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The Niigata Energy Forum 2004

Edited by
Vladimir I. Ivanov
and
Eleanor Goldsmith



In this booklet, the People's Republic of China is referred to as China, the Democratic People's Republic of Korea as the DPRK, the Republic of Korea as the ROK, and the Russian Federation as Russia. In the DPRK and the ROK, the Japan Sea is known as the East Sea.

THE NIIGATA ENERGY FORUM 2004

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FOREWORD

Susumu Yoshida

Chairman of the Board of Trustees and Director-General, ERINA

The Niigata Energy Forum 2004 marked the culmination of the three-year research and dialogue project undertaken by the Economic Research Institute for Northeast Asia, entitled *Energy Security and Sustainable Development in Northeast Asia: Prospects for Cooperative Policies*. We were fortunate to be able to obtain funding for this project from the Japan Foundation Center for Global Partnership, which not only provided financial assistance, but also practical support for our endeavors, for which we are extremely grateful.

We would also like to thank those institutions that have collaborated with us in organizing the conferences that formed a major part of the project: the East-West Center in Hawaii and the Northeast Asia Economic Forum, under the leadership of Dr. Lee-Jay Cho; the Korean Energy Economics Institute and its former president, the late Professor Sang-Gon Lee; the Institute of Economic Research of the Russian Academy of Sciences, led by Professor Pavel Minakir; and the administration of Khabarovskiy Krai, particularly Governor

Victor Ishaev. Furthermore, we wish to express our sincere gratitude to Governor Ikuo Hirayama and the government of Niigata Prefecture, for their support and encouragement of this project. Last, but most certainly not least, we must thank all those who have participated in the conferences that we organized. Without the valuable insights from a diverse range of perspectives that they provided, we should not have been able to begin putting together our vision for the energy future of Northeast Asia.

This project has brought together a variety of academics, government representatives and private sector practitioners from throughout the region and beyond, enabling us to create an informal network of contacts. It is our intention to build on the foundations laid through this project, in order to strengthen cooperative links between the countries of the region and we hope that this network will ultimately assist in the future development of an energy community in Northeast Asia.

PROJECT OVERVIEW

Vladimir I. Ivanov
Director, Research Division, ERINA

Between 2001 and 2003, in collaboration with experts from the US and Northeast Asia, ERINA has been working on a research and dialogue project entitled Energy Security and Sustainable Development in Northeast Asia: Prospects for Cooperative Policies.¹ This project has proved to be very successful, thanks to our principal collaborator, the Northeast Asia Economic Forum (NEAEF), as well as the vital support provided by the Japan Foundation Center for Global Partnership (CGP).

The project was preceded by in-house research and a small international workshop held in Niigata City in December 1999. In 2000, building on the outcomes of this workshop, ERINA received funding from CGP to hold three workshops in order to promote debate and share information regarding regional energy security and cooperation with the aim of achieving sustainable development. Workshops in Niigata (Tainai, 2001), Seoul (in collaboration with the Korean Energy Economics Institute (KEEI), 2002), and Khabarovsk (in collaboration with the government of Khabarovskiy Krai and the Russian Academy of Sciences Economic Research Institute, 2002) were followed by a meeting with practitioners to disseminate the outcomes

of the project, which took place in Tokyo (October 2003). The project culminated in the Niigata Energy Forum, which took place in conjunction with the 2004 Northeast Asia Economic Conference / Northeast Asia Economic Forum in Niigata on 1st February 2004.

The Forum²

The evening before the main part of the Energy Forum, 67 participants attended a presentation featuring two business proposals that may involve exporters of energy based in Far Eastern Russia and energy users on both sides of the Korean Peninsula's DMZ. The session opened with greetings from Governor Ikuo Hirayama of Niigata Prefecture and Governor Victor Ishaev of Khabarovskiy Krai.

The first presentation, by Victor Minakov, Director-General of Vostok-Energo, focused on the cross-border interconnection of the Russian Far East's electric power grid with that of the DPRK. The second presentation, by John Fetter from the United States (FSI Energy) and Rimtaig Lee from the ROK (Korean Southern Power Corporation), provided an overview of a project aimed at constructing a natural gas pipeline linking

¹ The goal of the project was to identify obstacles to cooperation in the realm of energy and the environment and propose viable approaches in order to overcome them. The participating institutions and experts have endeavored to compile a vision for coordinated initiatives in the highly sensitive area of energy policy, with regard to which the economies of the subregion have been operating completely independently thus far. A further objective was to assess the prospects for cooperative approaches to energy security, outlining an institutional framework that could reduce the region's vulnerability arising from its high dependence on energy imports and its reliance on the Middle East for the supply of a significant share of its oil imports.

² *The New York Times* (February 3, 2004), and *The Niigata Nippo* (February 21, 2004) carried detailed overviews of the proceedings at the Niigata Energy Forum.

Sakhalin and the Korean Peninsula. Following these presentations, a number of long-standing participants in ERINA's energy security and sustainable development project offered their comments on the two presentations; in addition, Victor Gorchakov, Vice-Governor of Primorskiy Krai, a region that would be transited by both the cross-border power grid and the gas pipeline, outlined his thoughts on the projects.

After dinner, an informal talk by Ambassador Evgeniy Afanasiev, Director of the First Asia Department at Russia's Ministry of Foreign Affairs, was received with great interest, leading to further questions and comments from the audience. Some participants in the evening session noted that this was the most informative part of the program.

Proceedings in the main part of the forum began the following day with the keynote speech delivered by Robert J. Priddle, former Executive Director (1994-2002) of the International Energy Agency. This was followed by a special address by Alexei M. Mastepanov of the Gazprom Company.

These presentations were followed by two panel discussions and three shorter reports from Ambassador Takehiro Togo, Senior Advisor to GSSI/Mitsui Co., Ambassador Yevgeniy Afanasiev, and Susumu Abe, Advisor to the GIF Research Foundation.

The Project Team

The Niigata Energy Forum attracted 88 participants from 58 organizations. Indeed, the project has attracted a broad range of participation throughout its duration. Panelists and speakers at the project workshops included experts from regional administrations (Niigata, Khabarovskiy Krai, Sakhalinskaya Oblast Administration) as well as those from central government ministries

and legislatures, such as the Japanese Diet (Taro Nakayama), Russia's State Duma (Evgeniy Galichanin), the Ministry of Foreign Affairs of Japan, the US Department of State, the Ministry of Foreign Affairs of the Russian Federation, and the Ministry of Fuel and Energy of Russia. It should be noted that these participants were involved in the project in their private capacity.

The list of research organizations that have contributed to the project includes the Atlantic Council of the US, the Central Research Institute of the Electric Power Industry (Tokyo), the East-West Center (Honolulu), the Energy Research Institute (Beijing), the Energy Systems Institute (Irkutsk), the Economic Research Institute (Khabarovsk), the Institute of Energy Economics, Japan (Tokyo), the Institute of World Economics and Politics (Beijing), the James Baker Institute for Public Policy (Houston), the Korea Electro-Technology Research Institute and the Korea Energy Economics Institute (Seoul), the Mitsubishi Research Institute (Tokyo), the Monterey Institute of International Studies, the National Energy Committee (Pyongyang), CNPC's Petroleum Economics & Information Center (Beijing) and the Research Institute of Petroleum Exploration and Development (Beijing). Experts from various universities, research centers, academies of science, associations and NGOs have also made significant contributions to the project.

International organizations supporting the project include the Asia Pacific Energy Research Center based in Tokyo, United Nations ESCAP (Bangkok), the International Energy Agency (Paris), the UNDP Tumen Secretariat (Beijing) and the World Bank (Washington, D.C.).

The list of participants from energy companies and the private sector includes ACE Engineering (Seoul), Gazprom (Moscow), Foundations Systems Inc. (Philadelphia),

Korea Gas Corporation and Korea National Oil Corporation (Seoul), Mitsui & Co. Ltd. (Tokyo), Osaka Gas, Sumitomo Corporation and Toshiba Corporation (Tokyo), as well as Vostok-Energo, UES Russia (Khabarovsk) and the Korean Southern Power Corporation.

The Timing of the Project

The considerable interest in the Energy Forum and the growing outreach of ERINA's energy security project in general is understandable, given developments in the global energy sector since 2000. These have encompassed the recovery of oil output in Russia and its political stabilization under President Vladimir Putin from 2000 onwards. At the same time, China's continuing economic advancement has led many experts to believe that growing energy use in China will affect the global energy demand-supply equation. In this context, Sino-Russian energy dialogue and a proposed oil pipeline from Eastern Siberia to Daqing have become very important to both sides, as well as attracting significant international attention.

On the other hand, the White House's attitude towards Russia and its role as a major oil producer has changed in response to the geo-strategic challenges emerging in the aftermath of the 9/11 attacks. In May 2002, the New Energy Dialogue between the US and Russia was launched at a bilateral summit, leading to greater confidence on the part of Japan with regard to Russia's potential to supply oil and natural gas to the markets of Northeast Asia.

Technical exchanges between Japan and Russia and preliminary discussions on the Angarsk-Nakhodka oil pipeline project began towards the end of 2002, culminating in several high-level meetings and informal negotiations, starting in January 2003, when the Japanese Prime Minister visited

Moscow.

