic through the Turkish Straits – essentially for fear of a disaster in the Bosphorus that could impact severely on Istanbul – may well mean that in time there will be a requirement for more than one bypass. Meanwhile, as advocates of various different plans pursue their projects, there is a need for at least a degree of governmental cooperation and coordination, both to ensure that shippers less sensitive to the environmental issues do not take advantage of reduced traffic through the Bosphorus to secure financial advantage over those who ship crude through a bypass, and to ensure adherence to environmental standards.

f. Tanker Standards

One approach might be to tighten up on tanker standards. Whilst the Montreux Convention prevents the Turkish government from imposing standards for vessels transiting the straits, the governments of the Black Sea littoral states can achieve the same result by establishing a common set of higher standards for all tankers docking at Black Sea ports. These could include minimum tonnages, double hulls, flushing bans and common environmental and safety standards.

CONCLUSIONS

There is no denying that, as of early 2007, there is considerable tension between the EU and Russia over energy issues. The question for the BSEC is whether its member states are forced to take sides in a prospectively highly acrimonious dispute or whether, by virtue of common interests, they can act as a bridge between the EU and Russia.

There are five main ways in which the BSEC and its member states can function as a bridge in regional - indeed global - energy affairs.

a. Progressing the St. Petersburg Declaration

The first is in both espousing and promulgating the conclusions of the St. Petersburg Summit concerning energy security. These were, after all, conclusions agreed by both Russia and the EU and by the US and other G8 members as well. The St. Petersburg principles thus constitute a firm yet non-contentious framework for energy cooperation both within the BSEC region itself, and between the BSEC region and the rest of the world.

In particular, this means a focus on energy efficiency, the introduction of cleaner energy systems, greater use of renewables, improved regional infrastructure and improved electricity interconnections (*the five points listed in Chapter Four*).

b. Deepening the Energy Cooperation Treaty

Ensuring that the Energy Community Treaty of 2005 becomes a pathway for cooperation between BSEC member states in terms of both internal connections within the BSEC and external energy relations with non-BSEC countries is another obvious course. However, particular attention needs to be paid to the integration of Turkey within this framework, not least because of Turkey's key role in the increasing integration of energy supply systems from the Caucasus to the Balkans. At a time when all the Balkan countries (save Turkey) are engaged in implementing the ECT, and thus the establishment of common gas and electricity markets with the EU, and with a prospect that the TransCaucasus states of Georgia, Armenia and Azerbaijan may at some time join the ECT, Turkish entry into the ECT needs to be encouraged.

c. Advancing Electricity Integration

Interconnection of electricity systems is an obvious way to boost regional energy cooperation. Precisely because the initial connections are essentially bilateral, rather than multilateral, this enables countries from both the UCTE network and the IPS/UPS group of power systems to start cooperation on a practical, local basis. The concept of complete regional integration, of a Black Sea Electricity Ring, will thus be built up as a result of a series of more local, bilateral, connections. BSEC is already taking the lead in this regard; its role now should be to encourage this process, not least through continued support of all the relevant technical studies required to achieve the broad-based interconnection of the two systems.

d. Bosphorus Bypasses

Bosphorus bypasses offer an opportunity for further BSEC energy cooperation. That there is a need for at least one Bosphorus bypass is scarcely to be disputed, that there may well be a requirement for more than one is a matter for both political negotiation and practical commercial consideration. For the BSEC, the question is whether it has a role to play in squaring the circle, in helping to create the circumstances by which one or more Bosphorus bypasses can be developed without automatically creating an asymmetric commercial system that enables those who choose not to ship their oil through a bypass to benefit from shipping their hydrocarbons at minimal cost through the Turkish Straits whilst other producers or shippers have to pay fees to the operators of whatever Bosphorus bypass pipelines may be developed.

The BSEC can assist in this regard by helping to set standards for tanker traffic between BSEC member states and within the Black Sea itself. Moreover, if the BSEC can effectively insist that its member states ensure that all oil should be carried in double-hulled tankers, that would in practice ensure improved safeguards for all continuing oil traffic through the Straits. This would constitute a significant environmental improvement, and one that could be achieved without defying the Montreux Convention.

Whether the BSEC, as an organisation, might seek to go further by developing a comprehensive programme for Bosphorus bypasses is a far more contentious question, Given the political nature of the subject, it might be best to avoid this, at least at this stage. However, the BSEC can contribute positively to the atmosphere by making it clear that while it does not favour any particular route - since that might lead to accusations of favouritism - it is nonetheless seeking to ensure a balanced solution that addresses the need to reduce the risk of an environmental disasters in the Bosphorus whilst ensuring that producers and consumers alike share the burden resulting from development of bypass as alternatives to the Turkish Straits.

e. Data Gathering

Developing energy interconnections requires accurate date concerning current levels of supply, demand and infrastructure, as well as believable projections as to how specific national and regional markets will evolve. Such work is already being carried out by a number of organisations, notably the International Energy Agency. Where the BSEC can play a specific role is in ensuring there is a recognisable Black Sea regional dimension to such studies, capable of being both collated at, and distributed by, the BSEC itself.

f. What next? A Proving Ground for EU-Russian Energy Cooperation

These suggestions do not address one of the key energy security questions for both producers and consumers, the question of what pipeline projects should be developed, and on what terms, to improve the flow of oil and gas by or through BSEC member states, to prospective customers in the EU. The interconnected questions of pipeline routes, inputs and methods of operation are all contentious issues in terms of current EU-Russian energy relations. The BSEC, as an

organisation embracing both Russia and a prospectively growing number of EU member states, cannot afford to take sides. But it is at least in a position to assist in this area by hosting panels, and perhaps sponsoring studies, that address core aspects of the subject, notably technical studies and commercial mechanisms. But it is probably not in a position to recommend one particular route, or formula for participation, over another.

Nonetheless in a tense atmosphere anything that can be done to bridge the gulf between Russia, a BSEC member state, and the EU, which now embraces three BSEC member states, should be done. European energy security, as the participants at St. Petersburg made clear, is a matter that embraces security of supply, security of demand and, of particular significance for many BSEC states, security of transit.

Between BSEC and the EU there is already a considerable congruence of policy, with various objectives set out by BSEC energy ministers in their Baku Declaration of September 2003 covering key areas subsequently addressed in the European Council's Action Plan, the Energy Policy for Europe, approved by Council in March 2007 (*see Annex VIII for the Baku Declaration and Annex XII for the Action Plan*). The Baku Declaration calls, *inter alia*, for trade liberalisation and the creation of a level playing field for commerce in energy; for greater diversification and interconnection of energy transport links, for increased energy efficiency, for an improved environment for foreign investment and for increased environmental protection. In general, however, while the Baku declaration is exhortatory, the Action Plan sets out a number of specific initiatives. But in acknowledging how far it still has to go, the Council makes clear it is thinking along the same lines as the BSEC energy ministers, with its opening paragraph noting that its goal of 'a truly competitive, interconnected and single Europe-wide internal energy market that will have major benefits for competitiveness and EU consumers as well as security of supply has not yet been achieved.' It specifically endorses diversification of both energy sources and transport routes and stresses the need for increased energy efficiency to enable the EU to meet its commitment to shave 20% off its original projections for energy usage in 2020.

Several of the EU initiatives involve BSEC member states. These include:

- ensuring the implementation of the Energy Community Treaty, with a view to its further development and possible extension to Norway, Turkey, Ukraine and Moldova;
- intensifying the EU relationship with Central Asia, the Caspian and the Black Sea regions, with a view to further diversifying sources and routes;
- negotiating and finalising a post-partnership and cooperation agreement with Russia in particular relating to energy issues."[24]

The EU's goal of improved energy relations with various Middle Eastern energy producers also has a bearing on EU relations with BSEC member states, since pipeline gas from Egypt (and

24 European Council (2007), European Council Action Plan (2007-2009) Energy Policy for Europe, Annex I, Presidency Conclusions, 8-9 March 2007. Text Available at http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/93135.pdf.

perhaps, in time, from Iraq and/or Iran) would be expected to reach EU markets via one or more BSEC member states, notably Turkey. In this context, it is significant that the Action Plan also calls for the appointment of a coordinator to help ensure the success of the Nabucco pipeline project to carry Caspian gas to Europe.

For the BSEC, the EU's Action Plan poses some considerable challenges, particularly if the organisation as a whole should seek to act as a bridge between the EU and Russia in the highly-charged arena of EU-Russian energy relations. In attempting to resolve the various energy dilemmas that beset the European Union, Russia and the other BSEC member countries, perhaps the best role for the BSEC itself lies not so much in seeking to orchestrate specific programmes for energy cooperation as in serving as a forum wherein such issues can be debated in a calm, rational fashion, thus helping to create the atmosphere of entente required to promote energy cooperation not only within the BSEC region itself, but throughout Eurasia.

SUPPLEMENT
A COMMON APPROACH TO ELECTRICITY DEVELOPMENT

This section is based on a contribution by *Dr. Evangelos Lekatsas* and *Dr. Ioannis Daskalakis*, Hellenic Transmission System Operator S.A. [25]

a. General Overview

There is one specific field of energy in which cooperation between BSEC countries is both desirable and attainable – electricity market integration. This is a long-term project, involving the connection of different power systems in order to create, in effect, a single market from Europe's Atlantic Coast to the Pacific shores of Russia.

Two main power systems serve the BSEC countries. One operates in a manner that enables it to be linked in to Western European networks; the other essentially groups the former Soviet states. Creating linkups between these systems is complex, but can be done. This study considers that there should be a phased development of work, which essentially entails a series of bilateral connections between the BSEC countries.

The connection of two huge power systems, with different generation and network structures, norms, standards and rules of operation, requires the establishment of a minimum set of technical requirements, organizational structures and procedures, as well as legal agreements. Integration demands a multiplicity of studies and both bilateral and multilateral negotiation procedures before any concrete decisions on a policy for actual implementation can be taken with the approval of all concerned.

Above all, achieving electricity market integration requires political agreement, as well as technical common understanding of the best ways of interconnection of networks and markets. For this reason, a geographically gradual progress in integration across a region may prove to be the most pragmatic way to approach these objectives. Integration is feasible, but it will take time. It will be many years before the dream of an electricity market from Lisbon to Vladivostok is realised.

b. The Black Sea Electricity Ring

The idea of interconnecting the Black Sea states dates back at least to 1996, when a BSEC expert working group meeting in Moscow considered a proposal for this prepared by Russia's Energosetproject Institute, based on data provided by BSEC members. Several expert meetings have taken place since then and by the time of the Russian chairmanship of the BSEC from May to October 2006, one of Russia's declared goals as chair was to speed up the synchronisation of the energy systems of Western and Eastern Europe. In a statement on 'Priorities of the Russian

25 Information provided in this section is valid as of 2006.

Federation Chairmanship of the Organisation of the BSEC' Moscow added that it also wished 'to continue to consistently advance proposals on improving interconnection between BSEC States' electric networks with the prospect to create 'Black Sea Electroenergy Ring' and regional energy market.'[26] This is the project best known as the Black Sea Electricity Ring, intended to ensure that all the littoral states of the Black Sea share electricity interconnections with their littoral neighbours.

Proposals for an electricity interconnector linking the Black Sea littoral states have been around for more than 10 years. In Istanbul, in 2002, the BSEC member states after noting progress made in connecting the power systems of Turkey with, to the north, Bulgaria and Romania and, to the west, with Greece - 'expressed their confidence that a better integration of electric grids can benefit all the countries of the Region and exchanged views on the prospect ways of further interconnecting the power systems of the BSEC Member States.'[27]

The project corresponds to EU and EU countries' general development concept of electric power sector, as well as to the development and reconstruction plans of electricity network infrastructure of the project participating countries. Moreover, the project corresponds to the Baku Declaration of September 2003 on energy cooperation in the Black Sea region, and in a wider aspect can be considered within the framework of the EU Mediterranean policy.

c. The Current Situation

At present, the power systems of South East European (SEE) countries (Albania, Bulgaria, Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Greece, Montenegro, Romania, and Serbia including Kosovo), operate on parallel and synchronous mode with UCTE network. For their part, the power systems of Armenia, Azerbaijan, Georgia, Moldova, Russia and Ukraine belong to the IPS/UPS group of power systems; they operate with different standards and independently from UCTE. The IPS/UPS group includes also many more countries such as the Baltic States of Latvia, Lithuania, and Estonia, as well as Belarus, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan.

The Turkish system operates independently from both UCTE and IPS/UPS systems. Turkey has applied to become a member of UCTE and currently a study is carried out investigating this possibility.

The synchronous interconnection of the IPS/UPS with the UCTE system is a difficult task that is now under consideration by a group of 80 experts from 17 countries from both sides. The size and complexity of such a task have never been mastered before on a worldwide basis. A series of technical studies are needed to assess the conditions under which the synchronous interconnection of the two systems becomes feasible without negative impact on their reliability.

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26 BSEC (2006), 'Priorities of the Russian Federation Chairmanship of the Organisation of the BSEC' (May 2006 - October 2006).

27 BSEC (2002), 'Report of the Meeting of the BSEC Working Group on Energy,' Istanbul, 5-6 September 2002. Text available on http://www.bsec-organizati on.org.

The use of non-synchronous connections (DC links), a relatively easy-to- implement, proven, and reliable technology minimizing the influence of connected power systems on each other, should, in our view, be investigated (*see Annex S.2: HVDC Transmission Versus AC Transmission)*.

A feasibility study for the UCTE-IPS/UPS connection was begun in 2005. Once the study is completed, detailed connection studies have to be initiated and these could last several more years. Consequently, full connection of the UCTE and the IPS/UPS power systems, whether on a synchronous, asynchronous or mixed basis – is not likely for many years.

As some of the BSEC countries are synchronized with the UCTE system, while others are synchronized with the IPS/UPS system, or are operating separately from both (e.g. Turkey), a staged approach appears necessary. Bilateral agreements between neighbouring countries to improve or build new interconnecting infrastructure and to operate it by 'islanding' a small part of the network of the one country and attaching it to the system of the other country, may prove a temporary, though not completely efficient, method of cooperation.

Islanding has been, or is being, applied in at least three cases:

- The thermal power station of Burshtyn and its Mukacevo substation, have been separated (islanded) from the rest of the Ukrainian system and, together with the necessary interconnecting lines, have been attached to the Rosiori substation of the Romanian system and to the Velke Kapusany and Sajoszoged substations of the Hungarian system, thus injecting power to UCTE.
- In Bulgaria, the thermal power station Maritsa Istok 3 has been attached to the Turkish power system.
- A similar islanded operation of a part of the Turkish system (in Babaeski) with the Greek system may be applied, temporarily, when the new interconnection line between the two countries is commissioned. This is designed as an interim manoeuvre, intended to function until the whole Turkish system is finally accepted to operate in full synchronous mode with UCTE.

Regarding the synchronization of the Turkish power system with the UCTE power system we note that the complementary technical studies to that effect have started in November 2005 and due to extend up to March 2007. They will be followed by the presentation to the UCTE Steering Committee of a catalogue of technical measures to be taken by the Turkish TSO. If the Turkish side applies these measures promptly, a test synchronization period is foreseen before the definitive synchronization. Consequently, we can probably expect that the Turkish power system will be synchronously connected to the UCTE power system in a couple of years (around 2010) and that the power exchanges with the Turkish power system will take place only within the UCTE power system.

Despite the large number of interconnections between the Balkan countries, none operate between a) Albania and the Former Yugoslav Republic of Macedonia; b) the Former Yugoslav Republic of Macedonia and Bulgaria; and c) Greece and Turkey, impeding the bilateral energy

exchanges and thus the development of electricity transactions between the aforementioned countries.

The existing transmission lines and interconnections among the national power systems of the SEE region permit transactions ranging from 250 MW to 1600 MW, depending on the origin, destination, path, and time period. However, they are not always sufficient to cover the respective power transfer needs. Lack of interconnections between the Former Yugoslav Republic of Macedonia (FYROM) with either Albania (Vrutok-Burrel), or Bulgaria (Cervena Mogilla-Stip), is considered to be a serious obstacle limiting trade. But elements of some key trans-border interconnections do already exist, notably the Adriatic interconnection line, the Elbasan-Tirana-Podgorica line and the interconnection of FYROM with NIS in Serbia. These are some examples of important interconnections within SEE that have to be implemented or restored.

There are other interconnections, currently under development or discussion (*for details see Tables S.1, S.2, S.3 and S.4*). Most of them present a wide regional interest and are expected to contribute to the development of the appropriate infrastructure necessary for the parallel and synchronous operation of the power systems of the BSEC countries, and for enhancing trade between them.

There is a need for political agreement as well as common technical understandings in securing electricity interconnections and this has contributed to the development of the South East Europe Energy Community under the Athens Treaty of June 2005 (*see Chapter Two*). As noted earlier, one of the main aims of the ECT is to create a single regulatory space for electricity and natural gas trade in the region to serve as a prototype for the ultimate goal of creating a single Internal Electricity Market in Europe.

d. Obstacles

However, the development of a regional electricity market is a project far more complicated than the liberalization of a national electricity market. It took more than ten years of hard negotiations between the member states of the European Union before they were prepared to adopt Directive 96/92 on the establishment of an Internal Electricity Market in Europe. For the BSEC member states, such a project is even more difficult and challenging, for the following reasons:

- The BSEC region consists of countries with various national, religious and cultural origins whilst most countries of the region are going through a transition period that involves structural, political, and economic changes.
- The predominance within the BSEC of state-owned, vertically-integrated utilities covering all stages of power generation and supply has led to the development of national electrical systems with a number of shortcomings, especially with respect to proper utilization of the investments.
- In the medium-term, regional trade is likely to be quite limited. Market design will have to reflect this.
- There are wide variations between the countries in terms of their existing and future

internal electricity market structures, the pace at which reform can be expected to take place, changing demand patterns and the fuel supply situation. It cannot be assumed that all countries will have the same need or desire to trade in a similar manner whenever a regional market should be initiated. A flexible market structure capable of handling different types of trading may be required.

e. A Staged Approach

The establishment of a regional South-East European market is expected to have immediate positive effects in terms of system reliability and economies of scale in planning, constructing and operating generation and transmission systems. In addition to these immediate benefits, the generation of a regional market will exercise competitive pressures on existing systems, increase their efficiency and encourage inflow of private capital.

But, as mentioned above, flexibility will be essential. There is a need to accommodate the approaches taken in each country in restructuring their electric systems and the design of their own markets. Any regional market should ideally allow each country to have maximum flexibility in determining what capacity and energy it may wish to buy or sell and the type of transaction that it may wish to use. An efficient market design should allow market participants a maximum choice in trading opportunities. Therefore, in developing options for a regional market design, it is helpful to understand the type of transactions that would be possible between national systems.

In general, there are three durations of capacity and/or energy transactions possible, corresponding to different requirements to balance national energy markets through trading:

- Long-term generating capacity and/or energy for one or more years to meet a capacity or generation shortage;
- Medium-term seasonal generating capacity and/or energy for a month, week or day to smooth out the load curve;
- Short-term balancing as in an hourly spot energy market.

The BSEC region is characterized by a number of different, frequently separated, electricity 'markets' in various stages of early development. In some cases the pricing mechanisms adopted are inadequate to encourage long-term investment in new electricity generation capacity. In most cases this is due to the fact that retail prices, as set by governments, are far below the cost of new entry. It will be a great challenge for politicians to provide the conditions for consumers to choose their suppliers, and, at the same time to convince them of the need to raise prices up to the level of costs. The situation is even more difficult in those countries with economies in transition in which the rates of collecting electricity bills are still very low. It is obvious that such obstacles can only be overcome when the economies of the countries converge. This needs time.

One prerequisite for the successful integration of the electricity systems of the Black Sea Region is the development of national system operators, independent of commercial interests. The operation of the system is one of the key functions in a common electricity market. The system operators are responsible for the security of supply and the reliability and efficiency of the

electricity system in a given area and its inter-connectors with other systems.

Collaboration and co-ordination between the system operators is also a prerequisite for the development of interconnected systems, with a number of transmission and distribution systems linked together by means of one or more inter-connectors.

f. Investments in Infrastructure

Cross-border infrastructure is necessary for integration of the electricity markets of BSEC countries. Investments will have to be made in a co-ordinated way, but improving infrastructure also increases security of both supply and demand – and contributes to a better environment and increased competitiveness. Investment in infrastructure development is thus essential.

g. Cross-Border Projects in South-East Europe

There are many differences among the national power systems of the region, in terms of size, power mix and even load profiles. Moreover, as a result of different economic conditions, there are varying projects for the development of the power systems in each country. Nonetheless, there are a number of projects of multinational interest. (*These are listed in Tables S.1 to S.4)*.

In terms of practical cross-border cooperation, it should be noted that each of these projects either includes at least one of the BSEC member states or embraces projects completed in South-East Europe which have a wider regional impact. The status of the projects is that existing as of mid-2006.

h. Interconnection Projects Proposed by BSEC Member States Within a BSEC Framework

i) The Caucasus Project

Russia's RAO-UES, during a meeting of the Black Sea Working Group (WG) on Energy held in Istanbul on 1-2 June 2004, proposed a project for reconstruction and development of the electricity network infrastructure necessary for expansion and power exchange diversification between Russia, Azerbaijan, Georgia and Turkey. The project, expected to take five years from approval to completion of physical rehabilitation and renovation works, initially concerns a feasibility study into the construction and rehabilitation of specific high-voltage overhead interconnection lines mainly between Georgia, Azerbaijan and Russia. Details about corresponding works on Turkish territory were not defined (*see Annex S.1: The South Caucasus Project*). During a subsequent meeting of the WG on Energy in Alexandroupolis on 2-3 March 2005, the Turkish delegation issued a statement that the project should not be given further consideration due to the fact that the Turkish Power System was expected to join the UCTE Power System in the immediate future and that synchronous links between Turkey and third countries – by which it meant Georgia, Azerbaijan and Russia – could not be accepted 'due to the UCTE rules regarding the interconnection with third countries which were not connected to the UCTE.'[28]

28 BSEC (2005), 'Report of the joint meeting of the BSEC ad hoc working group of experts on electrical networks and the BSEC Working Group on Energy', Alexandroupolis, 2-3 March 2005. Text available on http://www.bsec-organization.org.