Symbolically, in 2003, both the Russian and Japanese governments published their long-term national energy policy outlooks, for the first time, focusing attention on Northeast Asia and prospects for cross-border gas projects, as well as an oil pipeline to Nakhodka.

In addition, towards the end of 2002, the President of the ROK proposed a new initiative for the subregion, highlighting its potential to develop cooperative links in the energy sector. On the other hand, the activities of the Korean Peninsula Energy Development Organization (KEDO) were suspended the following year, in the aftermath of the new round of uncertainties and suspicions with regard to the DPRK and its nuclear program.

These important policy developments on both the domestic and international fronts were accompanied by significant practical developments. For example, the West-East gas pipeline project in China entered its implementation phase, while a trilateral Russia-China-ROK feasibility study on a gas pipeline from Kovykta to China and South Korea has been completed.

In the ROK, a nationwide gas transportation system has been constructed, stimulating enthusiasm for the Sakhalin-Khabarovsk-Vladivostok-Korea gas pipeline project. Furthermore, ExxonMobil (Sakhalin I) has proposed a plan for exporting natural gas to Japan via a submarine pipeline to Niigata or Sendai and extended to the Tokyo area. Funding for another north-south gas pipeline on Sakhalin to supply the LNG plant with gas has been allocated by Sakhalin Energy (Sakhalin II). Construction of a local gas pipeline from Komsomolsk to Khabarovsk and an oil pipeline from Sakhalin to DeKastri port on the mainland are also underway.

Finally, the Russian government has announced its plans to support the

construction of an oil pipeline from Angarsk to Nakhodka with a branch to Daqing. Moreover, Gazprom has revealed its plans to build a Trans-Siberian gas pipeline, linking Eastern Russia with its giant network of pipelines in Russia's western regions.

With regard to efforts on the part of international organizations, the Asia-Pacific Economic Cooperation Forum (APEC) launched its Energy Security Initiative in 2002, proposing: (1) the joint exploration and development of oil and gas reserves; (2) reliance on non-petroleum energy sources; and (3) the development of new technologies for alternative fuels, high-efficiency vehicles and public transport. APEC leaders have proposed the dissemination of best practice guidelines in energy efficiency and conservation, coordinating plans for energy sector development, and paying greater attention to environmental protection.

Conclusion

Needless to say, all these positive changes in policies and attitudes, as well as ongoing projects and new plans, have made ERINA's energy security project very timely, relevant and useful. As the project unfolded from one workshop to another, the international network of experts and their involvement in project activities has grown stronger. In addition, as we moved ahead, the practical energy security interests of the economies of Northeast Asia were in the process of crystallizing, further encouraging the Project Team.

In summary, the key project findings presented at the Niigata Energy Forum 2004 have demonstrated that subregional energy cooperation is needed because such cooperation:

- Serves national interests in general
- Reduces the risks of supply disruption
- Promotes competition in terms of

energy prices

- Assists the development of regional economies
- Provides benefits to local communities
- Facilitates environmental management
- Strengthens regional stability and security.

Indeed, cross-border energy links in Northeast Asia would ensure greater reliance on cleaner sources of energy. Energy cooperation could become an efficient regional development tool, while also serving as a vehicle for resolving the "DPRK problem".

It is worth noting in conclusion that the Energy Forum has provided a very useful platform for both intellectual exchange and professional and personal contacts, creating a greater awareness that cooperative approaches to energy security needs and environmental responsibilities must be assigned a higher priority in the agenda of governments in the Northeast Asia subregion, including central ministries, as well as regional administrations.

In publishing this report, we hope that our readers will provide us with their comments, opinions and proposals regarding the content of the presentations and proposals, in order to facilitate future efforts aimed at enhancing energy security and sustainable development among the economies and people of Northeast Asia.

Finally, we would like to extend our sincere gratitude to all members of the Project Team, partner institutions, support staff, and the speakers and participants attending the Energy Forum, as well as the Japan Foundation Center for Global Partnership and the government of Niigata Prefecture for their constant support and encouragement, which has been absolutely vital to this project.

GREETINGS FROM THE GOVERNOR OF NIIGATA PREFECTURE

IKUO HIRAYAMA

I would like to welcome everyone present to the Special Session of the 2004 Niigata Energy Forum. Thank you very much for making time in your busy schedules to visit Niigata. I am very pleased that so many of the countries of the region will be represented at the Forum tomorrow.

The main energy issue in Northeast Asia that has been taken up by Niigata Prefecture is that of Sakhalin's natural gas. At present, only the Kanto route has been the focus of attention within Japan, but we have had our eye on the formation of a circular route running from Sakhalin to Niigata and then on to the Korean Peninsula, linking the DPRK with Beijing and Siberia. In fact, we see the creation of a joint energy security framework as a form of peaceful preventative diplomacy.

In our increasingly globalized economy, making full use of the assets and resources of each component country within the single entity that is Northeast Asia is, in a sense, a response to intensified competition on a global scale. This response has arisen from a feeling that acting as a cross-border economic unit is more efficient and will bring greater happiness to the people living there.

In recent years, as the plans for developing a pipeline in Eastern Siberia and Sakhalin natural gas have begun to progress, this region has seemed to be making great strides towards development, transcending national borders. The momentum for forming and realizing the Northeast Asia Economic Subregion is increasing steadily. I believe that, in order to achieve regional stability, broader promotion of a cooperative framework that involves the relevant countries is needed.

The Northeast Asia Economic Conference

will begin the day after tomorrow. Following a suggestion at the 1999 conference that the establishment of a multilateral cooperation organization was needed in order to promote regional development, the Northeast Asia Economic Conference Organizing Committee was founded in 2000, counting many influential experts among its members. This committee's first initiative was to establish a Transportation Subcommittee, with the participation of representatives of national and local governments and research institutions in each country. In collaboration with ERINA, the subcommittee conducted research into and surveys of transport routes in Northeast Asia, and formulated the Vision for the Northeast Asia Transportation Corridors.

At this year's Northeast Asia Economic Conference, discussions are due to take place concerning the establishment of a new subcommittee under the auspices of the Organizing Committee, focusing on the theme of the environment. I believe that energy is another important theme that should be taken up by a subcommittee of the Organizing Committee and, in parallel with ERINA's activities, I would like Niigata Prefecture to continue to support such concrete multilateral cooperative initiatives in order to ensure that they continue in the future.

This will be the 14th Northeast Asia Economic Conference since 1990. There are still many outstanding issues in Northeast Asia, a region with diverse political and economic systems, and it is a fact that there has been little progress in multilateral economic cooperation. In order to identify concrete solutions to these problems, we have held numerous discussions about

transport, the environment and trade and investment, but this will be the first time that a session has been devoted to the topic of energy problems, so I hope that all those present this evening will also be proactive in expressing your opinions at the Northeast

Asia Economic Conference.

Finally, in addition to requesting your renewed efforts in translating regional energy cooperation projects into reality, I would like to express my best wishes for your health and prosperity.

GREETINGS FROM THE GOVERNOR OF Khabarovsk Territory

VICTOR ISHAEV

Governor Hirayama, Professor Kanamori and Mr. Yoshida! Ladies and Gentlemen!

In Niigata, we are very pleased to see again our old friends and colleagues with whom we will participate in the Northeast Asia Economic Conference.

To our regret, the SARS epidemic delayed our meeting for more than a year, but fortunately our contacts have been resumed now. We are all very pleased that Niigata Prefecture, the Economic Research Institute for Northeast Asia (ERINA) and the Northeast Asia Economic Forum (NEAEF) have invited us to attend the Economic Conference.

Since we met in Niigata two years ago, a number of important developments have taken place in the world, as well as in the region of Northeast Asia. These events have had a significant impact on the economic situation in the region, creating interest in new topics for discussion and research.

First of all is an issue related to the most important area among the forthcoming debates and exchanges of views: the prospects for cooperation among the economies of Northeast Asia in the field of energy. In this regard, the most important development that has taken place recently is the commencement of the practical implementation of the projects that we discussed in the 1990s.

The Sakhalin oil and gas projects are already underway, including deliveries of oil from the Sakhalin I project, the first contracts for LNG shipments to Japan from the Sakhalin II project, the construction of a natural gas pipeline between Komsomolsk-on-Amur and Khabarovsk, the beginning of

the construction of an oil terminal at De-Kastri Bay, and the construction of a natural gas liquefaction plant in Sakhalin, as well as a number of infrastructure projects related to the development of Sakhalin's oil and gas reserves.

In 2003, the Angarsk-Nakhodka pipeline project received a powerful boost, moving from the realm of theoretical discussions by economists and political scientists to the level of the leaders of the countries of Northeast Asia.

Research aimed at translating the transportation corridors into reality has been developing further, in response to growing cargo flows between Europe and Northeast Asia, events in the Middle East, and certain shifts in the situation on the Korean Peninsula that have provided some grounds for fresh, more optimistic assessments. From the standpoint of Far Eastern Russia at least, we notice increased container shipments; admittedly, it has only been slight, but it is still an increase, which is always better than a decline.