During the Alexandroupolis meeting, the Russian Delegation suggested the project be merged with the ongoing 'Black Sea Regional Transmission Planning' project. WG participants agreed that consultations in this regard between RAO-UES and the United States Agency for International Development would be initiated. However, no positive developments have since taken place in this regard. Likewise, there is no record of the BSEC approving or distributing any funds in relation to an initial submission in 2004 by RAO-UES in Sofia for 1.2 million in funding from the BSEC Project Development Fund for the original project to expand and diversify power exchanges between Russia, Azerbaijan, Georgia and Turkey (*Technical details on this project can be found in Annex S.1:: The South Caucasus Project).*

ii) The Black Sea Regional Transmission Planning Project

This project was initiated at a meeting held in Sofia, Bulgaria from 18-20 February 2004. The meeting, which was financed by USAID, was attended by participants from the transmission system operators (TSOs) of both IPS/UPS and UCTE systems in the Black Sea region, together with the Black Sea Regional Energy Center (BSREC) in Sofia, the UCTE and the USAID itself.
The project, financed by USAID, has the following goals:

- promotion of regional cooperation on transmission planning among Black Sea region TSOs;
- identification of priority investments on transmission systems and interconnection to improve reliability of the regional power systems;
- Proposing of possibilities of enhancement of electric power trade in the Black Sea region;
- Harmonization of the transmission planning principles and methods in the involved power system.

In 2005, this project was expanded to include two additional BSEC member states: Armenia and Azerbaijan.

As of mid-2006, a final report on the Caucasus Project was still awaited. The key issue here will be to avoid duplication with other cross-border projects and proposals.

iii) The Role of Armenia

Armenia occupies an interesting position in the context of both these projects. It already has connections with all its four neighbours: Georgia, Azerbaijan, Iran and Turkey – but connections with Azerbaijan and Turkey have lapsed because of political strains. Armenia's deputy energy minister Areg Golstyan, in an interview with the main author of this study, said in November 2006 that his country was working on development of a new overhead line with Georgia -- which he termed 'a new synchronised regime with Georgia' – and through Georgia with Russia. Armenia already has a synchronised regime with Iran. Golstyan added: 'If the situation will improve with Turkey, I think we can very quickly organise for our two countries to have a profitable exchange of electricity very quickly.' Physically, he said, the overhead lines and the

substations exist for connecting the two countries.

Discussing technical issues, Golstyan said: 'Usually, if different grids have different standards or qualities of electricity, then if you usually use direct current, you cannot directly synchronise. You need special equipment to convert to direct current, so you can connect without any problems of synchronicity.' But he added that Russia has been holding discussions with European electricity networks on how direct connections can be made without special equipment. As for Armenia itself, he considered that modernization of the country' sub-stations 'gives us the capacity to start work in accordance with European standards'.

ANNEXES

ANNEX I

ABOUT THE AUTHOR

John Roberts specialises in energy security issues and in the inter-relationship between energy, economic development and politics. He is the energy security specialist for Platts, the largest energy information provider in the world. Before taking on his present staff duties with Platts in August 2002, he developed his own Methinks consultancy, focussing on Caspian, & Middle Eastern energy and development issues. He has written extensively on energy development and, inter alia, has produced reports for the state energy transport company of Kazakhstan on oil export pipeline options and for the Government of the FYR of Macedonia on the establishment of a Macedonian Development Agency. He has lectured widely on energy security issues, notably on diversification of European oil and gas supplies, export routes for Caspian energy and on the issue of Bosphorus bypasses. His books include *Caspian Pipelines* (Royal Institute of International Affairs, London 1996) and *Visions & Mirages, The Middle East in a New Era* (Mainstream, Edinburgh, 1995). From 1992-1998 he wrote a series of annual reports on the politics, economy & finance of Saudi Arabia. From 1991 to 1996, he was Editor of *Middle East Monitor*, a monthly newsletter on the political economy and business environment of the Middle East; and from 1997-2000 he was editor of *Financial Times Energy Economist*. He lectures regularly at major energy, international relations and economic institutions around the world and has conducted journalist training workshops for the European Union and the World Bank. He has testified to the UK's House of Commons Foreign Affairs Committee on oil issues and Middle East developments. He broadcasts regularly for the BBC. A British citizen, he is a regular participant in various specialist panels on Caspian and Middle East/North Africa energy and development issues and has served as conference chairman, session chairman or rapporteur at a number of major international conferences and industry symposia.

ANNEX II

ABBREVIATIONS

AC	Alternating current
BSEC	Organisation of the Black Sea Economic Cooperation
BSTDB	Black Sea Trade and Development Bank
BSREC	Black Sea Regional Energy Center
BTC	Baky-Tbilisi-Ceyhan
CERA	Cambridge Energy Research Associates
CIS	Commonwealth of Independent States
CPC	Caspian Pipeline Consortium
CRES	Greek National Center for Renewable Energy Sources
DC	Direct current
DIS	Deferred Investment Scenario
EBRD	European Bank for Reconstruction and Development
ECT	Energy Community Treaty
EIA	US Energy Information Agency
EIB	European Investment Bank
EU	European Union
FSU	Former Soviet Union
FYROM	Former Yugoslavian Republic of Macedonia
G8	Group of Eight
HVDC	High voltage direct current
IEA	International Energy Agency
IFI	International Financial Institutions
IPS/UPS	Interconnected Power System/ United Power System
KTI	Kazakh Turkmen Iranian Pipeline Project
KMG	KazMunaiGaz
LNG	Liquefied natural gas
MW	Megawatt
OPEC	Organization of the Petroleum Exporting Countries
OVL	Overhead line
RAO-UES	Unified Energy Systems of Russia
SCP	South Caucasus Pipeline
SEE	Southeast Europe
SEECT	Southeast Europe Energy Community Treaty
TEN	Trans-European Energy Networks
TNK-BP	Tyumen Oil Company-British Petroleum
TCO	TengizChevrOil
TSO	Transmission System Operator
UCTE	Union for the Co-ordination of Transmission of Electricity

US	United States
USAID	United States Agency for International Development
WAPS	World Alternative Policy Scenario
WG	Working group
3Rs	Reduce, Reuse, Recycle

ANNEX III

EU GREEN PAPER

A EUROPEAN STRATEGY FOR SUSTAINABLE, COMPETITIVE AND SECURE ENERGY.

(Text with EEA relevance)

COMMISSION OF THE EUROPEAN COMMUNITIES
Brussels, 8.3.2006
COM(2006) 105 final
{SEC(2006) 317}

1. AN ENERGY STRATEGY FOR EUROPE: BALANCING SUSTAINABLE DEVELOPMENT, COMPETITIVENESS AND SECURITY OF SUPPLY

Europe has entered into a new energy era.

• There is an urgent need for investment. In Europe alone, to meet expected energy demand and to replace ageing infrastructure, investments of around one trillion euros will be needed over the next 20 years.

• Our import dependency is rising. Unless we can make domestic energy more competitive, in the next 20 to 30 years around 70 % of the Union's energy requirements, compared to 50% today, will be met by imported products – some from regions threatened by insecurity.

• Reserves are concentrated in a few countries. Today, roughly half of the EU's gas consumption comes from only three countries (Russia, Norway, Algeria). On current trends, gas imports would increase to 80 % over the next 25 years.

• Global demand for energy is increasing. World energy demand – and CO2 emissions – is expected to rise by some 60% by 2030. Global oil consumption has increased by 20% since 1994, and global oil demand is projected to grow by 1.6% per year.

• Oil and gas prices are rising. They have nearly doubled in the EU over the past two years, with electricity prices following. This is difficult for consumers. With increasing global demand for fossil fuels, stretched supply chains and increasing dependence on imports, high prices for oil and gas are probably here to stay. They may, however, trigger greater energy efficiency and innovation.

• Our climate is getting warmer. According to the Intergovernmental Panel on Climate Change (IPCC), greenhouse gas emissions have already made the world 0.6 degrees warmer. If no action is taken there will be an increase of between 1.4 and 5.8 degrees by the end of the century. All regions in the world – including the EU – will face serious consequences for their economies and ecosystems.

• Europe has not yet developed fully competitive internal energy markets. Only when such markets exist will EU citizens and businesses enjoy all the benefits of security of supply and lower prices. To achieve this aim, interconnections should be developed, effective legislative and regulatory frameworks must be in place and be fully applied in practice, and Community competition rules need to be rigorously

enforced. Furthermore, the consolidation of the energy sector should be market driven if Europe is to respond successfully to the many challenges it faces and to invest properly for the future.

This is the new energy landscape of the 21st century. It is one in which the world's economic regions are dependent on each other for ensuring energy security and stable economic conditions, and for ensuring effective action against climate change.

The effects of this landscape are felt directly by everyone. Access to energy is fundamental to the daily lives of every European. Our citizens are affected by higher prices, threats to the security of energy supply and changes to Europe's climate. Sustainable, competitive and secure energy is one of the basic pillars of our daily life.

This landscape requires a common European response. Heads of State and Government, at their summits in October and December 2005, recognised this and asked the Commission to take this forward. Recent events have underlined that this challenge must be met. An approach based solely on 25 individual energy policies is not enough.

The EU has the tools to help. It is the world's second largest energy market, with over 450 million consumers. Acting together, it has the weight to protect and assert its interests. The EU has not just the scale but also the policy range to tackle the new energy landscape. The EU leads the world in demand management, in promoting new and renewable forms of energy, and in the development of low carbon technologies. If the EU backs up a new common policy with a common voice on energy questions, Europe can lead the global search for energy solutions.

Europe must act urgently: it takes many years to bring innovation on stream in the energy sector. It must also continue to promote diversity – of energy type, country of origin and transit. In this way it will create the conditions for growth, jobs, greater security and a better environment. Work has been progressing on these issues since the Commission's 2000 Green Paper on Security of Energy Supply, but given recent developments on energy markets, a new European impetus is needed.

This Green Paper puts forward suggestions and options that could form the basis for a new comprehensive European energy policy. The Spring European Council and the European Parliament are invited to react to this Paper, which should also spark a wide-ranging public debate. The Commission will then table concrete proposals for action.

This Green Paper identifies six key areas where action is necessary to address the challenges we face. The most fundamental question is whether there is agreement on the need to develop a new, common European strategy for energy, and whether sustainability, competitiveness and security should be the core principles to underpin the strategy. From that flow the following questions:

1. Competitiveness and the internal energy market. Is there agreement on the fundamental importance of a genuine single market to support a common European strategy for energy? How can barriers to implementing existing measures be removed? What new measures should be taken to achieve this goal? How can the EU stimulate the substantial investments necessary

in the energy sector? How to ensure that all Europeans enjoy access to energy at reasonable prices, and that the internal energy market contributes to maintaining employment levels?

2. Diversification of the energy mix. What should the EU do to ensure that Europe, taken as a whole, promotes the climate-friendly diversification of energy supplies?

3. Solidarity. Which measures need to be taken at Community level to prevent energy supply crises developing, and to manage them if they do occur?

4. Sustainable development. How can a common European energy strategy best address climate change, balancing the objectives of environmental protection, competitiveness and security of supply? What further action is required at Community level to achieve existing targets? Are further targets appropriate? How should we provide a longer term secure and predictable investment framework for the further development of clean and renewable energy sources in the EU?

5. Innovation and technology: What action should be taken at both Community and national level to ensure that Europe remains a world leader in energy technologies? What instruments can best achieve this?

6. External policy. Should there be a common external policy on energy, to enable the EU to speak with a common voice? How can the Community and Member States promote diversity of supply, especially for gas? Should the EU develop new partnerships with its neighbours, including Russia, and with the other main producer and consumer nations of the world?

Developing a European energy policy will be a long term challenge. This needs a clear but flexible framework: clear in that it represents a common approach endorsed at the highest level, flexible in that it needs periodic updating. As a foundation for this process the Commission therefore proposes that a **Strategic EU Energy Review** be presented to the Council and Parliament on a regular basis, covering the issues identified in this Green Paper.

This would constitute a stocktaking and action plan for the Spring European Council, monitoring progress and identifying new challenges and responses on all aspects of energy policy.

2. SIX PRIORITY AREAS

2.1. Energy for growth and jobs in Europe: completing the internal European electricity and gas markets

Sustainable, competitive and secure energy will not be achieved without open and competitive energy markets, based on competition between companies looking to become European-wide competitors rather than dominant national players. Open markets, not protectionism, will strengthen Europe and allow it to tackle its problems. A truly competitive single European electricity and gas market would bring down prices, improve security of supply[29] and boost competitiveness. It would also help the environment, as companies react to competition by closing energy inefficient plant.

29 "Lessons from liberalised electricity markets", IEA, 2005.

In July 2007, with very few exceptions, every EU consumer will have the legal right to purchase electricity and gas from any supplier in the EU. This offers a major opportunity for Europe. But whilst much has been done to create a competitive market, work is not yet complete. Many markets remain largely national, and dominated by a few companies. Many differences remain between Member States' approaches to market opening, preventing the development of a truly competitive European market – including powers of regulators, level of independence of network operators from competitive activities, grid rules, balancing and gas storage regimes.

By the end of 2006, the second electricity and gas Directives will have been implemented by all Member States and the Commission will have completed its competition inquiry into the functioning of the European gas and electricity markets. A final decision, based on a full impact assessment, will then be made on any additional legislative measures needed: in particular to ensure non-discriminatory network access, adequate available network capacity, liquidity on gas and electricity markets and effective regulation. However, it is already clear that five core areas need particular attention:

(i) A European grid

Consumers need a single European grid for a real European electricity and gas market to develop. This can be done by ensuring common rules and standards on issues that affect cross-border trade. Progress is being made on these issues, but it is too slow.

A **European grid code** could encourage harmonised, or at least equivalent, grid access conditions. This would take the form of common rules on regulatory issues that affect crossborder trade. Experts are taking a first step forward on a regional basis, in particular energy regulators through the Council of European Energy Regulators and the European Regulators Group. But further and quicker progress is necessary before all business and private consumers will be able to purchase their electricity and gas from suppliers in other Member States. To this end, the Commission will examine (i) what needs to be done to address the differences between existing equivalent powers and independence for national regulators and (ii) whether existing forms of collaboration between national regulators and national grid operators are adequate, or whether a closer level of collaboration is needed – with for example a **European energy regulator** to look at cross-border issues. Such a regulator could have decision-making powers for common rules and approaches such as a European grid code and would work together with the network operators. A **European Centre for Energy Networks** could also bring the network operators together in a formal body to assist work on developing a European Grid Code.

(ii) A priority interconnection plan

At the Barcelona European Council in 2002, the Heads of State and Government agreed to increase minimum interconnection levels between Member States to 10%. Progress has not been satisfactory. There can be no truly competitive and single European market without additional physical capacity: this is particularly vital for countries such as Ireland and Malta or for the Baltic States, which remain an 'energy island' largely cut off from the rest of the Community.

Equally, additional electricity interconnection capacity is necessary between many areas and in particular between France and Spain to permit real competition between these two countries to develop. Similarly there is a need for new investment in infrastructure in gas markets. In many Member States, action needs to be taken to free up capacity reserved for former incumbents under electricity and gas long term contracts. Interconnection is a crucial mechanism for solidarity.

Private and public investments in infrastructure need to be stimulated and authorisation procedures accelerated. The greater the interconnection in the European electricity grid, the lower the need for spare capacity and, in time, the lower the costs. This is important at a time when Europe's previous overcapacity is becoming history. The Commission will by the end of 2006 identify the **individual measures** that it considers important at the **level of Member States**. Further actions at **Community level** will also be identified, such as more effective use of the Trans European Network instruments.

Finally, relations with Switzerland are important in this respect, which is a major transit country for electricity.

(iii) Investment in generation capacity

To replace ageing electricity generation capacity and to meet demand, the EU will need substantial investment over the next 20 years. This includes capacity to deal with peaks. The necessary reserve must exist in order to prevent disruptions at times of high demand and to serve as back-up for intermittent renewable energy sources. For timely and sustainable investments, a properly functioning market is needed, giving the necessary price signals, incentives, regulatory stability and access to finance.

(iv) A level-playing field: the importance of unbundling

Significant differences persist in the level and effectiveness of unbundling of transmission and distribution from competitive activities. This means that in practice national markets are open to fair and free competition to differing degrees. The provisions of the second electricity and gas Directives on unbundling need to be fully implemented, not just in their letter but also in their spirit. **If progress to a level playing field does not result, further measures at Community level should be considered**.

(v) Boosting the competitiveness of European industry

One of the most important objectives of the internal energy market is to promote the competitiveness of EU industry and thus contribute to growth and jobs. Industrial competitiveness requires a well-designed, stable and predictable regulatory framework, respectful of market mechanisms. Energy policy therefore needs to favour cost-effective options and be based on a thorough economic analysis of different policy options and their impact on energy prices. Secure availability of energy at affordable prices is crucial.

Integrated and competitive electricity and gas markets with the minimum of disruption are essential.

The new High–Level Group on Energy, Environment and Competitiveness will play an important role in identifying ways to promote the competitiveness of all sectors of affected industry.

This requires considering, for example, what is the best way to accommodate the legitimate needs of energy intensive industry whilst, at the same time, respecting competition rules.

Conclusions on this issue should be contained in the report on the internal market scheduled for the end of 2006. In addition, consideration needs to be given on how best to ensure effective coordination between the Commission, national energy regulators and national competition authorities.

2.2. An Internal Energy Market that guarantees security of supply: solidarity between Member States

(i) Enhancing security of supply in the internal market

Liberalised and competitive markets help security of supply by sending the right investment signals to industry participants. But for this competition to work effectively, the market needs to be transparent and predictable.

The physical security of Europe's energy infrastructure against risks from natural catastrophe and terrorist threat, as well as security against political risks including interruption of supply is critical to predictability. The development of smart electricity networks, demand management and distributed energy generation could all help at times of sudden shortage. This points to several areas for possible future action:

- The establishment of a **European Energy Supply Observatory** as soon as possible to monitor the demand and supply patterns on EU energy markets, identifying likely shortfalls in infrastructure and supply at an early stage and complementing on an EU level the work of the International Energy Agency.
- Improved **network security** through increased collaboration and exchange of information between transmission system operators in defining and agreeing common European security and reliability standards. **A more formal grouping of transmission system operators,** reporting to the EU energy regulators and to the Commission, could build on the work already started in the wake of the 2003 blackouts. This could develop into a **European Centre for Energy Networks,** with powers to collect, analyse and publish relevant information, as well as to implement schemes approved by the relevant regulatory institutions.
- With respect to **the physical security of infrastructure**, two main actions merit further consideration. Firstly, **a mechanism could be developed to prepare for and ensure rapid solidarity and possible assistance to a country facing difficulties following damage to its essential infrastructure**. Secondly, **common standards or measures might be taken to protect infrastructure**.

(ii) Rethinking the EU's approach to emergency oil and gas stocks and preventing disruptions

Oil is a global market and major supply disruptions, even if local or regional, require a global

response. The release of emergency stocks organised by the IEA in response to Hurricane Katrina worked well. Any stronger Community action in this area should therefore be compatible with this global mechanism. This might still point to a more coordinated Community response in the event of an IEA decision to release stocks. In particular, this would be helped by a new Commission legislative proposal ensuring the **publication on a more regular and transparent basis the state of Community oil stocks**, to contribute improving transparency on oil markets.

Furthermore, the **existing Directives on gas and electricity security of supply** should be re-examined to ensure they can deal with potential supply disruptions. Recent experience has raised important questions, including whether Europe's gas stocks can meet the challenge of shorter term supply disruptions. This review should also consider whether the appropriate signals are being given to encourage the necessary investment in Europe's gas and electricity markets in the years ahead, including investments in security of supply and infrastructure to enable mutual assistance. This could, inter alia, include **a new legislative proposal concerning gas stocks** to ensure that the EU can react to shorter term emergency gas supply disruptions in a manner that ensures solidarity between Member States, whilst taking account of the different potential for storage in different parts of the EU.

2.3. Tackling security and competitiveness of energy supply: towards a more sustainable, efficient and diverse energy mix

Each Member State and energy company chooses its own energy mix. However, choices made by one Member State inevitably have an impact on the energy security of its neighbours and of the Community as a whole, as well as on competitiveness and the environment. For example:

- decisions to rely largely or wholly on natural gas for power generation in any given Member State have significant effects on the security of supply of its neighbours in the event of a gas shortage;
- decisions by Member States relating to nuclear energy can also have very significant consequences on other Member States in terms of the EU's dependence on imported fossil fuels and CO2 emissions.

The **Strategic EU Energy Review** would offer a clear European framework for national decisions on the energy mix. It should analyse all the advantages and drawbacks of different sources of energy, from indigenous renewable energy sources such as wind, biomass and biofuels, small hydro and energy efficiency to coal and nuclear, and the knock-on effects of these changes for the EU as a whole. This could be based on a standard methodology.

Coal and lignite, for example, presently account for around one-third of the EU's electricity production: climate change means that this is only sustainable if accompanied by commercialised carbon sequestration and clean coal technologies on an EU level.

The Review should also allow a transparent and objective debate on the future role of nuclear energy in the EU, for those Member States concerned. Nuclear power, at present, contributes roughly one-third of the EU's electricity production and, whilst careful attention needs to be given to the issues of nuclear waste and safety, represents at present the largest source of largely carbon

free energy in Europe. The EU can play a useful role in ensuring that all costs, advantages and drawbacks of nuclear power are identified for a well-informed, objective and transparent debate.

Furthermore, it might be appropriate to **agree an overall strategic objective,** balancing the goals of sustainable energy use, competitiveness and security of supply. This would need to be developed on the basis of a thorough impact assessment and provide a benchmark on the basis of which the EU's developing energy mix could be judged and would help the EU to stem the increasing dependence on imports. For example, **an objective might be to aim for a minimum level of the overall EU energy mix originating from secure and low-carbon energy sources**. Such a benchmark would reflect the potential risks of import dependency, identify an overall aspiration for the long term development of low carbon energy sources and permit the identification of the essentially internal measures necessary to achieve these goals.

It would combine the freedom of Member States to choose between different energy sources and the need for the EU as a whole to have an energy mix that, overall, meets its core energy objectives. The Strategic EU Energy Review could serve as the tool for the proposal and subsequent monitoring of any such objective agreed by the Council and Parliament.

2.4. An integrated approach to tackling climate change

Effective action to address climate change is urgent and the EU must continue to lead by example and, above all, work towards the widest possible international action. Europe needs to be ambitious and must act in an integrated manner that promotes the EU's Lisbon objectives.

The EU is already at the forefront of approaches to decouple economic growth from increasing energy consumption. Its action has combined robust legislative initiatives and energy efficiency programmes with encouragement to competitive and effective renewable energy. However, the EU's commitment to fighting climate change is a long-term one.

In order to limit the forthcoming rise of global temperatures at the agreed target of maximum of 2 degrees above pre-industrial levels, global greenhouse gas emissions should peak no later than 2025, and then be reduced by at least 15%, but perhaps as much as 50% compared to 1990 levels. This huge challenge means that Europe must act now, in particular on energy efficiency and renewable energy.