All these positive events and developments create demand for new research projects and I am certain that the research and academic community of the Northeast Asian subregion will be able to collectively respond to this demand effectively.

In conclusion, please allow me to congratulate all of us on the resumption of the Niigata Economic Conference, expressing our gratitude to Governor Hirayama, Niigata Prefecture, Niigata City and Mayor Shinoda, and ERINA for organizing these conferences, as well as for inviting us to attend this Energy Forum.

GREETINGS FROM THE CHAIRMAN OF THE BOARD OF TRUSTEES OF ERINA SUSUMU YOSHIDA

I would like to begin by thanking you all very much for coming to Niigata to participate in the 2004 Niigata Energy Forum.

The East Asian economy is growing significantly, particularly the Chinese economy, the GDP of which rose 9.1% in 2003. Following on from its development mega-project in the country's western regions, the Chinese government has formulated a policy for developing Northeastern China and is devoting its energies to improving the population's standard of living and creating domestic demand.

The world's energy resources were re-evaluated in the light of the terrorist attacks of September 11th 2001, with trends in energy supply undergoing a major shift towards Russia. The success in developing Sakhalin's oil and gas resources has had a major impact on the world. In addition, Russia is currently in negotiations with the US, European nations, China and Japan regarding its oil resources in Siberia and the Far Eastern region, with discussion of a number of crude oil pipeline projects taking place, including Western Siberia–Murmansk, Angarsk–Daqing, and the Pacific pipeline.

Recently, the economy of East Asia has been the focus of discussion at meetings of ASEAN+3 (Japan, China and the ROK). I believe that these discussions should be broadened to include the whole of Northeast Asia, as soon as possible.

Furthermore, the next round of talks in the six-party process relating to the DPRK is now greatly anticipated. Various political problems are due to be discussed, such as military affairs and security, but the question of economic guarantees will inevitably be added to the agenda in the second round and it is expected that economic issues will be discussed during the third round.

Energy is the foundation of any economy. The biggest source of energy supply in Asia is Russia, and it is only with the participation of both Russia and Mongolia that we will be able to give full rein to Northeast Asia's potential. Accordingly, I advocate that the ASEAN+3 framework be expanded to ASEAN+5, encompassing Russia and Mongolia as well.

The key to speeding up this process will be the formation of a Northeast Asian energy community. There is vast potential demand for energy in East Asia; oil and gas could be supplied by Russia, and coal by both Russia and China, and potentially Mongolia. Accordingly, there is a need for a forum within which energy suppliers and consumers could formulate a grand design for Northeast Asia's energy links, covering such issues as developing new gas, oil and coalfields, laying pipelines, securing demand and procuring funding. Consequently, I sincerely hope that this forum will make a significant contribution to creating the theoretical and practical foundations for this.

OPENING PRESENTATIONS

KEYNOTE ADDRESS

NORTH EAST ASIA IN THE WORLD OF ENERGY: AN OUTSIDER'S VIEW

Robert Priddle

Executive Director, International Energy Agency, 1994-2002

I am greatly honoured to have been invited to give this keynote speech to the Niigata Energy Forum and I express my warm thanks to the Economic Research Institute for Northeast Asia and to the Northeast Asia Economic Forum.

As Executive Director of the International Energy Agency (IEA) in Paris from 1994–2002, I devoted the last eight years of my full-time professional life to the promotion of better understanding and co-operation between members of the international energy community. It is therefore a great pleasure to have this opportunity now to address those with a special interest in energy in North East Asia.

Two of the countries from the Region represented here are members of the International Energy Agency: Japan, a member since the foundation of the Agency in 1974; and the ROK, whose accession in 2002 met the aspirations of the government and people of the ROK and realized one of my personal ambitions for the Agency. This means that these countries participate fully in all aspects of the Agency's work, contributing to the arrangements for mutual support in pursuit of security of oil supply, sharing in collaborative technology projects, participating in joint analysis of the key issues facing energy policy-makers today and subjecting themselves to peer review of their national energy policy, conducted by a team drawn from other member countries of the IEA which measures achievement against the common objectives shared by all

member countries of the IEA. These objectives are expressed in the "Shared Goals" to which all IEA member states subscribe.

The IEA is an Agency within the family of the Organisation for Economic Co-operation and Development (OECD). It is a condition of membership of the Agency that a state must first be a member of the OECD, reflecting a certain commonality of economic and political standards. Not least because of the existence of this hurdle, Russia and China are not members of the IEA, despite the great importance of both to the international energy economy and the importance, nationally, of well-based energy policy.

But we have not allowed this hurdle to stand in the way of close association. With both Russia and China, the IEA has special collaborative arrangements, going beyond those with any other country outside the membership, except India. To illustrate this special relationship, the IEA has twice, with the full co-operation of the Russian government, surveyed the Russian energy economy as a whole and published its findings, as a contribution to energy policy-making in Russia. The Agency has worked together with Russia on energy efficiency, the gas market, oil security, the exploitation of Caspian oil resources, renewable energy and many other themes. Our formal relationship with China is slightly more recent – our Memorandum of Understanding was signed in 1996. We have not yet

ventured on a survey of the entire Chinese energy economy, though we did devote a chapter to China in the 2002 edition of our flagship publication, the World Energy Outlook, but we have undertaken major work with the Chinese government, including an analysis of the place of gas in the Chinese energy market, resulting in a ten point prescription of the steps necessary to realize Chinese ambitions for the development of this market. This practical guide to effective policy-making has been welcomed by the Chinese administration.

I have less to report in relation to IEA work on the energy situation in the DPRK or Mongolia. Our membership has not yet given priority to work exclusively dedicated to these countries; but they are, of course, covered in our worldwide presentation of energy statistics and energy prospects.

I have given this sketch of the relationship between the IEA and the countries of this region so that you can understand the perspective from which I approach the issues under debate here. The vision of the IEA is global, not European. Although the headquarters happens to be in France, and a majority of the Agency's members do come from Europe, the two largest come from outside: the US and Japan. So, though the membership shares certain common interests, all being advanced industrialized countries, their geographical distribution is widespread and their regional interests differ.

I will take you into my confidence. Japan – and, to an extent, Australia and the ROK – see the Agency as over-concentrated on European issues and seek to shift the emphasis of the work further towards Asia. (As an illustration of this perception of the IEA in Asia, I was interested that the title initially proposed to me for my talk was “North East Asian Energy – a European Perspective”. I insisted that the IEA viewpoint was global, not

European.) But the European members, in turn, fear that the focus of the Agency's efforts might lie too much outside Europe. They have been heard to express anxieties about over-dominant US influence – this, despite the fact that the Agency has never had a US Executive Director. How about the US? How does it see the Agency? Well, the US was very influential in the creation of the Agency in 1974, as a defensive grouping of the interests of major world oil consumers, faced by the deliberate use by oil producers of supply constraint as a lever in the pursuit of their wider political objectives. I believe the US is well-satisfied by the contribution made by the Agency over the years, including our efforts to shift the relationship with oil producers from one of confrontation (in the 1970s) to one of constructive dialogue – the situation today. On that subject, I noted with satisfaction the reference to co-operation between oil consumers and producers in the press communiqué from the annual meeting of IEA ministers on April 29 last year, which said, *inter alia*,

“We welcome the benefit of reinforced dialogue between producers and consumers of oil, as well as between the IEA and OPEC secretariats, which has contributed to mitigating the effects of potentially serious crises in world markets and the world economy.”

Ministers added that, *“we recognize that only through a more global framework can security be assured.”*

In short, despite the divergent regional and national interests of IEA members, to which I have drawn attention, all of them recognize the contribution to improved global understanding and better national policy-making which is achieved through their association together in the International Energy Agency.

The Global Energy Outlook

With this background – my statement of credentials, if you like – I would like to turn more directly to the theme of this session: North East Asia in the world of energy. I am surrounded by experts in the region's energy economy, representing governments, companies and the academic world. I shall not pretend to match this regional expertise. Rather, I shall draw on the global perspective of the IEA to say how I see the global energy economy evolving; and to identify what I believe to be the key energy policy issues which confront the energy community globally. These issues undoubtedly find their own expression in the particular circumstances of this region. Whether they have a uniquely regional flavour, justifying a regional energy organization, is something for you to decide locally. That issue will be taken up next Tuesday, in the energy session of the Northeast Asia Economic Conference / Twelfth Northeast Asia Economic Forum.

We have passed through a turbulent time recently, with direct repercussions for the energy outlook. The change of regime in Iraq has been achieved at the cost of death and destruction in the short term, though it promises greater future stability in the Iraqi oil supply and, indeed, its ultimate expansion, perhaps to 6 million barrels per day (Mbd) (but only after much new investment). Damage has been done to the harmony of the international community globally, between those with different views on the right path to stability in the Middle East, between those with different religious convictions and, even, between the members of the North Atlantic community. Those divisions will require careful repair. The SARS outbreak had regional economic repercussions, in addition to the human suffering involved. Confidence in corporate safeguards in the international capital

system has been shaken by accounting scandals. Few of these developments hold promise of early recovery in the global economy.

Despite this, energy planners deal in long timescales and must look beyond short-term disruptions. Members of the IEA attach much importance to the work of the IEA secretariat in providing a sound basis for such longer-term thinking, in the World Energy Outlook series. Late in 2002, the latest set of energy projections in this series was produced, looking ahead thirty years. In November 2003, the IEA developed the analysis further, publishing its World Energy Investment Outlook, the first systematic attempt to analyse the global investment requirements of the energy sector in the next thirty years. I will highlight some central features of these findings, then draw out the main policy issues to which, it seems to me, they give rise.

In the short time at my disposal this morning, I am going to limit my ambitions. I will do no more than:

- Depict, in outline, where we appear to be heading, globally, if we remain on the present course;
- Identify some key features of the projected scenario – features which challenge governments to decide whether they need to act to change the course of events and, if so, how.

Remember that my timescale is the next thirty years. This period is long enough for new technologies, now beginning to emerge, to have an appreciable impact on the market. Projections are available for all forms of energy and for all regions; but I will give particular prominence to oil and gas and to the global picture. These are the key findings:

- By 2030 the world will be consuming two-thirds more energy than today.
- Fossil fuels will remain overwhelmingly

dominant in primary energy supply. They will meet over 90% of the increase in demand (a higher proportion than in the thirty years leading up to 2000).

- Oil demand will rise from 75 Mbd to 120 Mbd in 2030. Oil will remain the single most important energy source.
- Demand for natural gas will grow more strongly than demand for any other fossil fuel.
- Though the rate of growth in demand for non-hydro renewable forms of energy will grow faster than the increase in demand for any other type of fuel, the share of non-hydro renewables in total energy demand in 2030 will remain small.
- Few new nuclear reactors will be built outside this region and many will be retired. Global nuclear output will decline after 2010. This expectation is, of course, driven by current political and social attitudes and is, therefore, particularly subject to change.

The Key Messages

What is particularly significant about these trends?

Energy Trade and Vulnerability

First, we shall see a major geographical shift in energy demand and supply. 60% of the increase in primary energy demand will arise in developing countries, especially in the developing countries of Asia. From 30% of total demand now, these developing countries will come to represent 43% in 2030. China is a major component of this shift.

Resources are available to meet these demands. Supply will include more non-conventional oil and oil products from gas-to-liquids technology. Fuel cells will be making a discernable impact in the decade

from 2020, mostly in small, decentralized power plants.

But almost all the increase in primary energy production will come in conventional form; and the sources will lie very largely outside the principal consuming countries. In the thirty years up to the year 2000, for example, OECD countries accounted for 40% of the increase in supply; they will account for a negligible part of the increase in supply between 2000 and 2030. The countries of the Middle East and the former Soviet Union will meet much of the growth in both oil and gas demand. International trade in these commodities will, accordingly, more than double. All oil-importing regions will import more oil, mostly from the Middle East; and some former net exporters of oil, such as Indonesia, will become net importers. There will be similar growth in import dependence in the main gas-importing markets, in North America, Europe and the Pacific Rim. This increase in reliance on international trade will be true of coal markets, too. But in the case of coal, international trade is seen as enhancing supply security, because of the diversity of supplying sources.

By contrast, in the case of oil and gas, increasing concentration of supply sources in a few producing countries will increase consumers' sense of vulnerability to supply interruption. In supplying gas to Europe over the last thirty years, Russia has shown how such anxiety can be overcome and confidence be established. That is a precious achievement for any supplier. Now, if anything, it is gas consumers who are giving rise to anxiety about security of gas demand by changing the competitive conditions in their internal markets, away from monopoly arrangements which appeared to make it safe for suppliers to undertake and finance long-term supply commitments. Consumer governments

need to reassure suppliers that their new, competitive markets continue to offer the necessary assurance of long-term security of demand.

Similarly, oil producers need to safeguard jealously their reputation for reliability in supply, which it has taken thirty years to re-establish after the oil shock of the 1970s. Their collective commitment to their customers has been expressed forcibly in recent years, notably by the immediate commitment to continuity of supply made by the then Secretary-General of OPEC after the outrage on September 11, 2001 and in the notable absence of any response by OPEC members to the call by Saddam Hussein in March 2002 for oil to be used, once again, as a political weapon.

Despite these assurances, oil consumers are highly likely to maintain and enhance their oil stock-holding arrangements against an oil supply crisis. New arrangements to this end are being put in place in China, while India announced earlier this month a commitment to build oil security stocks to cover fifteen days of national consumption. But I suggest that oil importers should always plan to make room first, in any supply crisis, for oil producers to take steps to make good the supply shortfall. After all, the producer has most at stake in terms of the long-term continuity of his business. In the absence of adequate guarantees, consumers will turn actively again to the diversification of energy sources and energy supply types as their preferred form of insurance.

Energy Investment Financing

The second main issue to which I wish to draw attention is the scale of investment required to satisfy the world's demand for energy over the next thirty years. My successor as Executive Director of the International Energy Agency, Claude Mandil,

announced in November last year the results of work carried out by the Agency over the previous twelve months to quantify this figure. As he said, no previous attempt had been made to build a comprehensive picture of energy investment, worldwide, in all parts of the energy supply chain. In collaboration with a wide range of international energy and financial institutions, the Agency has calculated global energy investment needs, by fuel and by region, and has identified the obstacles which might exist to mobilizing capital on the required scale.

Few of us will be able to grasp the magnitude of the figures which emerge. On present trends, to maintain and expand world energy supply will require investment of \$16 trillion in the next thirty years: \$16,000 billion. This figure is much larger, in real terms, than the comparable figure for the period 1970–2000. It would absorb 1% of the world's forecast annual global Gross Domestic Product (GDP) over the period.

I do not suggest that this figure will be precisely validated in thirty years' time. Indeed, policy-makers will have failed if the trends have not been changed. For example, the share of renewable energy in new power generation in the OECD, which is nearly one-third in the IEA's reference case, rises to one-half if OECD countries take more determined action to limit greenhouse gas emissions. But the figures are well-enough established overall to indicate the scale of magnitude of the challenge.

Here are some of the most telling findings of the investment analysis:

- Power generation, transmission and distribution will absorb almost 60% of global energy investment – almost \$10 trillion. If investment in the fuel chain to meet power station primary fuel requirements is added, the proportion of total investment increases to 70%.

- Transmission and distribution will account for more than half of global electricity sector investment.
- Investment of \$4 trillion will be required in the oil and gas sectors simply to maintain production at present levels.
- The coal industry requires a mere \$400 billion – 2% of global energy investment.

Huge though the overall figures may seem, nothing precludes successful financing of the sector globally on this scale, if the conditions are right. But the investment needs fall unevenly across the regions of the world. The financial needs of the developing countries and the countries in transition will be larger than those of the OECD countries, both in absolute terms and relative to the size of their economies. Russia's energy investment needs will amount to 5% of GDP and Africa's to 4%, compared to only half a percent in the OECD. And in general, investment risks are perceived to be greater outside the OECD, particularly for domestic electricity and downstream natural gas projects. In a globalised economy, where capital is free to flow to the areas perceived to offer the best returns, and in a sector increasingly dependent on private sector financing, conditions will need to change to enable the energy sector in less-favoured regions to compete successfully for capital. Financing the required \$5 trillion investment in the electricity sector in developing countries will be a daunting task, particularly in Africa and India. Far-reaching reforms are needed, the most important of which is to make tariff structures more cost-reflective.

What this illustrates is that, despite the trend away from direct government involvement in the energy sector through ownership, governments continue to carry the responsibility to create the necessary

preconditions for successful energy investment. They must give greater attention to policy, legal and regulatory frameworks for the energy sector, identifying changing risks and finding ways to lower barriers to investment. Moreover energy policy-makers need to make their voices heard in debate on broader issues which will bear directly on the success or failure of the energy sector, such as the basic instruments of good governance across the national economy.

Environmental Responsibilities

The third main challenge facing us all is environmental. Energy-related emissions of carbon dioxide are set to grow even faster than the growth in energy consumption, despite the commitments already made in some parts of the world. Emissions are predicted to reach 38 billion tonnes in 2030 – 16 billion tonnes more than in 2000. Two thirds of the increase will occur in developing countries, inevitably accompanied by other forms of more local pollution. China, alone, will account for a quarter of the increase—though Chinese emissions will still be well below those of the US in 2030. OECD countries with Kyoto commitments will need to rely extensively on purchases of emissions credits from elsewhere in order to fulfil these commitments. Even if they were to adopt the further measures assumed in an Alternative OECD Scenario developed by the IEA (particularly greater use of renewable energy in electricity generation), the 3 OECD regions would still not individually reach the Kyoto targets without purchasing emissions credits. Russia's reluctance to sign the Kyoto Protocol is going to limit the supply of emissions credits, even in the absence of the United States as a purchaser.

Concluding Remarks

Let me summarise. Looking at global energy prospects, I have drawn out three themes which need to preoccupy energy policy-makers everywhere. These are energy security, energy investment and the environmental impact of energy production and use. There are other themes I could have identified – like greater economic efficiency through the development of competitive markets. But our time is limited and the sound design of energy markets is, in any case, a necessary feature of sound policy-making in each of the three areas I have examined.