Action on renewables and energy efficiency, besides tackling climate change, will contribute to security of energy supply and help limit the EU's growing dependence on imported energy. It could also create many high-quality jobs in Europe and maintain Europe's technological leadership in a rapidly growing global sector.

In this respect, the **EU Emissions Trading Scheme** creates a flexible and cost-efficient framework for more climate friendly energy production. The full review of the EU Emissions Trading Scheme gives an opportunity for expanding and further improving the functioning of the scheme. In addition, the EU Emissions Trading Scheme provides the nucleus for a gradually expanding global carbon market, hereby giving European business a head-start.

(i) Making more from less: leading on energy efficiency

An effective energy efficiency policy does not mean sacrificing comfort or convenience. Nor does it mean reducing competitiveness. In fact an effective policy in this area means the opposite; making cost-effective investments in order to reduce the waste of energy, thereby increasing standards of living and saving money, and using price signals, that would lead to more responsible, economical and rational use of energy. Market-based instruments, including the Community energy tax framework, can be a very efficient tool in this respect. Although Europe is already one of the world's most energy efficient regions, it can go much further. In its 2005 Green Paper on Energy Efficiency, the Commission showed that up to 20% of EU energy use could be saved: equivalent to spending as much as 60 billion less on energy, as well as making a major contribution to energy security and creating up to a million new jobs in the sectors directly concerned.

One useful instrument in this respect is the EU's cohesion policy, which identifies as objectives supporting energy efficiency, the development of renewable and alternative energy sources and investments in networks where there is evidence of market failure. The Commission calls upon Member States and regions, when preparing their National Strategic Reference Frameworks and operational programmes for 2007-2013, to make effective use of the possibilities provided for by cohesion policy in support of the present strategy.

The Commission will this year propose an **Action Plan on Energy Efficiency** to realise this potential. This effort needs consistent support and determination at the very highest political level throughout Europe. Many of the tools are in national hands, such as grants and tax incentives, and the national level holds the key to convincing the public that energy efficiency can bring them real savings. But the EU level can have a decisive impact and the Action Plan will propose concrete measures to reach this 20% potential by 2020.

Examples of possible action include:

- Long-term targeted energy efficiency campaigns, including efficiency in buildings, notably public buildings.
- A major effort to improve energy efficiency in the transport sector and in particular to improve rapidly urban public transport in Europe's major cities.
- Harnessing financial instruments to catalyze investments by commercial banks in energy-efficiency projects and companies providing energy services.
- Mechanisms to stimulate investment in energy efficiency projects and energy services companies.
- A Europe-wide "white certificates" system, tradable certificates, which would enable companies that exceed energy efficiency minimum standards to "sell" this success to others that have failed to meet these standards.
- To guide consumers and manufacturers, more focus will need to be put on rating and showing the energy performance of the most important energy-using products including appliances, vehicles, and industrial equipment. It may be appropriate to set minimum standards in this area.

Finally, energy efficiency needs to become a global priority. The Action Plan can serve as a

'launch pad' to catalyse similar action worldwide, in close collaboration with the IEA and the World Bank. **The EU should propose and promote an international agreement on energy efficiency**, involving both developed and developing countries and the expansion of the Energy Star Agreement.

(ii) Increasing the use of renewable energy sources

Since 1990, the EU has been engaged in an ambitious and successful plan to become world leader in renewable energy. To take one example, the EU has now installed wind energy capacity equivalent to 50 coal fired power stations, with costs halved in the past 15 years. The EU's renewable energy market has an annual turnover of € 15 billion (half the world market), employs some 300,000 people, and is a major exporter. Renewable energy is now starting to compete on price with fossil fuels.

In 2001, the EU agreed that the share of electricity from renewable energy sources in the EU consumption should reach 21% by 2010. In 2003, it agreed that at least 5.75 % of all petrol and diesel should be bio-fuels by 2010. A number of countries are showing a rapid increase in renewable energy use through supportive national policy frameworks. But under current trends, the EU will miss both targets by 1-2 percentage points. If the EU is to meet its longer term climate change goals and reduce its dependence on fossil fuel imports, it will need to meet and indeed go beyond these targets. Renewable energy is already the third electricity generation source worldwide (after coal and gas) and has the potential to grow still further, with all the environmental and economic advantages that would follow.

For renewable energy to fulfil its potential, the policy framework needs to be supportive and in particular to stimulate increasing competitiveness of such energy sources while fully respecting the competition rules. While some sources of low-carbon indigenous energy are already viable, others, such as off-shore wind, wave and tidal energy need positive encouragement to be realised.

The full potential of renewable energy will only be realised through a long-term commitment to develop and install renewable energy. In parallel to the Strategic EU Energy Review, the Commission will bring forward a **Renewable Energy Road Map**. This would cover key issues for an effective EU policy on renewables:

- **an active programme with specific measures** to ensure that existing targets are met;
- **consideration of which targets or objectives beyond 2010 are necessary**, and the nature of such targets, in order to provide long term certainty for industry and investors, as well as the active programmes and measures needed to make this a reality. Any such targets could be complemented by extended operational targets on electricity, fuels and possibly heating;
- **a new Community Directive on heating and cooling,** complementing the Community energy saving framework;
- **a detailed short, medium and long term plan** to stabilise and gradually reduce the EU's dependence on imported oil**.** This should build on the existing Biomass Action

Plan[30] and the Strategy for Biofuels[31];

– **Research, demonstration and market replication initiatives to bring clean and renewable energy sources closer to markets.**

The Road Map would be based on a thorough impact assessment, assessing renewable energy sources against the other options available.

(iii) Carbon capture and geological storage

Carbon capture and geological storage, in combination with clean fossil fuel technologies provides a third opportunity of near zero emission technology. Today it can already be economically used for enhanced oil or gas recovery. It can be particularly important for countries which choose to continue the use of coal as a secure and abundant energy source.

However, this technology needs a stimulus to create the necessary economic incentives, provide legal certainty for the private sector and ensure environmental integrity. R&D and large scale demonstration projects are needed to bring the technology towards reduced costs, and market-based incentives such as emissions trading can also make this a profitable option for the longer term.

2.5. Encouraging innovation: a strategic European energy technology plan

The development and deployment of new energy technologies is essential to deliver security of supply, sustainability and industrial competitiveness.
Energy related research has contributed strongly to energy efficiency (e.g. in car engines) and to energy diversity through renewable energy sources. However the magnitude of the challenges ahead requires increased efforts.

This necessitates a long term commitment. As an example research has allowed efficiency of coal power stations to be improved by 30% in the last thirty years. The Research Fund for Coal and Steel has contributed to funding this at EU level. Further technological developments would see significant reductions in CO2 emissions.

Research can also bring commercial opportunities. Energy efficient and low carbon technologies constitute a rapidly growing international market that will be worth billions of Euros in the coming years. Europe must ensure that its industries are world leaders in these new generations of technologies and processes.

The 7th Framework Programme recognises that there is no single solution to our energy problems, but deals with a wide portfolio of technologies: renewable energy technologies, making clean coal and carbon capture and sequestration an industrial reality, developing economically viable biofuels for transports, new energy vectors such as hydrogen and environmentally friendly energy usage (e.g. fuel cells) and energy efficiency; as well as advanced nuclear fission and the

30 Communication from the Commission – "Biomass Action Plan" - COM(2005) 628, 7.12.2005.

31 Communication from the Commission – "An EU Strategy for Biofuels" - COM(2006) 34, 8.2.2006.

development of fusion through the implementation of the ITER Agreement.

The EU needs an appropriately resourced **strategic energy technology plan.** This should accelerate the development of promising energy technologies, but should also help to create the conditions to bring such technologies efficiently and effectively to the EU and the world markets. Research in areas of high energy use – housing, transport, agriculture, agroindustries, and materials – should also be addressed. The proposed European Institute of Technology (EIT) could play an important role in helping achieve this.

The plan should strengthen the European research effort to prevent overlaps in national technology and research programmes and to put the focus on agreed EU-level goals. Industryled European technology platforms on biofuels, hydrogen and fuel cells, photovoltaics, clean coal and electricity networks help to develop commonly agreed research agendas and deployment strategies.

The EU needs to consider ways to finance a more strategic approach to energy research, taking further steps towards integrating and coordinating Community and national research and innovation programmes and budgets. Building upon the experience and output of European technology platforms, high-level stakeholders and decision-makers need to be mobilised to develop an EU vision for the transformation of the energy system and to maximise the efficiency of the overall research effort.

Where appropriate, particularly to develop 'leading markets' for innovation, Europe should act through large-scale integrated actions with the necessary critical mass, mobilising private business, Member States and the European Commission in public/private Partnerships or through the integration of National and Community Energy Research Programmes. The long-term energy-related ITER project and the internationally coordinated Generation IV initiative aiming at designing even safer and more sustainable reactors, are examples of concerted EU actions to achieve specific goals. Europe should also invest in other possible future forms of energy, such as hydrogen and fuel cells, carbon capture and storage, large-scale renewable technologies such as concentrated solar thermal, as well as even longer term prospects such as methane hydrates. Consideration should also be given on how to mobilise the resources of the European Investment Bank to promote close to market R&D in this area and how to enhance cooperation in areas of global concern.

Actions to accelerate technology development and drive down the costs of new energy technologies must be complemented by policy measures to open the market and to ensure the market penetration of existing technologies that are effective in addressing climate change.

Competing against entrenched technologies and huge locked-in investments in the current energy system, largely based on fossil fuels and centralised generation, new technologies face high entry barriers. The EU Emissions Trading Scheme, green certificates, feed-in tariffs and other measures can ensure that the implementation of environmentally friendly energy production, conversion and use is financially viable. Such measures can provide powerful policy signals to the market and create a stable climate in which industries can take the longterm investment

decisions required. The Intelligent Energy-Europe Programme will also provide the necessary tools and mechanisms to overcome the non technical barriers to the take up of new and effective energy technologies.

2.6. Towards a coherent external energy policy

The energy challenges facing Europe need a coherent external policy to enable Europe to play a more effective international role in tackling common problems with energy partners worldwide. A coherent external policy is essential to deliver sustainable, competitive and secure energy. It would be a break from the past, and show Member States' commitment to common solutions to shared problems.

The first step is to agree at Community level on the aims of an **External Energy Policy** and on the actions needed at both Community and national level to achieve it. The effectiveness and coherence of the EU's external energy policy is dependent upon the progress with internal policies and, in particular, the creation of the internal market for energy. The abovementioned **Strategic EU Energy Review** would serve as the basis for establishing this common vision.

This would constitute a stocktaking and action plan for the European Council, monitoring progress and identifying new challenges and responses. Follow-up should take the form of regular formal political level discussions at Community level, involving Member States and the Commission in a manner to be developed. It would offer a single reference point, with an appropriate institutional format, for all actors in European energy at both Community and national level. This would permit not only the effective exchange of information but also a real co-ordination of approach: it would enable the EU, in effect, "to speak with the same voice".

The benefits of this approach for the external dimension would be particularly strong. It should cover a number of key goals and instruments:

(i) A clear policy on securing and diversifying energy supplies

Such a policy is necessary both for the EU as a whole and for specific Member States or regions, and is especially appropriate for gas. To this end, the above mentioned Review could propose **clearly identified priorities for the upgrading and construction of new infrastructure** necessary for the security of EU energy supplies, notably new gas and oil pipelines and liquefied natural gas (LNG) terminals as well as the application of transit and third party access to existing pipelines. Examples include independent gas pipeline supplies from the Caspian region, North Africa and the Middle East into the heart of the EU, new LNG terminals serving markets that are presently characterised by a lack of competition between gas suppliers, and Central European oil pipelines aiming at facilitating Caspian oil supplies to the EU through Ukraine, Romania and Bulgaria. In addition, the Review could acknowledge the concrete political, financial and regulatory measures needed to actively support the undertaking of such projects by business. The new EU-Africa Strategy, envisaging interconnections of energy systems as a priority area, could also help Europe to diversify its oil and gas supply sources.

(ii) Energy partnerships with producers, transit countries and other international actors

The EU and its energy partners are interdependent. This is reflected at bilateral and regional level in a number of specific EU energy dialogues with a number of producer and transit countries[32]. Equally, energy issues are a growing feature of the EU's political dialogues with other major energy consumers (such as the US, China and India), including through multilateral fora like the G8. These dialogues should be set within the common vision offered by the Review.

(a) Dialogue with major energy producers/suppliers

The EU has an established pattern of relations with major international energy suppliers including OPEC and the Gulf Cooperation Council. **A new initiative is particularly opportune with regard to Russia,** the EU's most important energy supplier. The EU, as Russia's largest energy buyer, is an essential and equal partner in this relationship. The development of a common external energy policy should mark a step change in this energy partnership at both Community and national level. A true partnership would offer security and predictability for both sides, paving the way for the necessary long-term investments in new capacity. It would also mean fair and reciprocal access to markets and infrastructure including in particular third party access to pipelines. Work should start on an energy initiative based on these principles. Subsequently the results could be integrated into the framework of EU-Russia relations due to replace the current EU-Russia Partnership and Cooperation agreement in 2007. In addition, efforts should be intensified in the G8 to secure rapid ratification by Russia of the Energy Charter Treaty and conclusion of the negotiations on the Transit Protocol.

(b) Developing a pan-European Energy Community

In line with the European Neighbourhood Policy and its Action Plans (and in addition to the current work undertaken through Partnership and Cooperation Agreements and Association Agreements), the EU has for some time been engaged in widening its energy market to include its neighbours and to bring them progressively closer to the EU's internal market. Creating a 'common regulatory space' around Europe, would imply progressively developing common trade, transit and environmental rules, market harmonisation and integration. This would create a predictable and transparent market to stimulate investment and growth, as well as security of supply, for the EU and its neighbours. Existing political dialogues, trade relations and Community financing instruments can be further developed and, for other partners, there is potential for new agreements or other types of initiative. For example, by building on the Energy Community Treaty with partners in South-East Europe, as well as the development of the EU-Maghreb electricity market and the EUMashrek gas market, **a pan-European energy Community** could be created both through a new Treaty, and through bilateral agreements. Certain essential strategic partners, including **Turkey and Ukraine**, could be encouraged to join the South East European Energy Community Treaty. The **Caspian and Mediterranean countries** are important

32 Notably Russia, Norway, Ukraine, the Caspian basin, the Mediterranean countries, OPEC and the Gulf Co-operation Council.

gas suppliers and transit routes. **Algeria's** increasing importance as a gas supplier to the EU could point to a specific energy partnership.

In addition, as one of the EU's most important strategic energy partner, attention should be given to facilitating Norway's efforts to develop resources in the high north of Europe in a sustainable manner as well as facilitating its entry into the South East Europe Energy Community.

This framework would also offer a clearer framework **to promote best long-term use of Community investment through Trans-European Energy Networks** and their extensions to third country partners and to maximise the impact on energy security of EU resources devoted to the energy sector in third countries. This is of particular importance for the new Neighbourhood Instrument and for EIB and EBRD financing. In this context, twinning programmes and loan subsidies for external strategic energy infrastructure are essential.

(iii) Reacting effectively to external crisis situations

Consideration should be given on how best to react to external energy crises. Recent experiences with respect to both oil and gas have shown the need for the Community to be able to react quickly and in a fully co-ordinated manner to such events. The EU has no formal instrument dealing with external energy supplies. This could be addressed by a **new more formal, targeted instrument to deal with emergency external supply events**. This might involve, for example, a monitoring mechanism to provide early warning and to enhance response capabilities in the event of an external energy crisis.

(iv) Integrating energy into other policies with an external dimension

At the **political level**, a common European external energy policy will permit a better integration of energy objectives into broader relations with third countries and the policies which support them. That means increasing the focus in relations with global partners facing similar energy and environmental challenges – such as the US, Canada, China, Japan and India – on issues such as **climate change, energy efficiency and renewable sources, research and development of new technologies**, **global market access and investment trends**, with better results in multilateral fora such as the UN, the IEA and the G8. If these countries reduce the use of fossil fuels, it will also be beneficial for Europe's energy security.

The EU could significantly step up bilateral and multi-lateral cooperation with these countries with the objective of encouraging the rational use of energy worldwide, of reducing pollution and encouraging industrial and technological cooperation on the development, demonstration and deployment of energy efficient technologies, renewable energy sources and clean fossil fuel technologies with carbon capture and geological storage. **In particular, greater efforts need to be made towards widening the geographic scope of the EU Emissions Trading Scheme** and, as mentioned above, as a first step the **EU should propose and promote an international agreement on energy efficiency**. In addition, more focus could be given to technological cooperation, in particular with other energy consuming countries.

Similarly, there is scope to make better use of **trade policy tools** to promote goals such as

non-discriminatory energy transit and the development of a more secure investment climate. The EU should press for a better respect of existing WTO rules and principles in this field, and bilateral or regional initiatives should build on these. Such agreements can include provisions on market opening, investment, regulatory convergence on issues such as transit and access to pipelines, and competition. Reinforced market-based provisions on energy and trade–related energy issues would thus be incorporated in the EU's existing and future agreements with third countries.

(v) Energy to promote development

For developing countries, access to energy is a key priority, and Sub-Saharan Africa has the lowest access in the world to modern energy services. At the same time, only 7% of Africa's hydropower potential is tapped. The EU should promote a twin-track approach through the European Union Energy Initiative and through raising the profile of energy efficiency in development programmes. Focusing on developing renewable energy and micro-generation projects, for instance, could help many countries reduce reliance on imported oil and improve the lives of millions. The implementation of the Kyoto Protocol clean development mechanism could spur investment in such energy projects in developing countries.

3. CONCLUSIONS

This Green Paper has set out the new energy realities facing Europe, outlined questions for debate and suggested possible actions at the European level. In taking the debate forward, it is essential to act in an integrated way. Each Member State will make choices based on its own national preferences. However, in a world of global interdependence, energy policy necessarily has a European dimension.

Europe's energy policy should have **three main objectives**:

• *Sustainability : (i) developing competitive renewable sources of energy and other low carbon energy sources and carriers, particularly alternative transport fuels, (ii) curbing energy demand within Europe, and (iii) leading global efforts to halt climate change and improve local air quality.*

• *Competitiveness: (i) ensuring that energy market opening brings benefits to consumers and to the economy as a whole, while stimulating investment in clean energy production and energy efficiency, (ii) mitigating the impact of higher international energy prices on the EU economy and its citizens and (iii) keeping Europe at the cutting edge of energy technologies.*

• *Security of supply: tackling the EU's rising dependence on imported energy through (i) an integrated approach – reducing demand, diversifying the EU's energy mix with greater use of competitive indigenous and renewable energy, and diversifying sources and routes of supply of imported energy, (ii) creating the framework which will stimulate adequate investments to meet growing energy demand, (iii) better equipping the EU to cope with emergencies, (iv) improving the conditions for European companies seeking access to global resources, and (v) making sure that all citizens and business have access to energy.*

To achieve these objectives, it is important to put them in an overall framework, in the first Strategic EU Energy Review. This could be augmented with a **strategic objective** which balanced the goals of sustainable energy use, competitiveness and security of supply; for example, by aiming for **a minimum level of the overall EU energy mix to come from secure and low-carbon energy sources**. This would combine the freedom of Member States to choose between different energy sources and the need for the EU as a whole to have an energy mix that, overall, meets its three core energy objectives.

This Green Paper puts forward a number of concrete proposals to meet these three objectives.

1. **The EU needs to complete the internal gas and electricity markets**. Action could include the following measures:

- The development of a European Grid, including through a European grid code. A European regulator and a European Centre for Energy Networks should also be considered.
- Improved interconnections.
- Creating the framework to stimulate new investment.
- More effective unbundling.
- Boosting competitiveness, including through better coordination between regulators, competition authorities and the Commission.

These must be addressed as a priority; the Commission will reach final conclusions on any

additional measures that need to be taken to ensure the rapid completion of genuinely competitive, European-wide electricity and gas markets, and present concrete proposals by the end of this year.

2. **The EU needs to ensure that its internal energy market guarantees security of supply and solidarity between Member States**. Concrete measures should include:

- A review of the existing Community legislation on oil and gas stocks, to focus them on today's challenges.
- A European energy supply observatory, enhancing transparency on security of energy supply issues within the EU.
- Improved network security through increased cooperation between network operators and possibly a formal European grouping of network operators.
- Greater physical security of infrastructure, possibly through common standards.
- Improved transparency on energy stocks at the European level.

3. **The Community needs a real Community-wide debate on the different energy sources**, including costs and contributions to climate change, to enable us to be sure that, overall, the EU's energy mix pursues the objectives of security of supply, competitiveness and sustainable development.

4. **Europe needs to deal with the challenges of climate change in a manner compatible with its Lisbon objectives**. The Commission could propose the following measures to the Council and Parliament:

(i) A clear goal to prioritise energy efficiency, with a goal of saving 20% of the energy that the EU would otherwise use by 2020 and agreeing a series of concrete measures to meet this objective, including:

- Efficiency campaigns, including on buildings.
- Harnessing financial instruments and mechanisms to stimulate investment.
- A renewed effort for transport.
- A Europe-wide "white certificates" trading system.
- Better information on the energy performance of some appliances, vehicles, and industrial equipment and possibly, minimum performance standards.

(ii) Adopt a long-term road-map for renewable energy sources, including:

- A renewed effort to meet existing targets.
- Consideration of which targets or objectives beyond 2010 are necessary.
- A new Community Directive on heating and cooling.
- A detailed plan to stabilise and gradually reduce the EU's dependence on imported oil.
- Initiatives to bring clean and renewable energy sources closer to markets.

5. **A strategic energy technology plan**, making best use of Europe's resources, building on European technology platforms and with the option of joint technology initiatives or joint undertakings to develop leading markets for energy innovation. This should be presented as soon as possible to the European Council and Parliament for endorsement.

6. **A common external energy policy**. In order to react to the challenges of high and volatile energy prices, increasing import dependency, strongly growing global energy demand and global warming, the EU needs to have a clearly defined external energy policy and to pursue it, at the same time at both national and Community level, with a single voice. To this end the Commission proposes:

- Identifying European priorities for the construction of new infrastructure necessary for the security of EU energy supplies.
- Developing a pan-European Energy Community Treaty.
- A new energy partnership with Russia.
- A new Community mechanism to enable rapid and co-ordinated reaction to emergency external energy supply situations impacting EU supplies.
- Deepening energy relations with major producers and consumers.
- An international agreement on energy efficiency.