How should these themes find expression in the particular circumstances of North East Asia?

Well, of course, the energy circumstances of the countries participating in this Niigata Energy Forum diverge significantly. Amongst those who are already major players in world energy markets, Russia is a very significant supplier of energy and promises to become even more so. Japan and the ROK are heavily dependent on external energy supplies. China's position falls somewhere between the two. It is not appropriate for me, therefore, to attempt to say which of the trends I have identified is most significant for the region as a whole.

What I would say, however, is that all the countries represented here share an interest in all of the issues which I have identified. This is to say no more than that there is no great divide between the interests of supplier and customer. As in every market, there must be a reasonable accommodation between the interests of supplier and customer, built on mutual understanding and respect, if there is to be a long-term market relationship. There is evidence that that is well understood in the pragmatic nature of the developing energy relationships in the region. Moreover, I take satisfaction

from the positive developments in the highly sensitive area of the relationship globally between oil suppliers and oil consumers. Though there is much yet to be accomplished, one concrete manifestation of this is the creation of the International Energy Forum, based in Saudi Arabia, which brings suppliers and consumers together on a permanent basis. Its first Secretary-General is, appropriately enough, an ex-chairman of the Governing Board of the International Energy Agency and a national of one of the world's most significant oil-exporting countries. The symbolism of that appeals to me. There are, of course differences of approach and of emphasis between the two camps. But so long as we work together to understand these differences and seek ways to bridge them, I shall be an optimist about the secure availability of energy to fuel the world's economic development.

Let me conclude with a particular illustration of this. The IEA is predicting a substantial increase in China's call on world oil markets over the next thirty years, reaching a level of import dependence of 82% in 2030. I know that many in China would not agree with the extent of that figure, but the trend is not, I think, in dispute. Although my work in the IEA was essentially devoted to the interests of the oil consumer in the developed world, I do not share the anxiety which some have expressed about this prospect of competition from China for an additional 10 Mbd of oil. The world has the necessary oil reserves. What we need to achieve to bring satisfaction to producer and consumer alike is a stable and well-functioning international oil market, offering security of demand to producers and security of supply to consumers. Additional net demand from China has a positive role to play in achieving that balance. And constant dialogue between the parties is the way to build confidence. This

is one reason why I take such pleasure in being able to participate with you in this

significant example of regional dialogue in Northeast Asia.

ENERGY MEGA-PROJECTS FOR THE 21ST CENTURY: A RUSSIAN PERSPECTIVE

Alexei M. Mastepanov

Deputy Director, Department of Prospective Development, Science and Environment, Gazprom

Introduction

There are two mega-trends that characterize the inter-linkage between the global economy and the energy sector. The first trend is growing global energy demand. The second is the globalization of energy markets and the internationalization of energy resources.

A deeper look at these two mega-trends allows speculation that fundamental developments in the world of energy are perhaps around the corner and a New World Energy Order is in the offing. What changes will this New Energy Order bring about? Should we prepare for more cooperation in energy resource development and trade, or had we better prepare ourselves for more conflict?

Hopefully, economic globalization promises greater economic cooperation and partnerships, particularly in large-scale energy projects in various corners of the world. Promoting partnerships and cooperation in the energy sector appears to be a common goal that should be shared by the energy companies and governments concerned. Their coordinated policies, business initiatives and state support, as well as consistent international efforts could help to contain conflict, promoting cooperation in mega-projects in the 21st century.

Energy and Economic Development

All over the world, the demand for energy is rising and will continue to grow in the decades to come. Access to energy and a

stable energy supply are the most crucial factors in economic development. Over the last decade alone, energy consumption increased by 11%, while in the last 30 years of the 20th century global energy consumption grew by 84% from 5 million tons of oil equivalent (Mtoe) in 1971 to 9.2 Mtoe in 2000.

The International Energy Agency (IEA) estimates that by 2030, global energy consumption will increase by another 60%, if not more. Oil will continue to be the leading source of energy in absolute terms, while natural gas will lead in terms of growth rates for consumption (2.4% annually).

By 2030, oil and natural gas consumption will further expand by 2,200 Mtoe compared with an incremental demand growth for oil of 1,100 Mtoe and gas of 1,200 Mtoe between 1971 and 2000. This means that inter-regional flows of oil and gas, as well as other forms of energy, will continue to expand dramatically, influencing economic and trade policies and international relations in general. The role of the oil and gas industries in this process will be particularly significant.

The role of the new “heavyweights” in international oil and gas trade, such as China and India, will increase further. By 2030, their combined imports of oil and oil products are expected to reach 475 Mt and 255 Mt, respectively.

China is forecast to become the world’s second-largest economy as far as energy consumption is concerned. China’s dependence on imported oil will climb to 83%, compared with 94% for India and

85% for the European Union.

The US, Russia and Europe will continue to lead in terms of natural gas consumption, but China's and India's demand for natural gas will expand extremely rapidly (by 5.5% and 4.7% percent annually, respectively).

By 2030, Japan and the ROK are likely to expand their reliance on natural gas, giving the Northeast Asian subregion a combined natural gas import requirement estimated at 170 billion cubic meters (Bcm).

This expansion in energy consumption and growing inter-regional flows of energy will undoubtedly influence market integration, intra-regional linkages in oil, gas and power supply, and inter-regional flows in oil, oil products and LNG, as well as further globalization of the oil markets.

The global energy architecture will continue to change and the emerging New Energy Order, which has certain "rules of the game", is even now forcing countries, their governments and energy companies to maneuver in order to secure and enhance their respective positions in the long run.

Russia's Energy Strategy 2020

As of today, several leading energy-producing economies and exporters of energy, as well as a number of large energy-consuming countries and energy importers define the prospects for this emerging New Energy Order. As the world's largest oil and natural gas producer and exporter, Russia belongs to this group of countries. In 2003, Russia produced 421 Mt and exported 175 Mt of crude oil, while natural gas exports to Europe alone reached 140 Bcm, including 89 Bcm transported to Western Europe.

The prospects for energy sector development are defined by Russia's Energy Strategy 2020. The plan is to increase primary energy production by 1,810–2,030 million tons of coal by 2020, with domestic

energy consumption reaching 1,145–1,270 million tons of coal equivalent, leaving therefore quite a significant margin for energy exports.

The economies of the Commonwealth of Independent States and European Union will remain the principal destinations for energy exports. However, Russia's Energy Strategy 2020 envisages developing access to energy markets in other regions of the world, Northeast Asia in particular.

The backbone of the Russian energy sector, which justifies its world exporter status, is the oil and gas industry. These are industries that require a massive infusion of investment in new, export-oriented oil and gas projects to be implemented towards 2020. The list of these vast undertakings includes the following areas and projects:

- In oil and natural gas exploration and development, the main developments will be taking place in Timano-Pechorskaya province, the northern segment of the Caspian Sea region, Eastern Siberia and the Far Eastern region.
- In oil transportation, the second phase of the Baltiyskaya Pipeline System will be commissioned, with a new pipeline being constructed that would run to the Kola Peninsula in the northern part of Western Russia.
- Oil transit from the Caspian Sea region can be expanded, provided that new capacity is added to the Atyrau-Samara pipeline.
- The Angarsk-Nakhodka pipeline with a branch to Daqing could become the largest project in Eastern Russia, followed by integrated gas pipeline infrastructure (including the Sakhalin projects) for this exceptionally large and important part of Russia.
- As far as natural gas is concerned, the plan is to diversify both export destinations and technologies and to introduce new

reserves of natural gas from the Yamal Peninsula, Eastern Siberia and the Far Eastern region.

- New offshore projects will be also undertaken in the Arctic and Far Eastern seas.

Oil and Gas Projects in Eastern Russia

Several mega-projects are in the pipeline in Eastern Russia; some are still at the planning stage while others were launched several years ago. These projects, with which this audience is familiar, are important not only for Russia, but also for Northeast Asia as a whole.

The question is: “Why has there been little or no progress as far as these proposals are concerned?” In my view, the problem is that very often the scale of these proposed projects is too large in terms of capital costs and delivery volumes. These mega-projects sometimes involve more than two countries. In some cases, there is a conflict of interests between the proposed energy importers. In addition, there are various concerns and limitations on the Russian side in terms of its export capacity and reserves.

Let me briefly review some of these problems, including (1) reserves, (2) market access and import policies, and (3) relationships of mutual dependence in the context of national interests:

1. As far as reserves of oil and gas are concerned, a project is normally designed and proposed to investors on the basis of estimated oil and gas resources, rather than proven reserves. This practice means that significant lead times and investment are required in order to conduct additional geological exploration of new fields and areas. Obviously, the investment risks during this phase of the project are high. In order to mitigate these risks, potential

investors expect the government of the host country to step in, while the recipient country is normally reluctant to do that. This kind of situation between the two sides can continue for many years.