ANNEX IV

THE EUROPEAN COUNCIL'S ACTION PLAN

23-24 March 2006
Bulletin EU 3-2006
Annexes to the Presidency conclusions (3/15)
Website http://europa.eu/bulletin/en/200603/p000015.htm

Annex III

Energy policy for Europe (EPE) - Indicative list of actions

The actions listed below pertain to both the internal and external aspects of energy policy and may contribute to more than one of its three objectives. Mentioning a particular action is without prejudice to the division of competences between the EC and the Member States.

Security of supply

Facing supply disruptions

Reference: Council Directive 2004/67/EC concerning measures to safeguard the security of natural gas supply: OJ L 127, 29.4.2004; Bull. 4-2004, point 1.4.86

1. While recalling the primary responsibility of Member States with regard to their domestic demand and in synergy with existing mechanisms, ensuring the availability of effective mitigating measures and coordination mechanisms in the event of a supply crisis, based on the principles of solidarity and subsidiarity, e.g. by considering a flexible combination of the measures set out in the gas supply directive, taking into account improved data on gas storage capacities and stocks.
2. Enhancing demand-side management, particularly in the housing and transport sectors, to accelerate the demand response.
3. Improving the effectiveness of gas and oil provisions.

Intensified diversification

4. Member States should intensify their diversification strategies while considering the development of a common approach, be it in terms of the supplier countries or the transportation routes. New gas supply routes should be opened, in particular from the Caspian region and North Africa. This diversification should not be limited to external sources but should include the development and exploitation of indigenous energy potential and energy efficiency.
5. Completion of network infrastructure, in the east-west direction but also along a north-south axis, and LNG (liquified natural gas) facilities contributing to that diversification should be

accelerated, and more competitive LNG markets should be promoted.
6. Subject to competition requirements, the contribution of long-term contracts should be acknowledged from both demand and supply points of view.

External dimension of security of supply
Reference: Energy Community Treaty: OJ L 329; 16.12.2005; Bull. 10-2005, point 1.4.66

7. Developing a common voice in support of energy policy objectives when addressing third countries fostering a more cooperative approach regarding access to energy resources, stability in transit and producer countries, and energy security. In this respect the intensified diversification to be pursued will increase the EU margin of manoeuvre in its relations with third countries.
8. Securing the entry into force of the Energy Community Treaty (with south-east Europe) in 2006 and considering the extension of its membership or principles to neighbouring countries.
9. Developing a common framework for establishing new partnerships with third countries, including transit countries and improving existing ones. This framework should consider the geopolitical implications of third countries' approaches towards energy. Consumer-to-producer partnerships should be supplemented with consumer-to-consumer ones. All fora should be put to good use for carrying out these dialogues, which can be conducted in a regional setting (e.g. OPEC, Euromed or the northern dimension) if this adds to their effectiveness, including for assisting in mediating in case of disputes affecting supply, Member States should be adequately represented in these fora, notably the IEA.
10. In order to maximise the outcome of these dialogues and facilitate the access of developing countries to sustainable energy and related technologies, synergies with international organisations, including IFIs, should be fully exploited.
11. The energy dialogue with Russia should be revitalised and become more open and effective in support of EU energy objectives, based on our mutual interdependence on energy issues and thus the need for secure and predictable investment conditions for both EU and Russian companies and reciprocity in terms of access to markets and infrastructure as well as non-discriminatory third-party access to pipelines in Russia, ensuring a level playing field in terms of safety, including nuclear safety, and environmental protection. Decisive efforts should be made to complete the negotiation of the Energy Charter Transit Protocol and secure Russia's ratification of the Energy Charter Treaty.

Market competitiveness and investment
Furthering market integration to the benefit of businesses and consumers
Reference: Barcelona European Council conclusions: Bull. 3-2002, point I.31

12. Improving regional cross-border exchange and accelerating the development of regional energy cooperation while facilitating the integration of regional energy markets into the EU internal market and its further development, notably through adequate interconnection measures. To that effect the Commission should submit a priority interconnection plan by the

end of 2006 identifying measures to be taken at Member State level as well as Community level. These measures will also contribute to reaching the target of a level of electricity interconnections equivalent to at least 10 % of their installed production capacity as agreed by the European Council in Barcelona in 2002.

13. Making networks operate like a single grid from the end user's point of view by completing the technical rules required for cross-border trade in energy, improving the functioning of gas market flexibility instruments, including storage capacities, access to networks and congestion management on the electricity market. It is expected that the Commission will address the issue of full and transparent access to infrastructure in its 2006 report on the internal energy market.

14. Ensuring full, effective and transparent implementation of existing legislation. This implementation should be in line with public service obligations, ensuring that liberalisation is also beneficial in terms of affordable access to energy. This liberalisation process should also take into account each Member State's situation in terms of diversification of supply in order to avoid excessive control by external suppliers.

15. Enhancing cooperation and coordination between regulators and system operators on a regional basis by a coordinated exchange of information and at Community level, for example by building on already existing administrative bodies like the European energy regulators group for electricity and gas (ERGEG).

Fostering the coherent development of infrastructure

16. Improving medium-to long-term investment planning procedures and investment coordination, especially as regards cross-border interconnection, gas infrastructure and LNG facilities as well as generation capacities, and ensuring a business climate more conducive to long-term investment through increased transparency and exchange of information based on Member States' own planning. This should contribute to starting the implementation of priority energy infrastructure projects without delay.

17. Providing a balanced mechanism regarding long-term contracts that will strengthen competition on the internal market and at the same time safeguard investment incentives.

18. Reviewing existing directives and legal framework conditions in the light of the need to speed up administrative authorisation procedures substantially while maintaining environmental and health standards, in particular by considering time limits for the procedures.

Renewables

Reference: Commission communication to the European Parliament and the Council entitled 'Biomass action plan': OJ C 49, 28.2.2006; COM(2005) 628; Bull. 12-2005, point 1.4.82

19. Producing a Commission analysis of how to achieve the existing targets (2010) of renewables and how to further promote in a cost-efficient manner renewable energies (roadmap) over the long term, e.g. considering to raise their share to 15 % by 2015 and in the same way further the use of biofuels in the transport sector by considering to raise their proportion to 8 % by 2015 accompanied by a constructive dialogue with the oil industry and by giving maximum support

to research on and development of second generation biofuels. The setting of new targets shall be justified on the basis of thorough analysis of the potential and cost effectiveness of further measures.

20. Promoting the use of biomass with a view to diversifying the EU's fuel supply sources, reducing greenhouse gas emissions and offering new income and employment opportunities in rural areas by taking forward proposals in the biomass action plan in all of its three sectors: heating and cooling, electricity and transport. This should be developed in the framework of a long-term strategy for bioenergy beyond 2010.

21. Mitigating legislative and administrative obstacles to renewables take-off by facilitating access to grid, cutting red tape and ensuring the transparency, effectiveness and certainty of support policies.

Energy efficiency

22. Bearing in mind the EU energy saving potential of 20 % by 2020, as estimated by the Commission, the Commission should propose an ambitious and realistic action plan on energy efficiency, aiming at strengthening the EU leadership, with a view to its adoption in 2006 and consider how to engage third countries in making progress on energy efficiency.

23. Improving energy efficiency notably in the transport sector given the important role this sector has to play, making use of cost-effective instruments, including voluntary agreements and emission standards.

24. Fully implementing the legislation on energy performance in buildings and end-use efficiency and energy services.

25. Substantially enhancing the efficiency of power stations, in particular by further promoting the use of combined heat and power.

Contributing to climate change policy

Reference: Kyoto Protocol on Climate Change: Bull. 4-1998, point 1.2.114

26. Contributing to the development of a medium- to long-term EU strategy to combat climate change in a post-2012 perspective and the achievement of the existing Kyoto targets.

27. Completing in a timely manner the review of the EU ETS as an instrument to achieve climate change objectives in a cost-effective manner, taking into account its impact on the three objectives of energy policy, on energy markets, the growth potential and industry structure of Member States, and the need for medium- and long-term certainty.

28. In its energy dialogues with third countries, the EU should facilitate the development of sustainable and efficient energy systems and assume a more proactive approach in combating climate change, promoting renewables, low emission technologies and energy efficiency and the implementation of the Kyoto Protocol mechanisms.

Horizontal and supporting actions Evidence-based policy-making

29. Developing analytical (energy modelling and regional scenarios; indicators) and market and

stocks monitoring tools in order to provide the EU with shared perspectives on long-term supply and demand as regards the EU and its partners, in synergy with other international institutions. In particular the Commission is encouraged to make rapid progress on the means to provide transparency and predictability regarding demand and supply on EU energy markets and to complement the work of the IEA while avoiding duplication of work.

30. Assessing the advantages and drawbacks of all individual energy sources with regard to the three objectives of energy policy; this assessment should cover all different sources, from indigenous renewable energy sources, to clean coal and the future role of nuclear energy in the EU for Member States which wish to pursue this option.

Research, development and demonstration - Technology development

Reference: Proposal for a European Parliament and Council decision concerning the seventh framework programme of the European Community for research, technological development and demonstration activities (2007-13): OJ C 125, 24.5.2005; COM(2005) 119; Bull. 4-2005, point 1.3.62

31. Increasing the priority for energy in national and Community R & D budgets, especially within the seventh framework programme, focusing on energy efficiency, sustainable energies and low emission technologies, responding to the challenges faced by the EU.

32. Supporting these technologies through a broader range of platforms and partnerships with third countries, and facilitating the market take-up of the resulting technologies, including through relevant Community instruments, so as to reinforce the EU leadership.

Coordination

33. In order to ensure a coherent implementation of the above priority actions, shared general orientations addressing the various components of energy policy as implemented by Member States should be developed, taking due account of Member States' characteristics.

ANNEX V

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN COUNCIL

EXTERNAL ENERGY RELATIONS-FROM PRINCIPLES TO ACTION

COMMISSION OF THE EUROPEAN COMMUNITIES
Brussels, 12.10.2006
COM(2006) 590 final

The European Council of March 2006[33] endorsed the Commission Green Paper's proposed objectives for an energy policy for Europe - long-term sustainability, security of energy supply and economic competitiveness, in line with the Lisbon strategy for growth and jobs. The June 2006 European Council[34] subsequently adopted a set of recommendations proposed jointly by the Commission and the High Representative/Secretary General of the Council[35].

(1) **Coherence** is central to achieving these objectives : coherence between the internal and external aspects of energy policy, and between energy policy and other policies that affect it, such as external relations, trade, development, research and environment. A coherent approach is key to ensuring that external energy policy provides guarantees in terms of security of supply, while at the same time ensuring projection of the objective of sustainability at international level. To ensure coherence, major and urgent decisions are needed.

(a) A major potential strength of the Union lies in the realisation of its **internal energy market**. It reinforces economic competitiveness, increases diversity, improves efficiency, fosters investment and innovation and contributes to the security of supply. Member States should promote the principles of the internal energy market in bilateral and multilateral fora, enhancing the Union's coherence and weight externally on energy issues. The pull of the EU internal market will also be strengthened if interconnection is improved and competition rules are fully respected.

(b) Major investments are needed to create the necessary interconnections inside and outside the Community in order to ensure the diversification of routes and sources of external energy supplies. The EU should help to create the environment for private capital flows and offer political and financial support to economically feasible projects, as appropriate.

33 Document 7775/1/06 REV 1, Brussels European Council 23/24 March 2006, Presidency Conclusions.

34 Document 10633/1/06 REV 1, Brussels European Council 15/16 June 2006, Presidency Conclusions.

35 Document 9971/06.

(c) Energy efficiency should be pursued as the most effective policy that contributes to all three energy policy objectives, including the reduction of import dependence. There are significant opportunities for the EU to lead common international action to reduce the growth in worldwide energy demand, improve energy efficiency, combat climate change and encourage greater sustainability. This is just one area where the EU's lead in cutting-edge environmental and energy technologies makes it an attractive international partner.

(d) The EU and its Member States should promote, both internally and externally, the acceleration to a low carbon economy, including emissions trading. This will address the issues of climate change and sustainability, as well as climate security. Early action can support the development and use in the EU and in third countries of renewable energies (wind, solar, biomass, hydro, geothermal) and clean hydrocarbons, including coal, bringing benefits in terms of leadership in developing international markets. Nuclear energy is seen by those who follow this path as an element in energy security and a low carbon economy.

(2) The Union should use all its weight in current and **future bilateral negotiations and agreements**, offering balanced, market-based solutions, first of all with its traditional suppliers, but also with other main producing and consuming countries. The EC should be a key driver in the design of international agreements, including the extension of the EC energy regulatory framework to neighbours (the Energy Community), the development of the Energy Charter Treaty, the post-Kyoto regime, a framework agreement on energy efficiency, the extension of the emission trading scheme to global partners, the promotion of research and the use of renewable energy sources. The role of the EC in international organisations and fora needs to be further developed. Member States and the Commission should coordinate their positions in order to speak with an effective, common voice.

(3) **EU-Russia energy cooperation** is crucial in ensuring energy security on the European continent. Russia is already the origin of around 25% of oil and gas consumed in the EU. The growing demand for energy, in particular gas, points to even higher volumes of energy imports from Russia. The foreseen negotiations on a new comprehensive framework agreement within the post-Partnership and Cooperation Agreement (PCA) offer an opportunity to agree on the objectives and principles of energy cooperation in a balanced and mutually binding manner. This would not only have an impact on the conditions for EU-Russia trade and investment in the energy sector, but would also extend across the economy, thus supporting the industrial diversification and technological development that Russia seeks. It would also bring benefits to transit and producer countries in Eastern Europe, the southern Caucasus and Central Asia. Such an agreement with Russia, confirming both market economy principles and the relevant principles of the Energy Charter Treaty, could also remove many of the current obstacles to Russia's eventual ratification of the Energy Charter Treaty.

With the current levels of investment in production, transport and distribution of energy

products, concerns have been expressed that Russia may not be able adequately to satisfy the growing demand on both its export and domestic markets. There should, therefore, be a strong joint effort to improve the energy efficiency of the Russian economy. For this to become possible, framework conditions regulating and fostering energy trade and cross investments between the EU and Russia would be required. Linked to this, the EU should develop its cooperation with Russia in implementing Kyoto commitments, to foster technical innovation and improve the efficiency of the energy sector.

The EU and Russia should see mutual long term benefits from a new energy partnership, which would seek a balance between expectations and interests of both sides. The equation is the following:

(a) Russia seeks ways to secure energy demand presented by the EU market. The EU needs Russian resources for its energy security. There is a clear interdependence.

(b) Russia wants a stronger presence in the EU internal energy market, ensured long term gas supply contracts, the integration of electricity grids and free trade for electricity and nuclear materials, as well as the acquisition and control of downstream EU energy assets (gas and electricity) and EU investments and technology for the development of the Russian energy resources.

(c) The EU wants non-discriminatory and fair treatment from Russia in their energy relationship, in terms of supply from Russia and in terms of access to the Russian market for EU investors; a level playing field in terms of market conditions, investment and acquisitions in the upstream and downstream Russian energy infrastructure and resources; third party access to pipelines within Russia, including those for transit of energy products from the Caspian region and Central Asia; respect for competition rules as well as high levels of environmental security and safety.

In its proposal for negotiating directives for a new framework agreement with Russia, the Commission has suggested how our energy relationship with Russia could be enhanced. Closer ties with Russia should seek to eliminate remaining barriers to trade and investment, promote regulatory convergence and facilitate the sharing of technology, thus widening and deepening our energy relationship. Mutual benefits for the long term could be anchored through creating a level playing field, predictability and reciprocity in terms of:

(a) upstream and downstream, domestic and foreign investment;
(b) market opening, and fair and non-discriminatory access to transport networks, including for purposes of transit of energy products;
(c) convergence of energy policies, legislation and regulations regarding the functioning of markets, including trade rules, as well as safety and security issues;
(d) compliance with the high standards of EU regulations concerning the safety, security and

environmental aspects, in particular for the purpose of electricity trade, as well as respect for competition rules;
(e) joint implementation of energy efficiency and savings, renewables and research measures.

It is essential that Member States have a common understanding on the proposed approach on the principles for a future energy partnership with Russia, to be considered in the framework of the post-PCA agreement. The Union should use all opportunities to convince Russia of the mutual interest in such an exercise.

(4) EU energy cooperation with **other third countries** remains a top priority, independent of EU-Russia negotiations. It serves the EU's and the transit countries' security of supply, help the reforms in partner countries and facilitates the producer countries' access to EU markets. Cooperation is also pursued with important energy consuming countries. Diversity of type of energy, of country of origin, and of country of transit are essential to ensure the EU's access to clean and secure energy.

The EU is surrounded by almost 80% of the world's hydrocarbon resources. There are important energy producers in the Mediterranean, Black Sea, Caspian, Middle East and the Gulf regions as well as in the North (Norway), with which the EU is building strengthened cooperation. The aim is to create a wide network of countries around the EU, acting on the basis of shared rules or principles derived from the internal market.

There are different tools that could be used to pursue this goal. There are the existing and future bilateral agreements with energy producer and transit countries, such as the PCAs, the Memorandum of Understanding on Energy Cooperation with Ukraine and the Association Agreements with Mediterranean countries. In addition, there are the European Neighbourhood Policy Action Plans; the foreseen memoranda of understanding with Algeria, Azerbaijan and Kazakhstan; Euromed energy cooperation; the Baku initiative; and the EC-Norway energy dialogue. Energy relations have also been reinforced with other important energy producers such as OPEC and countries in Latin America and Africa, which are increasing their hydrocarbon output and have the potential to go even further. As for energy consuming countries, cooperation is also being developed with the United States, India and China. An efficient monitoring and implementation of these initiatives is essential, and needs to be fully supported by the EU's trade, development, environment and competition policies.

The Energy Community Treaty entered into force on 1 July 2006 and extends the relevant EU energy *acquis* to the Western Balkan countries. The implementation of the Treaty will improve energy security, create a regional energy market and encourage vital investments. The inclusion of Norway and Ukraine, which have already formally applied to join the Energy Community Treaty, should be considered at the earliest possible moment. Further reflection needs to be carried out concerning other possible membership applications. In the Black Sea and Caspian Sea Region, the 'Baku initiative'

energy policy dialogue can be expected to galvanise the countries of the region to tackle shared challenges in cooperation with the EU and help boost new supplies from central Asia to the EU.

Turkey is becoming a crucial energy hub for supplies from the producer regions and is thus of strategic importance for the EU's energy security. The enlargement process with Turkey could contribute to promoting the early adoption and implementation of the EU's energy acquis by Turkey, while Turkey's early accession to the Energy Community Treaty could also speed up this process. Co-operation on pipeline projects such as the Nabucco project and further projects from the Caspian basin should be realised in the most effective manner. A rapid alignment of Turkey with EU energy standards and policies would be highly beneficial for realising Turkey's great potential as a major energy hub.

The EU's financial cooperation instruments should be mobilised in full to promote the restructuring and development of the partner countries' energy sectors, regional cooperation, infrastructure interconnections, new pipelines, energy efficiency and renewable energy sources for our mutual benefit. The recent case of a joint proposal from the EU, the European Investment Bank and the European Bank for Reconstruction and Development for the financing of hydrocarbon infrastructure projects in the framework of the EU-Ukraine Memorandum of Understanding on energy cooperation has demonstrated that powerful synergies can be created when all EU instruments are put at the service of a strategic EU objective in a coordinated manner. The recently adopted Global Energy Efficiency and Renewable Energy Fund will help to find additional financial resources.

It is important rapidly to build up relations with strategically important neighbours of the Union. Member States need to support the ongoing bilateral and regional energy cooperation partnerships with the main EU energy partners, including the gradual extension of the principles of the internal energy market through the European Neighbourhood Policy and the efficient use of all financial instruments which the EU, the European Investment Bank, the European Bank for Reconstruction and Development and other international financial institutions can put at the disposal of the EU's energy security.

(5) To ensure efficient follow-up and coherence in pursuing the above mentioned initiatives and processes, it will be crucial for EU partners to be constantly informed and aware of developments, and ready to share essential information with each other in case of an external energy crisis. For facilitating such exchange, the Commission, the Council Presidency and the General Secretariat of the Council are preparing the establishment of a **network of energy correspondents** to assist the EU's early response and reactions in case of energy security threats. The objective of such a network would be to prepare the ground for actions and decisions in case of an energy security crisis by collecting, processing and distributing reliable information relevant to the security of energy supplies to the EU. The network would also draw preliminary analysis and assessments in view of providing an early warning when the objectives of energy security may not be achieved.

The network should be composed of energy experts from Member States, the General Secretariat of the Council and the Commission. It should operate through a specific communication system and meet on an ad hoc basis. In order to facilitate the implementation of a common and coherent external energy security policy and constitute an important instrument by which the EU could have at its disposal an early warning system to promote its preparedness for energy crises, the Member States should agree to the establishment and **implementation of the network of energy correspondents.**

ANNEX VI

EU PRESIDENCY CONCLUSIONS

15 – 16 JUNE 2006 (excerpt)

' 22. In its conclusions of March 2006 the European Council called for an Energy Policy for Europe and invited the Commission and the Council to prepare a set of actions with a clear timetable enabling it to adopt a prioritised Action Plan at its meeting in Spring 2007.

23. The external aspects of energy security will constitute an important part of such an overall policy and will need to be included within the Action Plan. The European Council therefore welcomes the joint paper by the Commission and High Representative, which is a sound basis for an external policy conducted in a spirit of solidarity and intended to ensure reliable, affordable and sustainable energy flows into the Union. It invites the Commission to take it into due account when it draws up the Strategic Review. It underlines the importance of using all the available policies and instruments to support external action in this area.

24. Meanwhile, since there is a continuing need for the EU to respond to the worldwide competition for access to increasingly scarce sources of energy, the European Council invites the Presidency, the Commission and the High Representative to take forward work on the development and implementation of an external energy policy in a coherent and coordinated manner, making use of all available instruments including CFSP and ESDP. This should include the development of strategic partnerships with the main producer, transit and consumer countries and concentrate initially on the following priorities:

- conclude negotiations of the Energy Charter Transit Protocol and secure the ratification of the Energy Charter Treaty by all signatories to the Charter;
- invite the Commission to set out elements for an agreement with Russia on energy within the framework of the successor to the Partnership and Cooperation Agreement; extend the EU's internal market in energy to its neighbours (including the expansion of the Energy Community Treaty);
- make better use of the European Neighbourhood Policy (ENP) mechanism to further the EU's energy policy objectives; enhanced dialogue with Algeria will be particularly relevant;
- give full support to infrastructure projects compatible with environmental considerations and aimed at opening up new supply routes with a view to diversifying energy imports which would benefit all Member States;
- integrate the EU's energy objectives fully into its trade policy and pursue these through the WTO, as appropriate;
- attach particular importance to energy in the context of the Union's relations generally with major third-country partners.

25. The European Council underlines the need to further diversify sources of energy supply, promote development of renewable energies and make more efficient use of energy. It recalls in this context that it is for each Member State to choose its own energy mix.'

ANNEX VII

EU PARLIAMENTARY RESOLUTION ON EU-RUSSIA SUMMIT - MAY 2006

External relations – 15 JUNE 2006

'EU-Russia Summit: MEPs regret lack of agreement on energy'

In adopting a resolution on EU-Russia Summit held in Sochi on 25 May 2006, MEPs regret that the summit failed to secure an agreement on energy and stress as a basis for further negotiations the principle of interdependence and transparency as well as the importance of reciprocity in terms of access to markets, infrastructure and investment, with the objective of avoiding oligopolistic market structures and diversifying the European Union's energy supply.

The House calls in this context on Russia to ratify the Energy Charter Treaty and to increase cooperation on energy savings and renewable energy. MEPs stress the importance of a strengthened and enhanced partnership between the European Union and the Russian Federation based on interdependence and shared interests in the development of all four common spaces, but takes the view that the present partnership with Russia is more pragmatic than strategic since it reflects in the first place common economic interests without achieving major results as regards human rights and the rule of law.

The European Parliament urges the Commission to investigate existing cases of discrimination in trade in agricultural products by the Russian authorities against EU Member States such as Poland, but also against states in the common neighbourhood such as Moldova and Georgia.

The House Urges the Commission to give a full explanation in a timely and transparent way of its policy regarding Russia's accession to the WTO, taking into account all negotiated areas and sectors.

Human Rights Dialogue

Parliament calls also on the Russian Government in this framework to contribute to the intensification of the EU-Russia Human Rights Consultations as an essential part of the EU-Russia partnership and to allow the free functioning of domestic and international human rights organisations and other NGOs.

MEPs recognises the importance of the several established dialogues for the better functioning of EU-Russian cooperation and partnership and underlines in particular the necessity of an effective Human Rights Dialogue.

The House urges the Russian Federation as a member of the Council of Europe to improve conditions for prisoners and put an end to difficulties for lawyers to have access to some of them. MEPs point out that, according to the Russian Criminal Code, detainees should be imprisoned either close to their residence or close to where their trial took place, as exemplified by the prisoners Mr. Khodorkovsky and Mr. Lebedev.

Parliament regrets that as regards the Common Space of External Security no progress was made on conflict resolution in Transnistria and South Caucasus, with no real improvement in Chechnya and no willingness by the Russian side to engage with Belarus so as to start a genuine process of democratisation in that country.

Finally, the European Parliament calls on the Russian Government to honour its responsibility as President of the G8 and as Chair of the Committee of Ministers of the Council of Europe to achieve tangible results in the further development of transparent trade and reliable economic relations and in the establishment of stability, security, democracy and respect for human rights.

ANNEX VIII

BAKU DECLARATION ON ENERGY COOPERATION IN THE BSEC REGION

BAKU, AZERBAIJAN, 19 SEPTEMBER 2003

The Ministers of Energy of the BSEC Member States having gathered in Baku on the 19th of September 2003,

Underlining the significance of energy in further developing the cooperation and integration processes in the Black Sea region;

Underlining the role of energy in the sustainable development of the BSEC Member States;
Taking into account the strategic importance of the Black Sea region in the further development of energy infrastructure in Eurasia;

Noting the importance of national energy networks in enhancing the vital bridging role of the Black Sea region between Europe and Asia;

Stressing the existing beneficial bilateral and multilateral cooperation between the countries they represent;

Considering conflicts as the major impediment for development of both bilateral and multilateral cooperation in the region;

Stressing that cooperation at all times shall be based on the respect and adherence to the principles and norms of international law;

Stressing the importance of unhindered exercise of sovereign rights to exploitation, development and transportation of energy resources in the frame of international law;

Aiming to expand their current cooperation and establish more advanced modes;

Conscious of the great potential for further cooperation in the energy field;

Stressing the importance of environmental sustainability issues in the Black Sea region;

Emphasising the role of the Organization of the Black Sea Economic Cooperation as the instrumental mechanism for development of multilateral cooperation in the region;

Stressing the provisions of the BSEC Economic Agenda adopted by the Moscow Council of Ministers of Foreign Affairs of the BSEC Member States in April 2001, which emphasised the need to set priorities and objectives in the energy sector, as well as other relevant resolutions of the Ministers of Foreign Affairs;

Emphasising the role of the Parliamentary Assembly of the Black Sea Economic Cooperation, the BSEC Business Council, the Black Sea Trade and Development Bank and the International Centre

for Black Sea Studies as additional important mechanisms for multilateral cooperation;

Welcoming the establishment of the BSEC Project Development Fund;

Pursuing the BSEC strategic objective to develop a balanced, mutually beneficial cooperation with the EU;

Being aware of the provisions of the Energy Charter Treaty and the Energy Charter Protocol on Energy Efficiency signed in December 1994 and entered into force in April 1998.

Have agreed:

- *To strengthen* the rule of law on energy-related issues by ensuring a level playing-field of rules for all BSEC Member States;
- *To progressively* liberalise trade in energy materials, products and energy-related equipment by identifying and systematically eliminating trade barriers, with due regard to WTO rules and regulations and the other international obligations of the BSEC Member States;
- *To ensure* continuing freedom and security of all modes of hydrocarbon transport also taking into account the international commitments of BSEC Countries;
- *To ensure* further security of energy supplies, including the diversification of energy transport routes;
- *To take* all necessary measures towards improving energy efficiency;
- *To create* an attractive environment for foreign investments in the energy field by continuing, among others, reforms towards the elimination of legislative and administrative barriers;
- *To work* closer on the issues of interconnection of Electric Power Systems in the BSEC region taking into account the intentions of some Member States to join the UCTE;
- *To improve* the legal framework for energy sector operators taking into consideration the international and European requirements in each Member State;
- *To promote* objectives stipulated in the Energy Charter Treaty and the Energy Charter Protocol on Energy Efficiency; and to undertake required steps in order to resolve any problems obstructing full adherence to its Protocols;
- *To work* closer together towards inter-state co-operation with respect to improving and interconnecting their oil and gas pipeline net works and linking them in particular to the Trans-European energy networks;
- *To work* closer together towards further diversification of oil and gas export routes from the broader Caspian and Black Sea regions to the European and international market;
- *To promote* policies focused on environmental protection in order to manage the environmental problems arising from the exploitation and transportation of energy sources, particularly with regard to the Black Sea, by integrating environmental issues and sustainability into the energy policies and by supporting the development of renewable energy sources;
- *To develop* initiatives ensuring the physical safety and security of transport and energy supply networks;
- *To continue* active cooperation with the European Commission and the United Nations Economic Commission for Europe on energy-related issues;

- *To improve* the gathering, dissemination and exchange of energy-related information by fully involving the BSEC-related institutions and to encourage co-operation and exchange of best practices among energy professionals in the BSEC region;
- *To invite* the Country Coordinator to lead the activities of the Working Group on Energy in order to implement the provisions of the present Declaration.

ANNEX IX

BSEC STRATEGIC OBJECTIVES

Istanbul, BSEC Headquarters, 1-2 June 2004

LIST OF STRATEGIC OBJECTIVES

1. To pursue convergence and cooperation of the national energy markets (including all kinds of energy sources- oil, natural gas and electricity) at the regional level in order to establish mutual advantages.
2. To create a network in-charge of monitoring the development of projects regarding the improvement and construction of trans-border gas and oil pipelines among the BSEC member-countries and their connection to the domestic gas and oil networks, as well as the projects of the BSEC member-countries incorporated into the Trans-European energy systems and the Euro-Mediterranean energy partnership.
3. To undertake actions regarding the environmental protection and management of environmental problems resulting from the production and transportation of energy resources especially in the Black Sea region through implementation of the environmental protection decisions set forth in the energy policies for sustainable development and encouraging the utilization of renewable energy resources.
4. To develop common- interest energy interconnections and in this framework to promote EU-BSEC cooperation and projects in subjects of common interest in the energy sector.
5. To develop and enhance regional cooperation of the existing scientific and technical human resources in the BSEC countries.
6. To promote harmonization of energy legislation and regulatory framework in electricity, having in mind future possible connection among national and regional markets in BSEC region.
7. To cooperate with the established regional cooperation framework in South East Europe, the so-called Athens Process Forum, coordinated by the European Commission and aiming at the creation of a regional energy market in Southeast Europe; both organizations could inform each other in order to coordinate their action plans.
8. To develop cooperation of the WG on Energy with technical organizations such as UCTE, SUDEL and others.
9. To take measures addressing the environmental and safety risks arising from the increasing oil and other hazardous cargo transportation in the Black Sea and particularly in the Strait of Istanbul, the Sea of Marmara and the Strait of Çanakkale by considering by-pass options, such as: Bourgas-Alexandroupolis, Bourgas-Vlore, Constanta-Trieste,

Kiyikoy-Ibrikbaba, Odessa-Brody and Samsun-Ceyhan. [36] [37]

10. To establish an effective regional collaboration mechanism through forming an ad-hoc committee under the aegis of the Working Group on Energy for the purpose of exchanging experiences and know-how on restructuring/liberalisation of the energy sector and establishment of the related regulatory/institutional framework.
11. To ensure the further support of the institutions and the countries of the Black Sea region on the operation of the Odesa-Brody Oil Pipeline in its European direction and its integration into the Trans-European Networks (TEN).
12. To improve energy efficiency and provide cooperation in this subject among the Member countries in the region.
13. To develop new oil and gas production and transportation projects in compliance with international standards and legislation and also by taking into consideration environmental concerns in the BSEC region.

Source: Annex III to BS/EN/WG/R(2004)2; MEETING OF THE BSEC WORKING GROUP ON ENERGY.

36 The Russian and the Hellenic delegations believe that in the documents distributed by BSEC only the names used in the Montreux Convention of 1936 must be used, such as the Bosphorus Strait, the Marmara Sea and the Dardanelles Strait.

37 The Turkish delegation opposed to change the wording which was accepted by the Committee of Senior Officials and the Council of Ministers on 28-29 and 30 April 2004 respectively, and underlined the fact that the Working Group is not authorised to amend the above decisions. Therefore the term '…Strait of Istanbul, the Sea of Marmara and the Strait of Çanakkale' should be used, as it was accepted by consensus during the Meeting of the Committee of Senior Officials. The Turkish side underlined the fact that this term is used in international platforms and the IMO documents as well.

ANNEX X

ALEXANDROUPOLIS DECLARATION ON ENERGY COOPERATION IN THE BSEC REGION,

ALEXANDROUPOLIS, GREECE, 4 MARCH 2005

The Ministers in charge of Energy of the BSEC Member States having gathered in Alexandroupolis on the 4th of March 2005,

Underlining the role of energy in the sustainable development of the BSEC Member States;

Taking into account the strategic importance of the Black Sea region in the further development of energy infrastructure in Eurasia;

Emphasizing the role of the Organization of the Black Sea Economic Cooperation as the instrumental mechanism for development of multilateral cooperation in the region;

Noting the importance of coordination of national energy networks in enhancing the vital bridging role of the Black Sea region between Europe and Asia;

Stressing that cooperation at all times shall be based on the respect and adherence to the principles and norms of international law;

Stressing the importance of unhindered exercise of sovereign rights to exploitation, development and transportation of energy resources in accordance with international law;

Aiming to further expand their current cooperation and establish more advanced modes;

Conscious of the great potential for further cooperation in the energy field;

Stressing the importance of environmental sustainability issues in the BSEC region;

Stressing the provisions of the Baky Declaration on Energy Cooperation in the BSEC Region adopted by the Ministers of Energy of the BSEC Member States in Baky on September 2003;

Stressing the provisions of the "BSEC Economic Agenda for the Future" adopted by the Moscow Council of Ministers of Foreign Affairs of the BSEC Member States in April 2001, which emphasised the strengthening of close cooperation in the energy sector, as well as relevant resolutions and decisions of the Ministers of Foreign Affairs; *Emphasizing* the role of the Parliamentary Assembly of the Black Sea Economic Cooperation, the BSEC Business Council, the Black Sea Trade and Development Bank and the International Centre for Black Sea Studies as additional important mechanisms for multilateral cooperation;

Recognising the importance of the BSEC Project Development Fund;

Further stressing the need to develop a balanced, mutually beneficial cooperation with the EU;

Noting the importance of establishment of the Energy Community in South East Europe;

Recalling the BSEC Observer Status to the Energy Charter Treaty;

Taking into consideration the progress achieved so far in bilateral and multilateral cooperation among BSEC Member States;

Conscious of the significant role of the private sector in the development of energy infrastructure and energy markets in the Region;

Also conscious of the need of the private sector for a favourable business and investment environment;

Recognizing the beneficial effects FDI can have on the Region's economies through transfer of management and technical know-how and the creation of linkages with local SMEs;

Have affirmed their readiness:

- *To intensify* cooperation towards improving energy efficiency and promoting the use of renewable energy sources;
- *To strengthen* the rule of law on energy-related issues by ensuring a level playing field of rules for all BSEC Member States;
- *To enhance* freedom and security of all modes of hydrocarbon transport, also taking into account the environmental concerns and the international commitments of BSEC Member States;
- *To enhance* further security of energy supplies through the diversification of energy transport routes as well as energy resources;
- *To work* for the creation of a regionally integrated energy market for electricity and natural gas networks in the context of the European markets;
- *To establish* compatible energy action plans aiming at improving and interconnecting their electricity, oil and gas pipeline networks and linking them in particular to the Trans-European energy networks;
- *To work* closer on the issues of interconnection of Electric Power Systems in the BSEC region taking into account the ongoing studies and achievements of some Member States to join the UCTE;
- *To welcome* the soonest start of the feasibility study for UCTE-IPS/UPS synchronous interconnection with the aim of completing a conceptual study within 2006;
- *To enhance* the dialogue between the BSEC Member States with regard to technical aspects in generation, transmission and distribution of electricity;
- *To intensify* work towards further diversification of electricity, oil and gas export routes from the broader Caspian and Black Sea regions to the European and international market;
- *To develop* initiatives ensuring the physical safety and security of transport and energy supply networks;
- *To realize* effective and environmentally sustainable energy projects in the Region;
- *To continue* active cooperation with the relevant General Directorates of the European Commission, the United Nations Economic Commission for Europe on energy-related issues and with other energy related international institutions;
- *To explore* the possibilities of cooperation between the BSEC Member States and the future Energy Community in South East Europe, Mediterranean countries and regional initiatives;

- *To further* promote objectives stipulated in the Energy Charter Treaty and the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects;
- *To invite* the Country-Coordinator to lead the activities of the Joint Ad Hoc Working Group of Experts on Electrical Networks and of the Working Group on Energy in order to fully implement the provisions of the present Declaration.

ANNEX XI

ST. PETERSBURG PLAN OF ACTION FOR GLOBAL ENERGY SECURITY

G8 Energy Plan Full Text
St Petersburg, Russia, 16 July 2006
http://en.g8russia.ru/docs/11.html

Global Energy Security, St. Petersburg, July 16, 2006

Global Energy Challenges

1. Energy is essential to improving the quality of life and opportunities in developed and developing nations. Therefore, ensuring sufficient, reliable and environmentally responsible supplies of energy at prices reflecting market fundamentals is a challenge for our countries and for mankind as a whole.

2. To tackle this overarching goal we have to deal with serious and linked challenges such as:

- high and volatile oil prices;
- growing demand for energy (estimated to rise by more than 50% by the year 2030, approximately 80% of which would still be met by fossil fuels, which are limited resources);
- increasing import dependence in many countries;
- enormous investment requirements along the entire energy chain;
- the need to protect the environment and to tackle climate change;
- the vulnerability of the critical energy infrastructure; political instability, natural disasters and other threats.

The global nature of these challenges and the growing interdependence between producing, consuming and transiting countries require strengthened partnership between all stakeholders to enhance global energy security. We agree that development of transparent, efficient and competitive global energy markets is the best way to achieve our objectives on this score. We recognize that governments and relevant international organizations also play an important role in addressing global energy challenges.

3. Neither global energy security, nor the Millennium Development Goals can be fully achieved without sustainable access to fuels for the 2.4 billion people and to electricity for the 1.6 billion people

currently without such access in developing countries. They cannot be forgotten or marginalized.

Response of the International Community

4. Given political will, the international community can effectively address three interrelated issues: energy security, economic growth and environmental protection (the "3Es"). Applying fair and competitive market-based responses to the global energy challenges will help preclude potentially disruptive actions affecting energy sources, supplies and transit, and create a secure basis for dynamic and sustainable development of our civilization over the long term.

5. We will pursue energy security through a comprehensive and concerted approach consistent with our common environmental goals. Last year in Gleneagles, we agreed to enhance our work under the Plan of Action for Climate Change, Clean Energy and Sustainable Development and resolved to take forward the dialogue on these issues whose results will be reported at the 2008 G8 Summit in Japan. We reaffirm this commitment.

We also reaffirm our commitment to the United Nations Framework Convention on Climate Change (UNFCCC) and to meet our shared multiple objectives of reducing greenhouse gas emissions, improving the global environment, enhancing energy security, and cutting air pollution in conjunction with our vigorous efforts to reduce energy poverty. We also agree to work to improve access to energy in developing countries.

Statement on Global Energy Security Principles

6. Recognizing the shared interest of energy producing and consuming countries in promoting global energy security, we, the Leaders of the G8, commit to:

- strong global economic growth, effective market access, and investment in all stages of the energy supply chain;
- open, transparent, efficient and competitive markets for energy production, supply, use, transmission and transit services as a key to global energy security;
- transparent, equitable, stable and effective legal and regulatory frameworks, including the obligation to uphold contracts, to generate sufficient, sustainable international investments upstream and downstream;
- enhanced dialogue on relevant stakeholders' perspectives on growing interdependence, security of supply and demand issues;
- diversification of energy supply and demand, energy sources, geographical and sectoral markets, transportation routes and means of transport;
- promotion of energy saving and energy efficiency measures through initiatives on both national and international levels;
- environmentally sound development and use of energy, and deployment and transfer of clean energy technologies which help to tackle climate change;
- promotion of transparency and good governance in the energy sector to discourage corruption;

- cooperative energy emergency response, including coordinated planning of strategic stocks;
- safeguarding critical energy infrastructure; and
- addressing the energy challenges for the poorest populations in developing countries.

7. Based on the above objectives, principles and approaches, we will implement our common global energy security strategy through the following Plan of Action. We invite other states, relevant international organizations and other stakeholders to join us in these efforts.

ST. PETERSBURG PLAN OF ACTION
GLOBAL ENERGY SECURITY

1. We reaffirm our commitment to implement and build upon the agreements related to energy reached at previous G8 summits. We will enhance global energy security through actions in the following key areas:

- increasing transparency, predictability and stability of global energy markets;
- improving the investment climate in the energy sector;
- enhancing energy efficiency and energy saving;
- diversifying energy mix;
- ensuring physical security of critical energy infrastructure;
- reducing energy poverty;
- addressing climate change and sustainable development.

I. Increasing Transparency, Predictability and Stability of Global Energy Markets

2. Free, competitive and open markets are essential to the efficient functioning of the global energy system. Efforts to advance transparency; to deepen and spread the rule of law; to establish and strengthen predictable, efficient fiscal and regulatory regimes; and to encourage sound energy supply and demand policies all play significant roles in maintaining global energy security. By reducing uncertainty these efforts improve understanding of energy market developments, and therefore sound investment decisions and competitiveness. Regular exchanges of timely and reliable information among all market participants are also essential for the smooth functioning of world energy markets. Transparent, predictable national energy policies and regulatory environments facilitate development of efficient energy markets. We invite the International Energy Forum (IEF) to study ways of broadening the dialogue between energy producing and consuming countries on these issues including information exchange on their medium- and long-term respective policy plans and programs.

3. We welcome the beginning of implementation of the Joint Oil Data Initiative (JODI) and will take

further action to improve and enhance the collection and reporting of market data on oil and other energy sources by all countries including through development of a global common standard for reporting oil and other energy reserves. In this respect, we will invite the IEF to work on the expansion of JODI membership and to continue to improve the quality and timeliness of data.

4. As a critical tool in the fight against corruption, we will also take forward efforts to make management of public revenues from energy exports more transparent, including in the context of the Extractive Industries Transparency Initiative (EITI) and the IMF Guide on Resource Revenue Transparency (GRRT).

5. Clear, stable and predictable national regulatory frameworks significantly contribute to global energy security, and multilateral arrangements can further enhance these frameworks. We support the principles of the Energy Charter and the efforts of participating countries to improve international energy cooperation.

6. Concerted actions of energy producers and consumers are of critical importance in times of supply crises. We encourage further efforts under the IEA aegis to promote international best practices related to emergency response measures, including establishment, coordination and release of strategic stocks, where appropriate, as well as measures to implement demand restraint and fuel-switching. We note constructive steps by major producing countries to increase oil output in response to recent tight market conditions and support additional actions.

II. Improving the Investment Climate in the Energy Sector

7. Ensuring an adequate global energy supply will require trillions of U.S. dollars in investment through the entire energy chain by 2030, a substantial share of which will be needed by developing countries. We will create and maintain the conditions to attract these funds into the energy sector through competitive, open, equitable and transparent markets. We understand that governments' environmental and energy policies are critical for investment decisions. In producing, consuming and transit states, therefore, we will promote predictable regulatory regimes, including stable, market-based legal frameworks for investments, medium and long-term forecasts of energy demand, clear and consistent tax regulation, removal of unjustified administrative barriers, timely and effective contract enforcement and access to effective dispute settlement procedures.

8. We shall take measures both nationally and internationally to facilitate investments into a sustainable global energy value chain to:

- further save energy through demand-side measures as well as introduce advanced energy-efficient technologies;
- introduce cleaner, more efficient technologies and practices including carbon capture and storage;

- promote wider use of renewable and alternative energy sources;
- expand the hydrocarbon proven reserves in a way that would outpace their depletion and increase the recovery of energy resources;
- increase the efficiency of oil and gas production, and develop resources on the continental shelf;
- establish, expand and improve the efficiency of oil-refining, petrochemical and gas processing industries' capacity;
- develop global LNG market;
- establish or upgrade infrastructure for energy transport and storage;
- develop efficient power generating facilities; and
- expand and improve the efficiency, safety and reliability of electricity transmission facilities and power grids and their international connectivity including, where appropriate, in developing countries.