2. As far as export markets are concerned, in the gas sector in particular, cross-border gas pipeline projects can move rapidly if the gas market of the gas-importing country is developed and nationwide distribution infrastructure is already in place. In Northeast Asia, with the exception of the ROK, nationwide delivery systems have yet to be built. It is also possible that both Japan and the ROK will continue to rely on imports of LNG, rather than pipeline gas. On the other hand, neighboring provinces in China are likely to rely primarily on domestic coal as their main source of energy. This is perhaps why Chinese negotiators propose unrealistically low prices for Russian gas.
3. This leads me to another problem related to the interplay of national interests and mutual benefits that can be derived from cross-border energy cooperation. Indeed, mega-projects, including high-capacity cross-border delivery infrastructure, can become feasible only if these projects respond to the national interests and regional development needs of the countries involved. Over the last decade or so, when Russia was in crisis and its government was struggling to regain control over issues of strategic significance, private interests and their counterparts overseas were free to discuss and contemplate all sorts of projects. Today, some of these proposals cannot be seen as realistic. Moreover, according to the Constitution of the Russian Federation, subsoil resources

are considered to be part of the national heritage and the government, as the regulator of access to this wealth, is responsible for managing its utilization in line with long-term national interests.

Gazprom and Eastern Russia

In general, the huge oil and gas resources of Eastern Russia can only be successfully developed and monetized if this is done in a comprehensive manner, with the following requirements being met:

- Delivery infrastructure for natural gas in Eastern Russia should be designed in such a way that it ensures the economic development and social advancement of eastern regions, energy security and supply stability.
- It should also ensure the development of new reserves of natural gas in order to achieve a balance in terms of production, consumption and exports.
- Gas delivery infrastructure in Eastern Russia should be part of the nationwide gas delivery system.

In pursuit of these goals, the government has instructed the Energy Ministry to finalize the program for the gasification of Eastern Russia. Gazprom is involved in this process. The draft of the program includes new approaches to oil and gas resource development, including the following components:

1. The option of integrating the route and coordinating the construction of oil and gas pipelines, using one infrastructure “corridor” for these purposes.
2. Assessments concerning safety and environmental standards.
3. An economic analysis of the project, including gas prices, domestic demand scenarios, export options and market sizes.

The hydrocarbon resources of Eastern Russia are significant in scale and known reserves are concentrated in such regions as Kovykta in Irkutskaya Oblast, Chayanda in Yakutia, Sobinsko-Paiginskoe and Urubcheno-Takhomskoe oil-gas-condensate fields in Krasnoyarskiy Krai, as well as oil and gas fields offshore from Sakhalin.

The program should define scenarios for the optimal usage of these fields for regional needs and exports, avoiding unnecessary competition between projects in terms of markets and investment requirements.

These considerations were behind the proposal to build a central trunk gas pipeline in Eastern Russia linked with the existing gas transportation network in western regions. The proposed system would ensure the stability of supplies. Beginning with the northern areas of Irkutskaya Oblast, this pipeline could be integrated with the Angarsk-Nakhodka oil pipeline in terms of routes and the coordination of construction activities.

By 2020, Gazprom could diversify its activities into new fields, including LNG and gas-to-liquid (GTL). We are aware of the progress that has been made in research and development concerning the commercialization of GTL, including achievements on the part of Japanese experts. In Russia, similar research and development endeavors are underway, opening up opportunities for international collaboration.

In conclusion, we have to think about potential routes and directions of gas transportation in Eastern Russia and neighboring countries. It is possible that such a system could be formed somewhere around the middle of this century, responding to the interests of all the economies of Northeast Asia.

THEMATIC PAPERS

ENERGY SECURITY FOR A NEW NORTHEAST ASIA: AN UPDATE

Vladimir I. Ivanov

Director, Research Division, ERINA

In 2003 and the first half of 2004, the energy policies of the economies of Northeast Asia demonstrated some positive developments that indicate growing interest in the concept of energy cooperation. Although the emerging picture is still fragmented, one can detect important shifts in the focus of policymakers.

The first of these is growing concern with regard to the Middle East, in particular instability in Iraq and the internal security problems that have surfaced in Saudi Arabia. Secondly, China's booming economy and growing demand for oil and oil imports are generally perceived to be among the reasons for high oil prices. Thirdly, there is growing interest in oil and gas projects in Eastern Russia, both ongoing and planned. The economies of the Northeast Asian subregion (governments and companies) are paying close attention to existing and potential energy projects involving Russia. Thus far, this process of reassessment and economic evaluation is resulting in new policy concepts and business proposals. Finally, almost every economy in Northeast Asia is adopting a policy stance that favors multilateral energy cooperation.

Putin's Russia

Russia's economic recovery and domestic policies are improving its image, as well as the overall environment for discussing energy projects that involve the supply of oil and natural gas from Eastern Siberia and the Far Eastern region. It seems that traditional

concerns with regard to Moscow are giving way to longer-term positive expectations and practical interest. To a significant degree, this change in perceptions is a result of the policies adopted by President Vladimir Putin.

Earlier this year, two-thirds of the Russian electorate participated in the presidential elections, with 70.5% voting for Putin. His previous four years as President of Russia provide hope for the future. In 2000–2003, Russia repaid \$50 billion of its outstanding foreign debt, while also maintaining a solid surplus in foreign trade. The Russian Central Bank accumulated more than \$80 billion in hard currency and gold reserves. Inflation has been reduced to about 10%, while personal consumption has increased. Furthermore, its annual rates of economic growth were the highest among all of the G8 economies.

Putin's Second Term

The new wave of Putin's reforms is already in full swing. The first priority is improving the efficiency of the government, central ministries and other administrative bodies, including the presidential administration. For example, the number of central ministries has been reduced from 30 to 17. The new ministries will employ 20% fewer personnel. Many economic ministries have been merged and ministerial posts are now roughly equivalent to the rank of deputy prime minister in the previous government. President Putin's long-term

goals are ambitious, including (1) the doubling of GDP over 10 years; (2) poverty reduction; (3) the modernization of the armed forces; and (4) national consolidation.

The new, more efficient government must work hard to achieve these goals. On the other hand, Putin also believes in private initiative as the main source of national economic growth and modernization. The new government should provide greater security for its citizens, protect their interests and property rights, and facilitate and support entrepreneurship. The promotion of small and medium-sized enterprises is becoming the most important instrument of economic development.

In general, Putin's economic philosophy is underlined by four key principles. First of all, Russia's economic wellbeing should be based primarily upon domestic demand and expansion and the sophistication of its national market. Secondly, in order to rely more on the domestic market Russian industries must be modernized, in order to make them much more competitive than they are at present. Thirdly, the government must introduce new mechanisms that improve the utilization of Russia's natural resources, including greater controls in the fishery and forestry sectors, rational policies and transparency in oil and gas production and exports, and improved energy efficiency. Finally, new priorities include a simplified and more liberal tax system, improved convertibility of the national currency, a more efficient and better-developed banking sector, the construction of more affordable housing and improvements in the pension system.

Energy Projects and Infrastructure

On the other hand, the new government is ready to introduce more a stringent approach to oil companies that have earned

exceptionally high revenues, benefiting from record high world oil prices. For example, in 2002, in world prices, the value of oil and gas produced in Russia totaled \$116 billion, but the government failed to collect the "extra" revenues generated by high oil prices. From 2005, the new tax regime for producers and export duties for oil and products will allow the federal budget to collect an additional \$3 billion or more each year provided that oil prices remain high. This amount could be sufficient to finance the construction of an oil pipeline from Taishet to the Pacific coast with an estimated cost of almost \$15 billion.

In his 2004 Address to the Federal Assembly, Putin made special reference to energy projects and transport infrastructure in Eastern Russia. He said that, given Russia's climatic conditions and huge territory, infrastructure expenses make up a significant portion of the cost of many kinds of goods and services. At the same time, a modern, well-developed transport infrastructure would be capable of turning Russia's geography into a real competitive advantage for the country:

"What needs to be done to achieve this?

Above all, we need to unite the economic centers of the country, to provide economic regions with unhindered access to regional and international markets, and at the same time to provide infrastructure services of a world standard.... The state must control the development of the country's infrastructure for a long time to come.... The Government must announce its plans and projects, and the conditions to implement them.... For example, there are plans in the oil sector to diversify delivery of Russian oil. These plans are well known. They involve expanding the capacity of the Baltic pipeline system, opening the Western Siberia-Barents Sea pipelines, determining routes from oil

fields in Eastern Siberia, bypassing the Bosphorus and Dardanelle Straits, and integrating the Druzhba and Adriya oil pipelines.... The guidelines for passing the necessary decisions should be the realization of national tasks, and not the interests of individual companies.... As for the gas transport system, here we need first of all to develop the gas distribution network within the country, including expansion of the system to the east of Russia.³

These plans are directly related to the energy security interests of the economies of Northeast Asia. Japan, China and the ROK – not to mention the United States – are likely to become the principal export markets for oil, oil products, natural gas, coal, and, in some cases, electricity. It is also expected that, similarly to the Sakhalin projects, investment will flow from these economies into new ventures in Eastern Russia.

However, the scale of ongoing and proposed energy projects, the enormous costs involved and the sensitive energy security concerns of the energy-importing economies would require new partnerships with Russia to be built. It seems that Vladimir Putin's first term as president has made both the leaders of these economies and the general public more convinced that Russia is capable of being a reliable partner in the long-term.