9. We encourage construction and development of hydrocarbon-processing facilities to increase energy market flexibility and confidence, as well as expansion, where economically viable, of trade in hydrocarbon products. We will work with all stakeholders to improve energy regulatory regimes, inter alia, through feasible technical standards harmonization. We will ask the International Standards Organization to study ways and means of harmonizing relevant standards in this context.

10. We consider it important to facilitate capital flows into power generation, including to build new, more efficient power plants, upgrading existing plants to include wider use of renewables, and to construct transmission lines, develop interregional energy infrastructure and facilitate exchange of electrical power, including trans-border and transit arrangements. We encourage the development of competitive power markets, interregional energy infrastructure, and exchange of electrical power.

11. Rapidly growing LNG trade is gradually supplementing the existing regional systems of pipeline gas supplies. To reduce huge investment risks and facilitate smooth functioning of the emerging global LNG market, we will seek to create appropriate investment conditions.

12. High and increasing investment exposure calls for better risks sharing between all stakeholders in energy supply chain which will ensure reliable and sustainable energy flows. Economically sound diversification between different types of contracts, including market-based long-term and spot contracts, could contribute to such risks mitigation, as would timely decision-making and appropriate adherence and enforcement of contractual agreements.

13. We will work to reduce barriers to energy investment and trade. It is especially important that companies from energy producing and consuming countries can invest in and acquire upstream and downstream assets internationally in a mutually beneficial way and respecting competition

rules to improve the global efficiency of energy production and consumption. Market-based investment flows between and among nations will also enhance energy security by increasing confidence in access to markets or sources of supply.

14. Ensuring the long-term availability of skilled workforce throughout the energy sector is critical to energy security. We encourage institutions of higher learning and the private sector to take the necessary steps in providing appropriate training to adequately develop human resources in the energy sector, including new and innovative energy sources and technologies needed for ensuring longer-term energy security.

III. Enhancing Energy Efficiency and Energy Saving

15. Energy saved is energy produced and is often a more affordable and environmentally responsible option to meet the growing energy demand. Efforts to improve energy efficiency and energy saving contribute greatly to lowering the energy intensity of economic development thus strengthening global energy security. Increased energy efficiency and conservation reduce stress on infrastructure and contribute to a healthier environment through decreased emission of greenhouse gases and pollutants.

16. We will move forward with timely implementation of the Gleneagles Plan of Action. We have instructed our relevant ministers to continue the Dialogue on Climate Change, Clean Energy and Sustainable Development and report its outcomes to the G8 Summit in 2008. We call upon other states, especially fast-growing developing economies, to join the corresponding G8 initiatives. These outcomes can also be relevant to the dialogue on long-term cooperation to address climate change under the UNFCCC. Those of us who have ratified the Kyoto Protocol recognize the role of its flexibility mechanisms in promoting energy efficiency. It is important to engage the private sector and other stakeholders in achieving these ends.

17. A comprehensive approach within the international community to energy saving, energy efficiency and the extension of relevant efforts, including sharing best practices, to the entire energy value chain are important in this respect. For this purpose, we shall undertake to:

- strengthen and elaborate the system of national and multilateral energy efficiency statistics;
- consider national goals for reducing energy intensity of economic development to be reported by the end of the year;
- for energy intensive products, encourage the development, extension and deployment of best practice energy efficiency labeling programs, and increase efforts to adopt the most stringent energy efficiency standards that are technically feasible and economically justified. Individual countries should set these standards taking into account national conditions. In this context the IEA initiatives on standby power ('1 Watt' initiative), minimum efficiency standards for television set-top boxes and digital

television appliances, energy efficient lighting and fuel-efficient tire program are promising and should be examined in more detail;

- take necessary measures, including financial and tax incentives at home for the promotion of energy-efficient technologies, and the actual use of those available technologies on a wide-scale basis;
- demonstrate leadership at the national level by incorporating energy efficient technologies and practices in government buildings and drawing upon alternative energy resources to help power them;
- raise public awareness about the importance and benefits of energy efficiency and energy saving.
- encourage relevant actions taken by multilateral development banks (DBs), including EBRD and the World Bank;
- increase the Global Environment Facility's involvement in energy efficiency projects.

18. We will invite the World Bank, the IEA, and other organizations as appropriate to work on improvement of internationally accepted standards, labeling and best practices, and public awareness campaigns, in accordance with their respective mandates and comparative advantages.

19. As part of an integrated approach to the entire resource cycle we reaffirm our commitment to comprehensive measures to optimize the resource cycle within the 3Rs Initiative (Reduce, Reuse, Recycle). In furthering these efforts, we will set targets as appropriate taking account of resource productivity. We will also raise awareness of the importance of energy efficiency and environmental protection through national as well as international efforts.

20. Increasing energy saving and efficiency we will pay more attention to the energy sector itself, which can contribute significantly to this end by reducing losses in production and transportation. Our priority measures in this area will include:

- raising the environmental and efficiency levels for processing hydrocarbons;
- reducing gas flaring to minimal levels and promoting utilization of associated gas;
- improving energy infrastructure, including minimizing oil and oil products losses in transportation and gas emissions from gas systems;
- using methane otherwise released in the atmosphere from coal mining, landfills, and agricultural operations.

21. Since 2/3 of world oil is consumed by the transportation sector and its fuel consumption is outpacing general energy consumption we will pay special attention to this sector of energy demand. For making transportation more energy efficient and environmentally advanced we shall:

- share best practices to promote energy efficiency in the transportation sector;
- develop programs in our respective countries, consistent with national circumstances, to provide incentives for consumers to adopt efficient vehicles, including clean diesels

and hybrids; and introduce on a large scale efficient public hybrid and/or clean diesel transportation systems, where appropriate;

- promote diversification of vehicle energy systems based on new technologies, including significant sourcing from biofuels for motor vehicles, as well as greater use of compressed and liquefied natural gas, liquefied petroleum gas and synthetic liquid fuels;
- promote wider use of modern technologies, materials and devices on traditional vehicles, leading to lighter, more aerodynamic and more efficient engines and other transport components such as transmission and steering systems, tires, etc.;
- increase research to develop vehicles using gasoline/hydrogen fuel and hydrogen fuel cells to promote the "hydrogen economy";
- facilitate the development of trans-modal and trans-border transportation, where appropriate;
- study further the Blue Corridor project by the UN Economic Commission for Europe;
- continue to consider the impact of the air transport sector on energy consumption and greenhouse gas emissions noting international cooperation on these issues.

22. We call upon all countries to offer incentives to increase energy efficiency and to promote energy conservation.

IV. Diversifying Energy Mix

23. Diversification of the energy mix reduces global energy security risks. We will work to develop low-carbon and alternative energy, to make wider use of renewables and to develop and introduce innovative technologies throughout the entire energy sector.

Alternative, Cleaner Low-Carbon Energy

24. We shall further encourage the activities of the Carbon Sequestration Leadership Forum (CSLF) aimed at preparing and implementing demonstration projects on CO2 capture and storage and on the development of zero emission power plants. In this context we will facilitate development and introduction of clean coal technologies wherever appropriate.

25. We encourage all oil producing states and private sector stakeholders to reduce to minimal levels natural gas venting or flaring by facilitating the use of associated gas, including its refining and processing into fuels and petrochemical products. In this respect we support the efforts of Global Gas Flaring Reduction Partnership (GGFR) and Methane-to-Markets Partnership (M2M) to implement projects on the production of marketable methane from landfills, agriculture waste and coal-bed methane, particularly in developing countries.

26. We support the transition to the Hydrogen Economy, including in the framework of the International Partnership for the Hydrogen Economy (IPHE). A critical part of this effort is to

develop common international standards in the field of commercial development of hydrogen power, infrastructure and security requirements.

Nuclear Energy

27. We recognize that G8 members pursue different ways to achieve energy security and climate protection goals.

28. As we meet on the 20th anniversary of the Chernobyl accident, we reiterate the commitments made during the 1996 Moscow Summit on Nuclear Safety and Security, and the paramount importance of safety, security and non-proliferation.

29. Those of us who have or are considering plans relating to the use and/or development of safe and secure nuclear energy believe that its development will contribute to global energy security, while simultaneously reducing harmful air pollution and addressing the climate change challenge:

The development of innovative nuclear power systems is considered an important element for efficient and safe nuclear energy development. In this respect, we acknowledge the efforts made in the complementary frameworks of the INPRO project and the Generation IV International Forum.

Until advanced systems are in place, appropriate interim solutions could be pursued to address back-end fuel cycle issues in accordance with national choices and non-proliferation objectives.

Benefits will stem from improving the economic viability of nuclear power. We recognize that independent effective regulation of nuclear installations is essential for the development of infrastructure supporting safe and secure nuclear energy.

30. We are committed to:

- further reduce the risks associated with the safe use of nuclear energy. It must be based on a robust regime for assuring nuclear non-proliferation and a reliable safety and security system for nuclear materials and facilities;
- ensure full implementation of the international conventions and treaties in force today which are a prerequisite for a high level of safety and a basis to achieve a peaceful and proliferation-resistant nuclear energy use. The responsibility of all nations to support the work of the IAEA and all measures to implement these conventions and treaties in these fields is emphasized;
- continue to consider nuclear safety and security issues in the Nuclear Safety and Security Group (NSSG).

31. We reaffirm the objective set out in the 2004 G8 Action Plan on Non-Proliferation to allow reliable access of all countries to nuclear energy on a competitive basis, consistent with non-proliferation commitment and standards. Building on that plan, we intend to make additional joint efforts to ensure reliable access to low enriched uranium for power reactor fuel and spent fuel recycling, including, as appropriate, through a multilateral mechanisms provided that the countries adhere to all relevant international non-proliferation commitments and comply with their obligations.

32. In this respect, we take note of recent potentially complementary initiatives put forward in the IAEA framework regarding multilateral fuel supply assurances, as well as the proposals made by Russia and the U.S., aimed at further development of peaceful nuclear energy, in a manner that promotes proliferation resistance of the nuclear fuel cycle, including preventing the spread of sensitive nuclear technologies.

Renewables

33. A large-scale use of renewable energy will make a significant contribution to long-term energy supply without adverse impact on climate. The renewable solar, wind, hydro, biomass, and geothermal energy resources are becoming increasingly cost competitive with conventional fuels, and a wide variety of current applications are already cost-effective. Therefore, we reaffirm our commitment to implement measures set out in the Gleneagles Plan of Action.

34. We welcome the work of interested parties in international mechanisms and programs dealing with renewable energy, including the Renewable Energy and Energy Efficiency Program (REEEP), the Renewable Energy Policy Network for the 21st Century (REN21), and the Mediterranean Renewable Energy Partnership (MEDREP). We welcome the establishment of the Global Bio-Energy Partnership (GBEP). We will work in partnership with developing countries to foster the use of renewable energy.

35. We will continue enhancing international cooperation in using the potential of biomass, and advanced sustainable forest management practices. Both help to diversify local energy consumption and make an important contribution to carbon sequestration, as well as furthering a wide range of economic and environmental benefits.

36. We shall promote international cooperation in the area of forest management, primarily in addressing deforestation and forest degradation, the trade in illegally harvested timber and forest fires. We note that deforestation has a significant impact on climate change (resulting, according to the Food and Agriculture Organization of the United Nations (FAO), in an actual 25% increase in yearly greenhouse gas emissions). We reaffirm the importance of tackling illegal logging and agree to take further action, with each country taking steps where it can contribute most effectively. This should include the promotion of sustainable forest management and the incorporation of appropriate measures to address illegal logging in relevant national policies

of both timber-producing and consuming countries. We welcome recent international forest-related policy initiatives including the St. Petersburg Ministerial Conference Declaration on Forest Law Enforcement and Governance in Europe and North Asia, and initiatives of the United Nation Forum on Forests (UNFF), UNFCCC, the International Tropical Timber Organization (ITTO) and Asia Forest Partnership (AFP).

Innovative Energy Technologies

37. We will work in partnership with the private sector to accelerate market entry and utilization of innovative energy technologies by supporting market-led policies that encourage investments in this area.

38. Despite the increased role of alternative sources in the energy mix, hydrocarbons are expected to continue to play a leading role in total energy consumption well into this century. Therefore we will work with the private sector to accelerate utilization of innovative technologies that advance more efficient hydrocarbon production and reduce the environmental impact of its production and use. These include technologies for deep-sea oil and gas production, oil production from bitumen sands, clean coal technologies, including carbon capture and storage, extraction of gas from gas-hydrates and production of synthetic fuel.

39. We will take measures to develop other promising technologies including construction of advanced electricity networks, superconductivity, nanotechnology, including nanobiotech, etc. We welcome recent initialing ITER agreement by the participating countries and take this opportunity to encourage R&D programs on fusion energy within its framework.

40. We shall facilitate closer ties between fundamental and applied research to promote the earliest economically viable market entry of these technologies.

V. <u>Securing Critical Energy Infrastructure</u>

41. The security of the world's energy infrastructure is connected and mutually dependent. Given the global nature of the energy infrastructure, we recognize that no country can insulate itself from danger elsewhere. Hence, we are committed to ensuring the security of the global energy network, and will work to gain a better understanding of its vulnerabilities and ways to improve our efforts to prevent disruptions by deliberate attack. We support a coordinated, international process to assess risks to energy infrastructures, and a more effective means of sharing energy infrastructure security best practices and expertise.

42. We commit ourselves to address threats and vulnerabilities to critical energy infrastructures, and to promote international cooperation in this regard. We instruct our experts to meet as necessary to examine and make recommendations on addressing the many challenges in securing energy infrastructure and deliver to the Russian Presidency at

the end of this year a comprehensive report on:

- defining and prioritizing the most important vulnerabilities among energy infrastructure sites, and share methodologies for assessing and mitigating them;
- assessing potential risks of terrorist attacks;
- developing a compendium of effective security response best practices across all energy sectors within our countries;
- developing, implementing, and providing to other countries a checklist for the physical security of critical energy infrastructure;
- encouraging international cooperation on R&D for technologies to enhance critical infrastructure protection;
- establishing points of contact for coordination of technical assistance in this area;
- continuing to advocate the adoption of export controls on radioactive sources and new initiatives to prevent terrorists' access to radioactive sources.

43. We call upon governments to fully implement the International Ships and Ports Facility Security Code and encourage attention to the management of maritime security.

VI. Reducing Energy Poverty

44. We confirm our commitment to the UN Millennium Development Goals, including through facilitating a better access to energy. It is impossible to drastically reduce general poverty, support health services, provide clean drinking water and sanitation, promote more productive agriculture and food yields, and secure investment in job-creating enterprises in developing countries without addressing the challenge of energy poverty. We will help vulnerable countries overcome the macroeconomic shocks related to energy prices, and the longer term challenge of facilitating access to energy for the poorest populations.

45. A sound strategy to address energy poverty should be linked with:

- development of national and local institutional capacities and management improvements in the area of energy policy and related infrastructure needs, including training of local staff;
- facilitation of public participation in and public understanding of, energy policies and practices;
- national energy investment and access targets linked to poverty reduction policies;
- expansion of existing frameworks, such as the EU Energy Initiative (EUEI), the MEDREP, GBEP, the Global Village Energy Partnership (GVEP); the Renewable Energy and Energy Efficiency Partnership (REEEP), for private-public partnerships to foster investment that increases access to affordable energy services;
- establishment of an energy efficiency program and development of decentralized technologies, where economically justified, and geared toward reducing the cost of energy for the poor;

- a targeted and transparent social safety net system that can help poor and vulnerable customers pay for energy.

46. The majority of energy investment will need to come from the private sector. Assistance programs for developing countries should work towards promoting the improved policy and regulatory structures necessary to attract that capital.

47. The international financial institutions (IFIs) have an important role to play in tackling these challenges. We welcome the progress of the multilateral development banks to re-invigorate their efforts to promote investment in alternative energy sources, increased energy efficiency and adaptation in developing countries. We also welcome the launching of the International Monetary Fund's Exogenous Shocks Facility, and invite other non-G8 countries to contribute to it. We call upon other countries and IFIs to facilitate access to energy in the poorest countries by promoting private-public partnerships.

48. To improve access to reliable, modern, and sustainable energy services to the populations of energy poor developing countries, we will enhance existing bilateral and multilateral development mechanisms. We welcome the EU's Energy Facility, which will use grants to co-finance projects aimed at filling the energy gap, especially in Africa, as well as activities by Japan in partnership with AfDB to promote the 'Enhanced Private Sector Assistance' (EPSA) for Africa. We look forward to the outcome of the UN Commission on Sustainable Development's two-year cycle of work (2006-7) devoted to the review/policy discussion of the Energy for Sustainable Development issue.

49. We will facilitate development of local energy resources, including those based on core generation technologies and on renewable energy, such as hydropower, wind power, geothermal power, biomass, and the effective use of solar energy, to contribute to poverty reduction and long-term energy sustainability in developing countries. These measures include developing energy infrastructure capable, inter alia, of reducing vulnerability to energy shocks.

50. We instructed our experts to work together with other countries, international and regional financial institutions (World Bank, Regional Development Banks, UN agencies, etc.), the private sector and other stakeholders to facilitate technology transfer in the areas of energy efficiency, energy saving, renewable energy and decentralized local sources to reduce energy poverty thereby improving energy access and enhancing energy efficiency in developing countries. Building on the Gleneagles Plan of Action, such concerted efforts may help improve energy efficiency and promote energy conservation in developing countries through the following actions:

- supporting the development of infrastructure to improve energy access tailored to specific needs and targeted towards energy efficiency;
- assisting in policy and institutional capacity building for improving energy access,

enhancing energy efficiency and promoting energy conservation and diversification of energy sources;
- promoting renewable energy;
- encouraging rural electrification, using both grid and non-grid connected solutions;
- developing human resources in cooperation with the private sector.

51. We look forward to the completion and implementation of the World Bank Clean Energy Investment Framework and underline that it should give increased attention to improving access to energy services.

52.We share the view that strengthening national financial management and accounting systems, making government budgets, procurement procedures and concessions more transparent, taking specific measures to combat corruption, ensuring good governance, mobilizing domestic resources and progressively improving the business climate for private entrepreneurs and investors are essential for resolving effectively the above mentioned challenges in developing countries. In this context we also refer to the Gleneagles decision concerning Africa.

VII. Addressing Climate Change and Sustainable Development

53. We reaffirm our intention to deliver on commitments made in Gleneagles in order to meet our shared and multiple objectives of reducing greenhouse gas emissions, improving the global environment, enhancing energy security and cutting air pollution in conjunction with our vigorous efforts to reduce poverty. We also affirm our commitment to the UNFCCC's ultimate objective of stabilizing greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system.

We will continue to work to reduce greenhouse gas and deal effectively with the challenge of climate change.

We are undertaking a number of approaches to deal with the interrelated challenges of energy security, air pollution control, and reducing greenhouse gas associated with long-term global climate change. With respect to climate change, we reaffirm our shared commitment under the UNFCCC and its related mechanisms.

Those of us committed to making the Kyoto Protocol a success underline the importance we attach to it, view Clean Development Mechanism and the Joint Implementation Mechanism as central elements of this, and look forward to the process to develop it further.

Some or all of us are participating in the following other initiatives to address these challenges: Asia-Pacific Partnership on Clean Development and Climate, the Methane to Markets Partnership, the International Partnership for the Hydrogen Economy, the Carbon Sequestration Leadership

Forum, the Renewable Energy and Energy Efficiency Partnership and the Global Bio-Energy Partnership.

We welcome the progress made at the XI Conference of the Parties to the UNFCCC (Montreal, December 2005) where we committed to engage in a dialogue on long-term cooperative action to address climate change by enhancing implementation of the convention; and the progress made at the UN Climate Change meeting last May in Bonn.

We reaffirm the importance of the work of the Intergovernmental Panel on Climate Change (IPCC) and look forward to its 2007 report.

All these undertakings are the foundation of our current efforts to address climate change, and will form the basis of an inclusive dialogue on further action in the future, including the period beyond 2012.

54. We welcome the progress made by the World Bank and the IEA on developing a framework for clean energy and sustainable development and on identifying alternative energy scenarios and strategies to support and implement elements of the Gleneagles Plan of Action.

55. We welcome the progress made at the first meeting of the Gleneagles Dialogue on Climate Change, Clean Energy and Sustainable Development, held on 1 November last year. We look forward to the next Ministerial meeting in Mexico in October 2006, where we will continue to identify opportunities for greater collaboration to tackle climate change, while pursuing energy security and sustainable development through deployment of cleaner, more efficient and low-carbon energy technologies, finance and market mechanisms, including, as appropriate, Clean Development Mechanism, Joint Implementation, emissions trade, and adaptation.

ANNEX XII

ENERGY POLICY FOR EUROPE

ANNEX I. EUROPEAN COUNCIL ACTION PLAN (2007 – 2009) ENERGY POLICY FOR EUROPE (EPE).

(This is an annex to the PRESIDENCY CONCLUSIONS of the BRUSSELS EUROPEAN COUNCIL Of 8/9 MARCH 2007. It was published by the EU on 2 May 2007 as document 7224/1/07. The Council conclusions can be found on: http://europa.eu/european_council/conclusions/index_en.htm).

ANNEX I

EUROPEAN COUNCIL ACTION PLAN (2007 – 2009) ENERGY POLICY FOR EUROPE (EPE)

The Action Plan comprises the following priority actions, some of which may contribute to more than one of the three objectives of the EPE. New measures should take into account the better regulation principles, notably as regards impact assessments.

I. Internal Market for Gas and Electricity

1. Taking note of the Commission's internal market report and the final report following the sector inquiry on the gas and electricity markets, with the aim of increasing competition, ensuring effective regulation and encouraging investment to benefit consumers, the European Council:

– reaffirms that to achieve this aim the first step, to which it is committed, is to ensure timely and full implementation of the letter and spirit of existing Internal Market legislation relating to the opening up of the gas and electricity markets, since a truly competitive, interconnected and single Europe-wide internal energy market that will have major benefits for competitiveness and EU consumers as well as increasing security of supply has not yet been achieved;

– notes the interaction between investment decisions and the development of the regulatory framework, and is therefore of the opinion that future measures affecting the internal market have to be designed and implemented in a way that provides a positive framework for much-needed investment;

– taking account of the characteristics of the gas and electricity sectors and of national and regional markets, agrees on the need for:

- effective separation of supply and production activities from network operations (unbundling), based on independently run and adequately regulated network operation systems which guarantee equal and open access to transport infrastructures and independence of decisions on investment in infrastructure;
- further harmonisation of the powers and strengthening of the independence of

national energy regulators;

- the establishment of an independent mechanism for national regulators to cooperate and take decisions on important cross-border issues;
- the creation of a new Community mechanism for Transmission System Operators to improve coordination of network operation and grid security building on existing cooperation practices;
- a more efficient and integrated system for cross-border electricity trade and grid operation, including elaboration of technical standards;
- the enhancement of competition and security of supply through facilitated integration of new power plants into the electricity grid in all Member States, in particular encouraging new market entrants;
- relevant investment signals contributing to the efficient and more secure operation of the transmission grid;
- increased transparency in energy market operations;
- better consumer protection, e.g. through the development of an Energy Customers' Charter.

Moreover, the European Council invites the Commission:

- to provide additional clarifications related to the key measures envisaged and their impacts in time for the June Council (Energy);
- to elaborate together with Member States the medium and long-term forecasts for gas and electricity supply and demand, and to identify the additional investment required to satisfy EU strategic needs;
- to assess the impact of vertically integrated energy companies from third countries on the internal market and how to implement the principle of reciprocity;
- to assess access to gas storage in the EU.

The European Council invites the Commission to come forward with relevant proposals, including through the development of existing legislation where possible.

2. Reaffirming the need for improved regional cross-border exchange and accelerating the development of regional energy cooperation while addressing the challenges of peripheral energy markets and facilitating the integration of regional ones into the EU internal market and its further development, notably through interconnection, taking into account the integration of on- and off-shore renewable energies, the European Council: - welcomes, as a first step, the Commission's intention to appoint where necessary, in accordance with Article 10 of Decision 1364/2006/EC, European coordinators to accelerate the most critical priority projects of European interest;[38] it notes, however, that new projects are needed in order to achieve

38 Priority projects of European interest are listed in Decision 1364/2006/EC of the EP and of the Council. Regarding coordinators and without prejudice to further appointments, the Council notes that in its Communication, the Commission envisages the following projects: the Power-Link between Germany, Poland and Lithuania; connections to offshore wind power in Northern Europe; electricity interconnections between France and Spain; and the Nabucco pipeline, bringing gas from the Caspian to central Europe.

adequate interconnection in particular of isolated energy markets and asks the Member States concerned to achieve at least 10 % of electricity and gas interconnection capacity by 2010. To this end, Member States concerned should reinforce their bilateral cooperation, for instance by elaborating appropriate guidelines; - invites the Commission to table proposals aiming at streamlining approval procedures.

II. Security of Supply

3. In order to contribute to security of supply in a spirit of solidarity between Member States, notably in the event of an energy supply crisis, the European Council:

- underlines the need to enhance security of supply for the EU as a whole as well as for each Member State through:

- effective diversification of energy sources and transport routes, which will also contribute to a more competitive internal energy market;
- developing more effective crisis response mechanisms, on the basis of mutual cooperation and building notably on existing mechanisms, considering a wide range of options after careful assessment of existing means, taking into account the primary responsibility of Member States regarding their domestic demand, and making appropriate use of the warning capacity provided by the network of energy security correspondents;
- improving oil data transparency and reviewing EU oil supply infrastructures and oil stocks mechanisms, complementary to the IEA crisis mechanism, especially with respect to availability in the event of a crisis;
- a thorough analysis of the availability and costs of gas storage facilities in the EU;
- an assessment of the impact of current and potential energy imports and the conditions of related networks on each Member State's security of supply;
- establishing an Energy Observatory within the Commission.

III. International Energy Policy

4. The development of a common approach to external energy policy has to be speeded up, involving consumer-to-producer as well as consumer-to-consumer and consumer-to-transit countries, dialogues and partnerships including through organisations such as OPEC. To that effect, the European Council emphasises the following as essential elements when further developing the common voice of the EU in support of the three energy policy objectives:

- negotiating and finalising a post-partnership and cooperation agreement with Russia in particular relating to energy issues;39
- intensifying the EU relationship with Central Asia, the Caspian and the Black Sea regions, with a view to further diversifying sources and routes;
- strengthening partnership and cooperation building on the bilateral energy dialogues with the USA as well as with China, India, Brazil and other emerging economies,

39 This formulation is without prejudice to ongoing discussions on the negotiating mandate for the post-PCA agreement.

focusing on the reduction of GHG, energy efficiency, renewables and low-emission energy technologies, notably CCS;

- ensuring the implementation of the Energy Community Treaty, with a view to its further development and possible extension to Norway, Turkey, Ukraine and Moldova;
- making full use of the instruments available under the European Neighbourhood Policy;
- enhancing energy relationships with Algeria, Egypt and other producing countries in the Mashreq/Maghreb region;[40] • building a special dialogue with African countries on energy and using Community instruments to enhance in particular decentralised renewable energies and generally energy accessibility and sustainability in this region, as well as energy infrastructure of common interest;
- promoting access to energy in the context of the UN-CSD.

IV. Energy efficiency and renewable energies

5.The European Council is aware of the growing demand for energy and increasing energy prices as well as of the benefits of strong and early common international action on climate change, is confident that a substantive development of energy efficiency and of renewable energies will enhance energy security, curb the projected rise in energy prices and reduce greenhouse gas emissions in line with the EU's ambitions for the period beyond 2012, and underlines that the energy savings objective and targets for renewables and biofuels referred to below should be achieved with a view to sharing efforts and benefits fairly and equitably among all Member States, taking into account different national circumstances, starting points and potentials.

6. In that light, the European Council: - stresses the need to increase energy efficiency in the EU so as to achieve the objective of saving 20 % of the EU's energy consumption compared to projections for 2020, as estimated by the Commission in its Green Paper on Energy Efficiency, and to make good use of their National Energy Efficiency Action Plans for this purpose;
- calls for a thorough and rapid implementation of the ambitious five main priorities as highlighted in the Council conclusions of 23 November 2006[41] 1 on the Commission's Action Plan on Energy Efficiency, relating to energy-efficient transport, dynamic minimum efficiency requirements for energy-using equipment, energy-efficient and energy-saving behaviour of energy consumers, energy technology and innovations and the energy savings from buildings;
- invites the Commission to rapidly submit proposals to enable increased energy efficiency requirements on office and street lighting to be adopted by 2008 and on incandescent lamps and other forms of lighting in private households by 2009;
- welcomes the Commission's intention to put forward in 2007 a proposal for a new international agreement on energy efficiency in order to develop common global efforts towards promoting energy efficiency, bearing in mind that such an agreement should be complementary to EU energy efficiency policy;

40 Bearing in mind the GAERC conclusions of 22 January 2007 (doc. 5463/07).

41 15210/06.

- supports the use of international negotiations to encourage sustainable methods of production and to promote international trade in environmental and energy-efficient goods and services;
- calls for an early review of the Community guidelines on State aid for environmental protection and other relevant Community instruments which can provide incentives, with the aim of making them more supportive of the Community's energy and climate change objectives.

7. The European Council reaffirms the Community's long-term commitment to the EU-wide development of renewable energies beyond 2010, underlines that all types of renewable energies, when used in a cost-efficient way, contribute simultaneously to security of supply, competitiveness and sustainability, and is convinced of the paramount importance of giving a clear signal to industry, investors, innovators and researchers. For these reasons, taking into consideration different individual circumstances, starting points and potentials, it endorses the following targets:
- a binding target of a 20% share of renewable energies in overall EU energy consumption by 2020;
- a 10 % binding minimum target to be achieved by all Member States for the share of biofuels in overall EU transport petrol and diesel consumption by 2020, to be introduced in a cost-efficient way. The binding character of this target is appropriate subject to production being sustainable, second-generation biofuels becoming commercially available and the Fuel Quality Directive being amended accordingly to allow for adequate levels of blending.
From the overall renewables target, differentiated national overall targets should be derived with Member States' full involvement with due regard to a fair and adequate allocation taking account of different national starting points and potentials, including the existing level of renewable energies and energy mix (cf. paragraphs 10 and 11), and, subject to meeting the minimum biofuels target in each Member State, leaving it to Member States to decide on national targets for each specific sector of renewable energies (electricity, heating and cooling, biofuels).
In order to meet these targets, the European Council:
- calls for an overall coherent framework for renewable energies which could be established on the basis of a Commission proposal in 2007 for a new comprehensive directive on the use of all renewable energy resources. This proposal should be in line with other Community legislation and could contain provisions as regards: Member States' overall national targets; National Action Plans containing sectoral targets and measures to meet them; and criteria and provisions to ensure sustainable production and use of bioenergy and to avoid conflicts between different uses of biomass.
- calls for a thorough and rapid implementation of the measures highlighted in the June 2006 Council conclusions[42] on the Commission Biomass Action Plan, notably as regards demonstration projects for second-generation biofuels;
- invites the Commission to analyse the potential of cross-border and EU-wide synergies and of interconnections for reaching the overall renewable energy target, thereby also addressing the situation of countries and regions largely isolated from the EU energy market;
- invites the Commission to work with Member States to develop renewable energies, for

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example through an expanded Forum on renewable energies and to promote the exchange of best practice.

8. The European Council underlines the central role that emissions trading must play in the EU's long-term goals to reduce GHG emissions, and stresses the importance of the review by the Commission of the EU Emissions Trading Scheme in delivering an improved EU ETS that provides a market-based, cost-effective means to deliver emissions reductions at minimum cost - including as regards energy-intensive industries - and to make a major contribution to the EU's overall targets.

V. Energy Technologies

9. Recognizing the need to strengthen energy research in particular to accelerate the competitiveness of sustainable energies, notably renewables, and low carbon technologies and the further development of energy efficiency technologies, the European Council welcomes the Commission's intention to table a European Strategic Energy Technology Plan during 2007 for consideration at the latest by the 2008 Spring European Council.

10. Aware of the huge possible global benefits of a sustainable use of fossil fuels, the European Council:

- underlines the importance of substantial improvements in generation efficiency and clean fossil fuel technologies;
- urges Member States and the Commission to work towards strengthening R & D and developing the necessary technical, economic and regulatory framework to bring environmentally safe carbon capture and sequestration (CCS) to deployment with new fossil-fuel power plants, if possible by 2020;
- welcomes the Commission's intention to establish a mechanism to stimulate the construction and operation by 2015 of up to 12 demonstration plants of sustainable fossil fuel technologies in commercial power generation.

11. Recalling that the EPE will fully respect Member States' choice of energy mix, the European Council:

- notes the Commission's assessment of the contribution of nuclear energy in meeting the growing concerns about safety of energy supply and CO2 emissions reductions while ensuring that nuclear safety and security are paramount in the decision-making process;
- confirms that it is for each and every Member State to decide whether or not to rely on nuclear energy and stresses that this has to be done while further improving nuclear safety and the management of radioactive waste, and to that effect it: supports R & D on waste management, particularly under the 7th Framework Research Programme;
- can envisage the creation of a high-level group on nuclear safety and waste management.
- suggests that broad discussion takes place among all relevant stakeholders on the opportunities and risks of nuclear energy.

ANNEX S.1

THE SOUTH CAUCASUS PROJECT

Project for "Reconstruction and development of the electricity network infrastructure necessary for power exchange expansion and diversification between Russia, Azerbaijan, Georgia and Turkey."

The purpose of the project is the reconstruction and the further development of existing electric power infrastructure in Russia, Azerbaijan, Georgia and Turkey, for the improvement of the electrical interconnections between these countries.

1. On Georgian territory:

500 kV OHLs

- 'Caucasioni' – partial rehabilitation (102, 2 km)
- 'Zestafoni-Ahaltsikhe-Kars' - construction (120 km)
- substation Ahaltsikhe – construction with two OHLs 500 kV (2x15 km)
- BBS on substation 'Batumi' and/or on OHL 500 kV 'Zestafoni-Ahaltsikhe-Kars' – construction
- 'Tbilisi TPP -southern Georgia - Zestafoni' - construction (102 km) and rehabilitation of plundered sites (144 km)
- Substation Zestafoni: shunting reactors installation
- Tbilisi TPP: the device выводных ячеек 500кВ
- 'Azerbaijan TPP – Mukhranis veli' - rehabilitation (35-40 km*)*

220 kV OHLs

- 'Salhino': Psou-Bzyby-Tkvarcheli-Perepadnaya1 (220 km)
- 'Paliastomi-1' and 'Paliastomi-2': Inguri-Batumi-Hopa (90 km) – rehabilitation

110 kV OHLs

- HPP 'Sukhumi' - substation 'Sukhumi' – rehabilitation.

2. On Azerbaijan territory:

500 kV OHLs

- 'Muhranis-Veli – AzerbaijanTPP'

330 kV OHLs

- 'Atarbekjan – Akstafa' - OHL construction on Azerbaijan territory

3. On Turkish territory:

To be defined by the Turkish side.

Objectives of the project

Development of a common electric power grid infrastructure between the participating

countries; creation of conditions simplifying electric power exchange and transit procedures between the participating countries; power deficit reduction; power supply reliability increase; creation of technological preconditions for formation of integrated power market and common economic rise in the participating countries.

Establishment and perfection of regional interconnections in the field of joint power projects financing, international promotion of perspective ideas and innovations.

Description of project activities to be undertaken
Rehabilitation of existing overhead lines (OHLs) and construction of the new ones, reconstruction of power network infrastructure, increasing of the electric power exchange and transit between the participating countries.

The Russian proposal specifically noted the current existence of synchronous work between power systems of Russia and Azerbaijan (electric power deliveries from Russia up to 300 MW) and Georgia (electric power deliveries from Russia up to 450 MW). It added that electric power deliveries from Russia to Turkey were carried out until March 2002 and that between Georgia and Azerbaijan there were still electric power transfer and import-export operations, with summer transfers of up to 300 MW. It also called, in paragraph 9, for 'Synergy with the respective policies of the European Union.' It argued that 'the project corresponds to EU and EU countries' general development concept of electric power sector, as well as to the development and reconstruction plans of electricity network infrastructure of the project participating countries,' adding that: 'Besides, the project corresponds to the Baku declaration of power cooperation in the Black Sea region, and in a wider aspect can be considered within the framework of the EU Mediterranean policy.'

ANNEX S.2

HVDC TRANSMISSION VERSUS AC TRANSMISSION

In order to benefit from the important export possibilities towards the West in conjunction with the installation of new power generating capacity as well as transit of cheap electricity from its eastern neighbours to the UCTE system, the possibility to use asynchronous HVDC interconnections should not be excluded. For this reason, the advantages and disadvantages of HVDC transmission in comparison to AC transmission, together with a list of well known, already existing HVDC applications are briefly presented below.

The advantages and disadvantages

The main advantages of HVDC transmission over AC transmission are the following:

- There is no stability limitation with long distance DC transmission because the link is asynchronous.
- In long distance AC transmission, series compensation is always necessary. Even then, transmission distances are limited.
- Long distance AC transmission with underground or submarine cables is difficult due to excessive charging current that leaves little margin for the normal load current. On the other hand, there is no charging current with DC transmission. Therefore, much longer distance transmission is possible with DC in cases of underground or submarine cables.
- At high loading, excessive reactive power and voltage drop occurs with long distance AC transmission. On the other hand, at no load the Ferranti effect becomes important in long AC lines. This means that long AC transmission is feasible only with the use of series and shunt compensation.
- Fault level is increased with AC interconnections. On the contrary, DC links do not increase the short circuit level because fault currents on DC lines are restricted by thyristor control. DC lines are simpler, cheaper and more efficient and require less right of way. However Converter Stations used as terminals at both ends of a DC line interconnecting two AC systems are much more expensive than ordinary AC switchgear terminal equipment.
- Economic comparisons based on the above generally accepted facts, lead to the conclusion that DC transmission is economically justified for overhead line lengths over 600 km. For distances less than 400 km, asynchronous interconnections using a back to back converter station and an AC interconnection line are economically cheaper compared to the configuration of two AC/DC converters at the ends of a DC line.
- DC link converters generate harmonics, on both the AC and DC sides, which require

elaborate and expensive filtering for their reduction down to acceptable levels.

- Two terminal DC links do not require circuit breakers on the DC side, because the fault current is electronically limited by fast current control. However, multi-terminal links require DC breakers. As there is no zero current crossing in DC transmission, DC breakers are difficult to implement and this is one of the most important reasons that multi-terminal DC links are difficult and expensive to implement.

Application of DC Transmission Links

Due to the characteristics mentioned above, the most common applications of DC transmission links are:

- Submarine crossings;
- Interconnection of systems with different frequencies;
- Long distance overhead lines;
- Underground transmission.

The most important HVDC links in Europe are summarized in Table S.5.

TABLES

Table 1.1 Trade within the BSEC (millions of UDS, years 2004-2005)

Albania and the BSEC

Economies	Exports		Imports	
	2004	2005	2004	2005
Armenia	n/a	n/a	n/a	n/a
Azerbaijan	n/a	n/a	n/a	n/a
Bulgaria	0.25	0.29	53.48	61.11
Georgia	n/a	n/a	0.13	0.15
Greece	20.93	22.09	454.94	473.50
Moldova	n/a	n/a	0.68	0.78
Romania	0.21	0.24	21.51	55.49
Russia	2.06	1.58	41.41	55.49
Serbia & Montenegro	13.74	15.69	14.29	16.32
Turkey	14.12	19.35	177.12	214.62
Ukraine	1.35	1.55	57.43	65.62
BSEC Total	**52.66**	**60.79**	**820.99**	**943.08**
EU	450.06	529.67	1,673.18	1800.20
World	535.40	629.10	2,292.60	2,540.20

Armenia and the BSEC

Economies	Exports		Imports	
	2004	2005	2004	2005
Albania	n/a	n/a	n/a	n/a
Azerbaijan	n/a	n/a	n/a	n/a
Bulgaria	2.00	2.28	17.35	19.82
Georgia	23.07	26.35	59.94	68.49
Greece	0.73	0.94	30.46	33.92
Moldova	0.20	0.22	3.01	3.44
Romania	0.18	0.21	2.61	2.99
Russia	66.79	91.87	148.19	210.46
Serbia & Montenegro	0.01	n/a	0.26	n/a
Turkey	n/a	n/a	n/a	n/a
Ukraine	0.67	7.98	1.74	88.98
BSEC Total	**93.65**		**263.56**	
EU	236.35	465.38	445.61	571.20
World	535.90	824.10	1,309.40	1,624.50

Azerbaijan and the BSEC				
Economies	**Exports**		**Imports**	
	2004	**2005**	**2004**	**2005**
Albania	n/a	n/a	n/a	n/a
Armenia	n/a	n/a	n/a	n/a
Bulgaria	26.95	0.04	9.40	11.53
Georgia	143.37	163.81	27.88	31.86
Greece	26.95	32.13	9.40	4.47
Moldova	0.60	0.07	1.36	1.55
Romania	147.75	168.70	8.29	9.20
Russia	126.59	186.73	683.60	941.22
Serbia & Montenegro	4.33	4.95	0.43	0.49
Turkey	123.18	110.44	444.18	366.29
Ukraine	8.46	9.67	237.08	270.88
BSEC Total	**608.18**	**676.54**	**1,421.62**	**1,637.49**
EU	1,358.27	2,756.10	1,704.15	2,043.32
World	2,391.00	3,939.60	4,242.40	4,920.20

Bulgaria and the BSEC				
Economies	**Exports**		**Imports**	
	2004	**2005**	**2004**	**2005**
Albania	39.32	44.93	0.33	0.38
Armenia	14.14	16.15	16.01	18.29
Azerbaijan	9.17	10.48	0.04	0.04
Georgia	35.34	40.38	17.11	19.55
Greece	521.49	664.07	1,061.88	1,111.36
Moldova	26.90	30.74	6.05	6.91
Romania	317.18	368.31	496.41	574.45
Russia	184.82	219.00	1,120.56	2,090.47
Serbia & Montenegro	326.53	373.09	44.47	50.81
Turkey	868.60	1,072.35	982.09	1,144.02
Ukraine	75.07	85.78	548.39	626.58
BSEC Total	**2,418.56**	**2,925.28**	**4,293.34**	**5,642.86**
EU	5,321.05	6,050.85	8,336.81	9,775.97
World	9,363.20	10,837.50	14,159.40	17,438.40

Georgia and the BSEC

Economies	Exports		Imports	
	2004	2005	2004	2005
Albania	0.12	0.14	n/a	n/a
Armenia	54.49	62.26	25.37	28.89
Azerbaijan	25.35	28.96	157.70	180.19
Bulgaria	15.55	17.77	38.88	44.42
Greece	7.33	33.39	14.49	23.06
Moldova	0.12	0.13	1.76	2.01
Romania	1.29	1.47	14.02	23.39
Russia	104.53	142.72	257.79	388.29
Serbia & Montenegro	0.32	0.36	1.47	1.68
Turkey	118.61	179.72	202.29	249.55
Ukraine	15.31	17.49	142.38	162.68
BSEC Total	343.02	484.41	856.15	1,104.16
EU	111.62	315.53	616.39	685.06
World	646.50	1,194.90	1,847.00	2,354.60

Greece and the BSEC

Economies	Exports		Imports	
	2004	2005	2004	2005
Albania	414.00	431.00	23.00	24.00
Armenia	28.00	31.00	1.00	1.00
Azerbaijan	9.00	4.00	30.00	35.00
Bulgaria	965.00	1,010.00	574.00	730.00
Georgia	17.00	21.00	56.00	37.00
Moldova	8.00	8.00	15.00	5.00
Romania	479.00	504.00	624.00	540.00
Russia	328.00	335.00	2,876.00	4,213.00
Serbia & Montenegro	266.00	83.00	163.00	79.00
Turkey	690.00	880.00	1,223.00	1,191.00
Ukraine	53.00	67.00	201.00	194.00
BSEC Total	**3,257.00**	**3,374.00**	**5,786.00**	**7,049.00**
EU	8,401.00	9,083.00	30,444.00	30,058.00
World	15,204.00	17,115.00	52,548.00	53,996.00

Moldova and the BSEC

Economies	Exports		Imports	
	2004	2005	2004	2005
Albania	0.62	0.71	n/a	n/a
Armenia	2.74	3.13	0.22	0.25

Azerbaijan	1,23	1,41	0,06	0,07
Bulgaria	5,50	6,28	29,59	33,81
Georgia	2,07	2,36	0,11	0,12
Greece	3,42	4,99	10,42	8,97
Romania	98,93	105,47	164,53	196,98
Russia	353,42	498,33	216,33	493,15
Serbia & Montenegro	0,42	0,48	2,89	3,30
Turkey	12,26	19,66	69,43	82,57
Ukraine	64,75	73,99	436,42	498,65
BSEC Total	**545,36**	**716,81**	**930,00**	**1.317,87**
EU	297,16	396,32	582,72	1.082,31
World	986,30	1.299,00	1.774,20	2.706,00