Oil Supply Stability and Diversity

According to estimates by ExxonMobil, by 2020, overall global energy use is projected to grow by 40% compared with 2000. Energy demand will rise from 215 million

barrels of oil equivalent per day (Mboe/d) to almost 300 Mboe/d, while demand for fossil fuels will exhibit an absolute increase of about 65 Mboe/d. Moreover, by that time, the petroleum industry may need to add about 100 Mboe/d of new supply to meet projected demand: an amount close to 80% of current production levels.⁴

These and similar projections are very important in comprehending the scale of the problem and the need to ensure a stable, affordable oil supply in the decades to come. What is even more important is the long-term outlook of the leading oil companies, as well as that of the governments of the oil-importing countries with regard to the geography of investment in the oil and gas sector in the next ten to fifteen years.

The Middle East

Currently, about 50% of the world's proven oil and gas reserves are concentrated in the Middle East, with Saudi Arabia alone having about one-fifth of all oil reserves. It produces about 10 Mbd or close to 500 million tons a year (Mt). Its production constitutes one-third of total OPEC output, which has declined from 38.8 Mbd in 1979 to 30.5 Mbd in 2003, primarily because of the decline in production in Iran and Iraq, as well as in Libya and Indonesia.

The uncertainty surrounding the former three of these exporters has already become a source of oil supply insecurity that is one of the reasons behind the high oil prices being seen at present. Instability in the Middle East and Persian Gulf, and Saudi Arabia in particular, will certainly continue to influence oil prices, which are unlikely to fall

³ Vladimir Putin, Address to the Federal Assembly of the Russian Federation, May 26, 2004

⁴ See remarks by Lee R. Raymonds, Chairman and CEO, ExxonMobil Corporation, Woodrow Wilson Center for Scholars, Washington, D.C., June 7, 2004 and remarks by Rex W. Tillerson, President, ExxonMobil Corporation, Address to the U.S.-Saudi Business Council and Center for International and Strategic Studies, Washington, D.C., April 27, 2004.

much below the \$25 per barrel (p/bbl) level, according to forecasts made by some leading oil producers, as well as independent analysts.

In fact, the future of the Iraqi oil industry depends on the safety of its sea-based oil terminals, which currently have to be protected by the coalition forces. The sophistication and scale of the operation raises the question of when, or whether, the Iraqis can safely take over this job from the US and its allies.

In 2002–2004, energy facilities not only in Iraq, but also Saudi Arabia, were threatened by or actually subjected to terrorist attacks. Strikes on pipelines in mainland Iraq alone have already cost the nation \$200 million in lost revenue. Exports have been almost halved because of damage to the pipeline, which feeds the Basra and Khor al Amaya terminals.

It is widely feared that, because of various political, economic and technical impediments, neither Saudi nor Iraqi production capacity is likely to cover long-term demand growth. According to Amy Jaffe, Associate Director of the Rice University energy program, current demographic trends will encourage Saudi Arabia to seek higher oil prices for domestic political reasons to put restraints on falling per capita income and fund basic social services, including education and social welfare. Saudi Arabia's oil sector employs less than 2% of the total labor force.⁵ The population is rapidly getting younger and unemployment and domestic political pressures are unlikely to ease, contributing to growing nationalism, on one hand, as well as pervasive pessimism about the Kingdom's economic future, on the

other. Moreover, democratization and political reform may make capacity expansion more difficult to implement.⁶

Nevertheless, the oil-importing economies are bound to continue their high dependence on these supply sources. In order at least to retain their current levels of oil dependence on the Middle East, these economies must proactively support the development of alternative sources of supply. Therefore, broadening the geography of supply requires adjustments in the geography of investment.

Russia and the Caspian region appear to be prime candidates for these efforts to broaden the geography of supply. In this context, interest in energy projects involving Russia and the economies of Northeast Asia is growing both at the governmental level and among energy companies.

Russia and the Caspian Region

According to Transneft, oil output in Azerbaijan could reach 28 Mt by 2010, or a little more than 0.5 Mbd. In Kazakhstan and Turkmenistan, oil output in 2010 is estimated at 88 Mt and 18 Mt respectively. However, oil production in Russia is very likely to reach 500 Mt (10 Mbd) by 2006–2007. In 2004, its crude exports (including to the Commonwealth of Independent States (CIS)) are conservatively estimated at 4.5 Mbd and are poised to increase to 5.0 Mbd in 2005, and 5.5 Mbd in 2007 (Table 1).

In June 2004, oil production in Russia increased by 10%, while exports by pipeline, sea and rail increased by 17% compared with the same period of 2003, reaching almost 3.5 Mbd. Oil exports to CIS markets

5 ExxonMobil – the largest purchaser of Saudi crude oil exports – accounts for nearly 10% of the Kingdom's total exports, employing more than 3,000 Saudis.

6 Amy Jaffe, "International Oil Markets Outlook", presentation at the *Seminar on the Latest Energy Situation in Russia and International Energy Markets*, Petroleum Energy Center, Capitol Tokyo Hotel, June 17, 2004.

stabilized at about 0.8 Mbd.

Investment in infrastructure is the key to the enhanced role of Russia in global energy supply. In the next 2–6 years, the government is planning an expansion of export-oriented transportation infrastructure along the seven main routes up to 6 Mbd:

- Baltic: 1.2 Mbd through the expanded Baltic Pipeline System by 2005
- Barents Sea: New pipeline of about 1.0 Mbd by 2010.
- Central Europe: Integrated Druzhba-Adria pipeline, up to 0.3 Mbd
- Black Sea-Mediterranean: Novorossiysk and Tuapse ports to 1.2 Mbd
- Caspian-Black Sea-Mediterranean: Atyrau-Samara pipeline to 0.5 Mbd
- Eastern Siberia: Taishet-Pacific pipeline, up to 1.6 Mbd by 2011
- Far Eastern Russia: Sakhalin projects, up to 0.2 Mbd by 2008.

Meanwhile, according to the new Federal Agency for Sea and River Transportation, Russia could also increase oil and product exports through its Black Sea terminals by 1 Mbd, mainly by transporting crude pumped through the CPC pipeline from Kazakhstan. In the west, through its own ports on the Baltic, as well as ports in

Estonia, Latvia and Lithuania, Russia could raise crude and crude product exports from 2.6 Mbd to around 3 Mbd, while another 1 Mbd could be shipped to Europe as transit oil from Central Asia.

Currently, Russia matches Saudi Arabia in oil output, while lagging behind in terms of exports.⁷ Western specialists have recently suggested that in the long term, confirmed oil reserves in Russia could exceed those discovered in Saudi Arabia (300 billion barrels), reaching 180 billion barrels as soon as 2010.

Present estimates of Russian oil reserves based on international standards are rather conservative and remain at about 60 billion barrels. Oil companies, however, have begun to reassess their reserves. Yukos has announced an increase in reserves from 11.2 billion barrels to 13.0 billion barrels, while TNK-BP has increased estimates of its reserves from 6.1 billion barrels to 9.0 billion barrels, claiming that additional investments in exploration could allow its oil reserves to be raised to 30 billion barrels.

New Policy Priorities

As far as investment is concerned, the International Energy Agency (IEA) has

Table 1. Non-CIS Oil Exports by Transneft, First Half of 2004 (Mbd)

	2003 June	2004 June	June 04/ June 03	2003 (six months)	2004 (six months)	1H 2004/ 1H 2003
LUKoil	0.52	0.69	32%	0.51	0.67	31%
Surgutneftegaz	0.38	0.36	-4%	0.35	0.40	13%
YUKOS	0.65	0.73	12%	0.56	0.73	29%
SIDANCO	0.11	0.17	54%	0.11	0.17	53%
Slavneft	0.14	0.16	18%	0.11	0.16	39%
TNK	0.27	0.49	80%	0.34	0.43	27%
Sibneft	0.24	0.28	18%	0.23	0.26	12%
Tatneft	0.18	0.27	49%	0.18	0.23	26%
Transneft total	3.10	3.63	17%	2.87	3.49	21%

Source: Ministry of Industry and Energy

⁷ Russia's 2004 budget was drawn up under a base case scenario of \$22 p/bbl.

estimated that an average of \$200 billion must be invested annually in order to meet the world's oil and gas demand in 2030. This is approximately equal to the investment requirements for the exploration and development of new oil and gas fields, as well as the construction of delivery infrastructure in Eastern Siberia and the Far Eastern region.

Such huge sums can be successfully amassed if governments create and maintain favorable conditions for investors. Long-term investment cooperation could also be useful, leading to increased interdependence between energy-importing countries and Russia. This, in turn, would require governments to adjust and sharpen up their diplomatic policies, favoring international cooperation in the energy sector. In recent years, in fact, Northeast Asia has seen signs of such policy changes.