Romania and the BSEC

Economies	**Exports**		**Imports**	
	2004	**2005**	**2004**	**2005**
Albania	20.00	22.00	n/a	n/a
Armenia	2.00	3.00	n/a	n/a
Azerbaijan	8.00	8.00	148.00	169.00
Bulgaria	451.00	522.00	317.00	368.00
Georgia	78.00	90.00	n/a	n/a
Greece	628.00	514.00	401.00	500.00
Moldova	205.00	240.00	70.00	76.00
Russia	121.00	212.00	2,027.00	3,103.00
Serbia & Montenegro	227.00	256.00	52.00	61.00
Turkey	1,643.00	1,968.00	1,241.00	1,542.00
Ukraine	78.00	94.00	807.00	900.00
BSEC Total	**3,461.00**	**3,929.00**	**5,063.00**	**6,719.00**
EU	17,170.00	17,740.00	19,276.00	26,562.00
World	23,476.00	25,929.00	29,614.00	39,010.00

Russia and the BSEC

Economies	**Exports**		**Imports**	
	2004	**2005**	**2004**	**2005**
Albania	38.00	50.00	2.00	2.00
Armenia	135.00	191.00	73.00	101.00
Azerbaijan	621.00	856.00	139.00	205.00
Bulgaria	1,019.00	1,900.00	203.00	241.00
Georgia	230.00	353.00	107.00	157.00
Greece	1,159.00	1,899.00	167.00	189.00
Moldova	374.00	448.00	496.00	548.00
Romania	1,674.00	3,045.00	130.00	233.00

Serbia & Montenegro	483.00	539.00	169.00	259.00
Turkey	7,200.00	10,859.00	1,225.00	1,738.00
Ukraine	10,663.00	12,378.00	6,097.00	7,776.00
BSEC Total	**23,596.00**	**32,518.00**	**8,808.00**	**11,449.00**
EU	88,325.00	133,733.00	33,967.00	43,424.00
World	166,369.00	239,277.00	69,055.00	97,405.00

Serbia & Montenegro and the BSEC

Economies	**Exports**		**Imports**	
	2004	**2005**	**2004**	**2005**
Albania	12.99	14.84	15.11	17.26
Armenia	n/a	n/a	n/a	n/a
Azerbaijan	n/a	n/a	n/a	n/a
Bulgaria	40.43	46.19	359.18	410.40
Georgia	1.34	1.53	0.35	0.40
Greece	148.36	160.68	292.42	231.21
Moldova	2.63	n/a	0.46	n/a
Romania	51.91	61.07	249.26	281.62
Russia	n/a	n/a	n/a	n/a
Turkey	79.46	70.15	232.63	189.52
Ukraine	n/a	n/a	n/a	n/a
BSEC Total	**337.12**	**354.46**	**1,149.41**	**1,130.41**
EU	1,801.75	1,903.97	5,804.01	5,369.31
World	2,229.70	2,346.00	7,648.00	7,416.00

Turkey and the BSEC

Economies	**Exports**		**Imports**	
	2004	**2005**	**2004**	**2005**
Albania	161.00	195.00	16.00	21.00
Armenia	n/a	n/a	n/a	n/a
Azerbaijan	404.00	333.00	136.00	121.00
Bulgaria	893.00	1,040.00	955.00	1,180.00
Georgia	200.00	240.00	303.00	326.00
Greece	1,167.00	1,092.00	593.00	890.00
Moldova	66.00	77.00	27.00	34.00
Romania	1,231.00	1,530.00	1,694.00	2,106.00
Russia	1,859.00	1,841.00	9,027.00	12,169.00
Serbia & Montenegro	211.00	172.00	87.00	77.00
Ukraine	572.00	708.00	2,480.00	3,000.00
BSEC Total	**6,764.00**	**7,228.00**	**15,318.00**	**19,924.00**
EU	34,401.00	38,360.00	45,428.00	55,009.00
World	62,923.00	71,780.00	97,337.00	118,236.00

Ukraine and the BSEC				
Economies	**Exports**		**Imports**	
	2004	**2005**	**2004**	**2005**
Albania	52.00	60.00	1.00	2.00
Armenia	71.00	81.00	8.00	9.00
Azerbaijan	216.00	246.00	9.00	11.00
Bulgaria	499.00	570.00	83.00	94.00
Georgia	148.00	169.00	19.00	22.00
Greece	118.00	176.00	55.00	73.00
Moldova	660.00	755.00	67.00	77.00
Romania	732.00	820.00	91.00	110.00
Russia	5,886.00	7,069.00	12,128.00	13,615.00
Serbia & Montenegro	240.00	274.00	37.00	42.00
Turkey	1,869.00	2,426.00	374.00	565.00
BSEC Total	**10,491.00**	**12,646.00**	**12,872.00**	**14,620.00**
EU	9,796.00	8,879.00	9,374.00	17,648.00
World	32,629.00	35,205.00	28,995.00	41,986.00

Source: IMF (2005) Direction of Trade Statistics, Yearbook 2005 and IMF (2006) Direction of Trade Statistics, Quarterly June
n/a, not available
NOTE: Many of these figures, p articularly concerning 2005 data, are either derived from partial data plus estimates, or from data provided by trade partners. The figures should thus be regarded as being provisional assessments rather than final compilations.

Table 2.1 Global energy demand according to various IEA scenarios (in mtoe)						
	2002	**2003**	**2004**	**2010**	**2020**	**2030**
2004 Reference Scenario						
Total Primary Energy Supply	10,345	n/a	n/a	12,194	14,404	16,487
-- oil	3,676	n/a	n/a	4,308	5,074	5.766
-- gas	2,190	n/a	n/a	2,703	3,451	4,130
2004 World Alternative Policy Scenario						
Total Primary Energy Supply	10,200*	n/a	n/a	n/a	13,345	14,654
-- oil	3,530	n/a	n/a	n/a	4,600	4,995
-- gas	2,190	n/a	n/a	n/a	3,254	3,701
2005 Reference Scenario						
Total Primary Energy Supply	n/a	10,723	n/a	12,389	14,402	16,271
-- oil	n/a	3,785	n/a	4,431	5,036	5,546
-- gas	n/a	2,244	n/a	2,660	3,338	3,942
2005 Deferred Investment Scenario						
Total Primary Energy Supply	n/a	10,273	n/a	n/a	n/a	15,367
-- oil	n/a	3,785	n/a	n/a	n/a	5,068
-- gas	n/a	2,244	n/a	n/a	n/a	3,639
2005 World Alternative Investment Scenario						
Total Primary Energy Supply	n/a	10,723	n/a	n/a	13,525	14,658
-- oil	n/a	3,785	n/a	n/a	4,727	4,967
-- gas	n/a	2,244	n/a	n/a	3,142	3,528

*Excludes international marine bunkers

Source: International Energy Agency

Table 3.1 Potential Eurasian Gas Suppliers to the EU Market (by pipeline)

1. Supply Potential as of 2010

Country	Volume	Transit Country	Potential	Existing
Iran	10 bcm	Turkey	20-30 bcm	3-10 bcm
Turkmenistan	13 bcm	Iran/Turkey	30 bcm	13 bcm
Turkmenistan	34-80 bcm	Russia	80 bcm	50 bcm
Turkmenistan	10-36 bcm	Russia/Ukraine	36 bcm	36 bcm
Azerbaijan	7 bcm	Turkey	20 bcm	6-20 bcm*
Iraq	10 bcm	Turkey	10 bcm	None
Egypt	4 bcm	Jordan/Syria	10-12 bcm	Link to Jordan**

* SCP system under construction, due to open 2006.

** Egypt-Jordan gasline has almost reached Syrian border.

2. Additional Supply Potential post- 2015

Country	Volume	Transit Country	Existing System
Qatar	20-30 bcm	Kuwait/Iraq/Turkey	None
Egypt	10-12 bcm	Jordan/Syria	Link to Syria
Saudi Arabia	unknown	Jordan/Syria/Turkey	None
Kazakhstan	10-20 bcm	Azerbaijan/Turkey	None
Turkmenistan	20-30 bcm	Azerbaijan/Turkey	None
Turkmenistan	30-36 bcm	Iran/Turkey	Limited connections**
Uzbekistan	5-10 bcm	Turkmenistan/Azerbaijan/ Turkey	None

** Turkmenistan's Caspian shore gasfields are already linked into the Iranian network via the 12 bcm/y capacity line from Korpedzhe to Kurt-Kui, but there are no significant connections to Iran from Turkmenistan's main central and south-eastern gasfields

3. Potential Gas Pipelines from Turkey to Current EU Member States

Route	Initial	LT capacity	Comments
Turkey-Greece	0.75bcm	3-11 bcm	Due to open 2006
Greece-Italy Interconnector	22 bcm	22 bcm	Under study. Possible opening 2008
Turkey-Austria (Nabucco)	3-5 bcm	25-30 bcm	Under study. Possible opening 2010
Greece-Western Balkans-Hungary-Austria	undefined	possibly 10-20 bcm	Preliminary proposal

Russia's Gazprom is proposing a 25-30 bcm/y system with a line from Bulgaria to Greece and then a suggested connection to Austria via the Balkans and a separate Trans-Adriatic connection to Italy.

Source: International Energy Agency and Platts.

Table 3.2 Key Factors in EU-Russian Energy Trade			
EU - Russia Energy Trade Balances (for EU 25)			
EU	**2003**	**2004**	**2005**
Oil			
Oil Production	141,601	132,770	118,974
Oil Imports (from outside EU)	557,932	580,696	580,521
Source: Eurostat			
Gas balances (EU and Russian Gas balances in 2005, in billions of cubic metres)			
EU consumption	471.2		
EU production	199.7		
EU net imports	271.5		
Russia production	598.0		
Russia consumption	405.1		
Available for export	192.9		
--Actual exports by pipeline	151.28 bcm*		
*This is essentially a hard-cash export market figure. Other exports went to former Soviet countries. *Source: BP (2006), Statistical Summary of World Energy.*			

Gas traded in 2005			
	World	**Europe**	
Pipeline	532.6	c. 225.5	
LNG	188.8	46.0	
Total	721.4	271.5	
Source: BP (2006), Statistical Summary of World Energy.			

Table 4.1 Russian & Caspian Contributions to Global Oil Supply (2003-2030)									
	2003	**2004**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**Annual Growth per year 2003-2030**
Russia	8.81	9.3	9.5	10.0	10.3	10.7	11.2	11.5	0.8%
Caspian	1.92	1.9	2.1	3.4	4.3	4.8	5.2	5.7	4.3%
Opec	29.50	34.0	35.3	37.8	42.1	46.6	51.3	56.8	2.0%
Non-Opec	50.39	48.9	49.1	52.9	55.3	57.2	59.1	60.9	0.8%
World	79.89	82.9	84.3	90.7	97.4	103.8	110.4	117.7	1.4%
Net Eurasia Exports*	5.44	6.31	6.64	6.67	8.02	9.40	10.75	11.60	2.4%

* From the EIA's 2006 Annual Energy Outlook.
Note: The figures cited are the reference case scenario for what the EIA terms 'conventional liquids production' - in this case crude oil and natural gas liquids.

Source: Energy Information Administration (2007), Annual Energy Outlook 2007, Washington DC. Department of Energy, May (For full table, see Appendix G, table G1). The 2003 figures are from the 2006 Outlook.

Table 4.2 Kazakhstan export capacities 2005-2015 (in millions of tonnes per year – mt/y)			
Pipeline Capacities			
	2005-6	**c. 2010**	**c. 2015**
CPC (Kaz share) [1]	23 Kaz (32 total)	50 Kaz (67 total)	55 Kaz (75 Total)
Atyrau-Samara[2]	15	25	30
Alikbekmola-Kenkiyak-Orsk	6	6	6
Trans-Caspian to Makhachkala	5	5	5
Trans-Caspian to Neka[3]	6	18.5	20-27
Trans-Caspian to Baku[4]	6-10	20	30-50
China[5]	10	20	30
KTI[6]	-	-	25
Rail[7]	7.5-14.0	(15)	(15)
Totals	78.5-89.0	158.5-159.5	201-228

Source: Platts

Table 5.1 - Bosphorus Bypasses Line lengths, capacities, costs and indicative charges				
Route	**Length (km)**	**Capacity (b/d)**	**Cost ($m)**	**Tariff ($/tonne)**
Northern routes:				
Odessa-Brody-Plock	510*	500,000	740	14.5
Odessa-Brody-Plock-Wilhelmshavn	1,100*	500,000	c.2,000	20.00
Constanza-Trieste	1,360	800,000	2,270	7.3-15.5**
Balkan routes				
AMBO	850	750,000	1,500	9.50
Bourgos-Alexandroupolis	303	700,000	900	5.00
Turkish routes				
Kiyikoy-Ibrikbaba	198	1,500,000	913	4.51
Samsun-Ceyhan	550	1,400,000	1,500	10.00

* Distance for new pipeline only; excludes existing 644-km Odessa-Brody line.

** Depending on choice of route and line construction/refurbishment issues

Sources: Various; indicative tariffs from ILF.

Note on tariff comparison. These figures derive from a 2004 study by German pipeline consultants ILF, which calculated an indicative range of possible throughput tariffs for various options. To enable comparisons to be made, in each case ILF assumed that the operational line had capacity of 35 mt/y (700,000 b/d). Actual tariffs, of course, would reflect different actual capacities. The tariff column is intended purely for comparative purposes. In most cases, cost estimates available in 2004 (when the indicative tariffs were calculated) have since been increased, consequently tariffs for any completed line will likely be significantly higher than those indicated here.

Table S.1 Projects Recently Completed in South-East Europe	
Project description	**Comment**
400kV HVDC submarine cable Galatina (IT)-Arachtos (GR)	Project completed in 2003
Reconstruction of 400kV OHL - Trebinje -Gacko -Mostar (BH) -Konjsko (HR) - Mostar -Sarajevo (BH) - Sarajevo –Tuzla -Uglievik (BH) - Uglievik (BH) -Ernestinovo (HR) - Mostar substation (BH)	Reconnection with the UCTE (9.11.2004) - Completed - Completed - Completed - Completed - Completed
Reconstruction of 220kV OHL - Tuzla (BH) –Dakovo (HR) (2 lines) - Jaijce/Prijedor (BH) –Mraclin (HR) - Prijedor (BH) –Meduric (HR)	Reconnection with the UCTE (9.11.2004) - Completed - Under construction To be completed by end of 2007 - Completed
400kV T.L. Arad (RO) and Sandorfalva (H)	Project completed
400kV T.L. Uglievik (BH) – Mitrovica (SR)	Completed in mid 2006

Source: Information provided by Lekatsas and Daskalakis, 2006

Table S.2 Projects Rejected in South-East Europe	
Project description	**Comment**
220kV T.L. Vrutok (FYROM) – Burrel (AL)	Project not further considered. It was the first proposal for the electrical interconnection of Albania and FYROM.
400kV T.L. Bitola 2 (FYROM) – Elbasan (AL)	Project not further considered.
220k VT.L Vlore (AL)-Igoumenitsa (GR)	Project not further considered. Both countries decided to reject the project and focus instead on the Elbasan-Tirana-Podgorica line.
400kV T.L. Iasi (RO) – Chisinau (MD)	Project not further considered. The Moldovan side has not expressed a definite interest for this link.

Source: Information provided by Lekatsas and Daskalakis, 2006.

Table S.3 Projects Under Construction in South-East Europe	
Project description	**Comment**
400kV T.L. Skopje5 (FYROM) – Nis (SR)	Project agreed and initiated. To be completed by end of 2009.
400kV T.L. Bitola (FYROM) – Florina (GR)	Project under construction. To be completed by end of 2007.
400kV T.L. Stip (FYROM) – Ch.Mogilla (BG)	Project under construction. To be completed by end of 2007.
400kV T.L. Filippi-Nea Santa (GR) – Babaeski (TR)	Project under construction. To be completed by end of 2007. Related to this project is the construction of the 400kV double-circuit line Lagadas-Filippi in Greece.
400kV T.L. Tirana (AL) – Podgorica (MN)	Project under construction. To be completed by end of 2008. The internal Albanian 400kV line Tirana-Elbasan is directly related to this project Greece has also expressed an interest for this interconnection.
400kV T.L. Nadad (RO) – Békéscsaba (H)	Project agreed and initiated. To be completed by end of 2008. Related to this project is also the construction of the 400kV line Arad-Nadad-Oradea in Romania.

Source: Information provided by Lekatsas and Daskalakis, 2006.

Table S.4 Projects Under Discussion in South-East Europe	
Project description	**Comment**
400kV Interconnection FYROM-Albania-Italy	Project under investigation. Feasibility study ongoing (BG, FYROM, AL, IT).
400kV T.L. Zrenjanin (SR) – Timisoara (RO)	Project under investigation. Preliminary studies under preparation.
400kV T.L.Prishtina (KO) – Tirana (AL)	Project under discussion.
400kV T.L. Sombor (SR) – Pecs (H)	Project under discussion.
400kV T.L. Suceava (RO) – Balti (MD)	Project under discussion.
400kV submarine link between Romania and Turkey	Project under investigation. Preliminary studies ongoing.
400kV T.L. N.Santa (GR) – Maritsa 3 (BG)	Project under discussion. New routing study should be done due to change of connection point on Greek side.
HVDC submarine cable between Italy and Greece	Following the completion of the 400kV 500MW submarine DC link in 2003, a second submarine DC link is envisaged.

Source: Information provided by Lekatsas and Daskalakis, 2006.

Table S.5 European High Voltage DC Links		
No.	**Name**	**Main Reason for Choosing HVDC Transmission**
1	English Channel	Sea crossing, asynchronous (2,000 MW)
2	Dürnrohr	Asynchronous link (back to back) *
3	Sardinia – Italy	Sea crossing (via Corsica) **
4	Fenno – Skan	Sea crossing (200 km)
5	Gotland 1	Long sea crossing, frequency control (96 km)
6	Gotland 2	Long sea crossing, frequency control (96 km)
7	Gotland 3	Long sea crossing, frequency control (96 km)
8	Kontek	Sea crossing, asynchronous systems (170 km)
9	Swe Pol	Long distance and sea crossing (230 km)
10	Skagerrak 1 & 2	Sea crossing (127 km)
11	Skagerrak 3	Sea crossing (127 km)
12	Konti – Skan 1	Sea crossing, asynchronous link (88 km)
13	Konti – Skan 2	Sea crossing, asynchronous link (88 km)
14	Baltic cable	Sea crossing (250 km)
15	Greece – Italy	Sea crossing (160 km + 110 km over head)
16	Vyborg (Russia-Finland)	Asynchronous link (back to back)

* Out of operation after CENTREL's connection with UCTE[8]
** A new direct DC Link is also planned
Source: Information provided by Lekatsas and Daskalakis, 2006.
Note for Tables S.1 to S.4 : The country and territory abbreviations are as follows:
IT: Italy; BH: Bosnia & Herzegovina; HR: Croatia; H: Hungary; GR: Greece; RO: Romania; AL: Albania; SR: Serbia; BG: Bulgaria; MD: Moldova; TR: Turkey; KO: Kosovo; MN: Montenegro; FYROM: Former Yugoslav Republic of Macedonia.

(Footnotes)

1 CPC First phase design capacity was 28 mt/y, split 20 to Kaz and 8 to Russia. Design enhancements have increased capacity to c. 32 mt/y, with a split of around 23/9. The 2010 figure represents planned maximum capacity and agree3d split; the 2015 figure makes allowance for design enhancement.

2 KMG has a three-phase programme to take capacity to 30 mt/y; as of late 2005, however, Transneft has not agreed to the next expansion phase, to take throughput to 25 mt/y.

3 Based on capacities at Iran's Neka terminal and pipeline to Tehran refineries. Capacity on the Neka-Tehran line should be 370,000 b/d by 2010; Iran has spoken of taking it eventually to 540,000 b/d.

4 Kazakhstan is negotiating an IGA with Azerbaijan covering the delivery of up to 600,000 b/d (30 mt) of oil. This is clearly aimed at using BTC facilities. By 2015 BTC could well be expanded and possess the capacity to hand le 1 mb/d of Kazakh crude. The 2005-6 figure for available Azerbaijani capacity to handle Kazakh crude includes Baku-Supsa, railcar to Batumi and initial access to BTC in 2006.

5 The current agreement with China provides for a 20 mt/y system. Further enhancements are only to be expected, hence the assumption of a prospective 30 mt/y capacity in 2015.

6 Total has been assisting in a feasibility study on this line based on the premise of a 25 mt/y capacity. Since the line is not likely to be built until Kashagan development/expansion is well under way, a 25 mt/y figure for 2015 seems reasonable.

7 TCO, before CPC opened, exported as much as 7.5 mt/y via the Kazakh railway system. Up to 50,000 b/d went to China (in 2004, some 30,000 b/d was exported in this way); but most headed for Russia and Russian-connected export terminals. Delays in expanding CPC mean that TCO is planning to export up to 14 mt/y (280,000 b/d) by rail in 2006. The advent of BTC, the expansion of CPC, the China line and other pipeline expansions should render railcar delivery redundant. An estimate of 15 mt/y is retained as backstop for 2010 and 2015, but is not included in active totals.

8 CENTREL, regional group of four transmission system operator companies: ČEPS, a.s. of the Czech Republic; Hungarian Power System Operator Company- MAVIR ZRt. of Hungary; PSE-Operator S.A. of Poland; Slovenská Elektrizačná Prenosová Sústava, a.s. - SEPS, a.s. of the Slovak Republic.

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The geopolitics of global energy have changed significantly since the beginning of the 21st century. For all the rising importance of gas, which will be discussed in the paper along with electricity, it is oil that retains crucial importance. Azerbaijan and Russia, of the BSEC member states, thus play a disproportionately large role in determining how evenly the world's oil market is balanced. Similarly, several other BSEC member states play pre-eminent roles in the core issue of energy transit. But, in the Russia-EU context – and thus in a BSEC context as well – Russia, as the world's biggest energy supplier, and the EU, as the world's biggest energy importer, both stand to benefit from a long-term strategic accord leading to mutual energy security.

This study of Energy Cooperation among the BSEC Member States is intended to contribute to the development of an energy strategy for the BSEC, and will seek to utilise in particular the conclusions of the G8 summit in St. Petersburg in July 2006, not least since they represent the best prospect for a consensus between the two most important political determinants of energy development in the BSEC area: the European Union and Russia.

The study is a valuable contribution to a research effort launched by the ICBSS during the past year, focusing specifically on issues of energy security in the wider Black Sea region.