Japan

On April 12, 2004, METI presented a concept for an "Asian Energy Partnership" that should serve as a major pillar of Japan's international energy strategy up to the year 2030. This concept was proposed by the Ministerial Advisory Committee for Natural Resources and Energy. This Asian Energy Partnership is aimed at developing cooperation by Asian countries on common energy challenges, covering the following areas:

- Energy security through a strengthened oil stockpile program in Asia, while also seeking a future cooperative emergency response scheme to supplement measures taken by the IEA
- Market reforms – particularly for oil and natural gas – through nurturing spot and futures markets for oil and LNG; trade and investment liberalization through free trade agreements and the abolition of destination clauses in oil and LNG

contracts

- Formulation and regulation of policies on the environment and energy efficiency in the domestic, regional and global context, including various policy dialogues, as well as efforts to implement these policies and persuade others to follow suit
- The enhancement of energy supply security through resource development, transportation (pipeline and sea lane shipments) and cooperation among relevant authorities.

The plan was expected to be adopted as an official policy recommendation in June 2004. METI also proposed this concept at the ASEAN+3 Energy Ministers Meeting, as well as at the APEC Energy Ministers Meeting in Manila.

Meanwhile, the dialogue on energy issues between the leaders of Japan and Russia merits close attention. The encouraging position of the Japanese government with regard to the Trans-Eastern Russia oil pipeline is well known. Moreover, Japanese gas users have already contracted large volumes of LNG from Sakhalin II, utilizing most of the production capacity of the first phase of the gas liquefaction plant to be commissioned in 2007.

Furthermore, both the Russian government and the administration of Sakhalinskaya Oblast are expecting that the progress of the Sakhalin projects will lead to a decision to build a long-distance pipeline to Tokyo area. For Japan, Sakhalin may be a significant development in terms of providing more alternatives for a secure energy supply. The Japanese government has said that public funds can be used for a pipeline project, providing that both the economic efficiency of the project and private sector participation are confirmed.⁹

The ROK

The ROK government has also made a proposal regarding the future of Northeast Asia.⁹ In 2003, the Presidential Committee on a Northeast Asian Business Hub conducted 26 working meetings, conferences and workshops, developing as result of this effort a comprehensive plan for regional economic cooperation in a number of areas, including the energy sector. The Committee stated that the “super consumers” of Northeast Asia (the ROK, China and Japan) lie adjacent to a “potential super supplier” (Russia), giving rise to a framework for energy cooperation within the subregion. The Committee proposed the following steps in order to promote energy cooperation:

- The construction of a natural gas pipeline network
- Joint exploration and processing of petroleum
- Cooperation in supplying energy to the DPRK on a long-term basis
- The development of cleaner energy sources, such as Siberian hydroelectric power.

The Committee also proposed that, in pursuing energy cooperation, broader considerations other than immediate economic needs should be taken into account, including long-term energy security, environmental constraints and the impact of energy cooperation on overall relations among the countries of Northeast Asia. The government is supportive of new initiatives by ROK energy companies, which are seeking contact with those involved in

the Sakhalin projects in order to discuss the prospects for imports and investment.

China

On April 24, 2004, speaking at the Opening Ceremony of the Boao Forum for Asia 2004 Annual Conference, Chinese President Hu Jintao outlined China’s views regarding international economic cooperation:

It is China’s sincere wish to cultivate with its fellow Asian countries an overall and close partnership geared to Asian rejuvenation, a partnership that features equality and mutual trust politically, mutual benefit and a win-win [approach] economically, exchange and emulation culturally, and dialogue and cooperation on the security front.... China will work actively to promote the institutional building of all kinds of economic cooperation organizations with a view to consolidating resources, prioritizing the key areas and conducting performance-oriented cooperation.¹⁰

On June 22, 2004, addressing the opening ceremony of the Asia Cooperation Dialogue (ACD) Third Foreign Ministers’ Meeting¹¹ in Qingdao, Chinese Premier Wen Jiabao stated that, “We stand ready to conduct energy dialogue and to cooperate with other countries in Asia and the world at large on the basis of equality and mutual benefits.” Twenty-two participating countries – both oil producers and consumers – agreed the “Qingdao Initiative” on energy cooperation, pledging to stockpile

8 See the Agency for Natural Resources and Energy, *Energy and Resources Today*, 4. *Natural Gas*, available at: <http://www.enecho.meti.go.jp/english/energy/lng/examination.html>

9 See: *Toward a Peaceful and Prosperous Northeast Asia*, (Seoul: Presidential Committee on a Northeast Asian Business Hub, 2003), p. 24.

10 Speech by President Hu Jintao of China at the Opening Ceremony of the Boao Forum for Asia 2004 Annual Conference, Boao, 24 April 2004.

11 The ACD Foreign Ministers’ Meeting is an informal, non-institutionalized forum for dialogue and consultation, established in 2002.

strategic energy reserves and develop a regional energy transportation network. Nevertheless, the Chinese premier asserted that China would mainly rely on the development of domestic energy resources.

China's imports are growing at an average rate of over 15% annually, which has made it the third largest importer globally and the largest importer in Asia. In 2000–2004, China accounted for 40% of total growth in world oil demand. In 2003, its oil consumption exceeded that of Japan and its oil imports increased by 40%. China also leads in product demand and imports in Asia-Pacific region. Some are of the view that strong demand on the part of China is among the reasons behind high oil prices.

The rapidly growing number of motor vehicles, including privately owned ones, as well as the overall prospect of motorization in China will make this economy the second-largest importer of oil after the United States. Moreover, in recent years, China's electricity demand has been rising by 9–10% a year and electricity shortages have forced many smaller users to turn to power generators and portable power systems, thus creating additional demand for diesel and gasoline.

In 2003, the oil pipeline project from Angarsk to Daqing promoted by Yukos and CNPC experienced a temporary setback, being subsumed into part of a larger Taishet-Pacific pipeline plan adopted by the Russian government in 2003 as part of the Energy Strategy 2020. However, China is interested in importing oil from Eastern Russia by rail and will be getting as much as 15 Mt annually from 2006.

In China, three medium-to-long term development plans are under construction at present: a petroleum and natural gas plan, an LNG plan, and a natural gas pipeline plan. It seems that LNG import contracts concluded with Australia have made it clear

that China's reliance on imported gas could grow rapidly. A delegation (from the National Development and Reform Commission (NDRC)) recently visited Sakhalin, reflecting China's growing interest in LNG imports and its intention to expand utilization of natural gas from Russian sources.

The NDRC has estimated that, by 2020, gas consumption in China could reach 200 Bcm, 31% and 32.5% of which would be consumed by power plants and urban users respectively. It has also been estimated that China's gas imports could reach 80 Bcm by 2020 via two main channels, including LNG shipments to coastal areas and supplies via pipelines from Russia, Uzbekistan and Kazakhstan.

Russia

The position of the Russian government on energy projects relevant to Northeast Asia is also becoming increasingly proactive. After the government adopted the Energy Strategy 2020, Russia's position on oil and gas pipeline projects in Eastern Siberia and the Far Eastern region gradually took shape. In the process, the following priorities were emphasized:

Transport infrastructure for hydrocarbons is to be built primarily within Russian national territory, thus ensuring (a) national energy security, (b) the industrial and social development of the regions where infrastructure is to be built, and (c) access to diverse markets in the whole of the Asia Pacific area.

It is quite likely that oil and gas ("west-to-east") pipelines, linking oil and gas fields with the Pacific Coast, will be integrated into one mega-project. This approach makes "north-to-south" pipeline projects, including the Kovykta-China-Korea gas pipeline, unlikely in the foreseeable future. However, Sakhalin gas could flow "north-to-south" to Japan, China, and the Koreans.

The domestic market has been assigned a symbolic priority, if nothing more than that – because it is not big enough – over export markets in terms of the delivery, pricing and use of gas. The implications of this approach are as follows:

- Gazprom will retain its exclusive right to export gas, including in Eastern Russia
- The Eastern Consortium¹² will lead the development of new fields
- Natural gas will be exported to Asian markets in the same manner in which it is exported to Europe
- Kovykta gas can be diverted to the domestic market only.

At the same time, the decision has been taken to transform the representative office of Gazprom in Beijing into a regional office that will also cover Japan and the Korean Peninsula, as well as other economies in the Asia-Pacific region, in order to promote gas exports and Gazprom's participation in various projects, including investment, production and services. For example, one of Gazprom's top management (Alexei Miller) and one of the leaders of Sumitomo (Kenji Miyahara) recently discussed the prospects for cooperation in gas-to-liquid (GTL) production.

There are also signals from the government that may encourage foreign investors. At the recent meeting of the Federal Antimonopoly Service (FAS) board, its head Igor Artemiyev made some important comments. Firstly, the FAS wants to see licenses for new mineral resource deposits allocated via auctions, or at least tenders. Foreign companies should be entitled to bid in these, except in rare cases where there is a potential threat to national security. Secondly, the FAS will strive to ensure nondiscriminatory third-party access to gas,

oil and oil product transportation systems, as well as to the services of companies in the oil and gas storage business. If these good intentions were translated into action, Russia's oil and gas sector would become more attractive both to foreign investors and independent domestic gas producers.

Project Update

Over the last several years, several energy ventures in Eastern Russia have entered the active implementation phase, with multi-billion dollar sums having actually been earmarked for investment in these. The first project worthy of note is Sakhalin I, which was launched almost three decades ago with the participation of Japanese companies. Its total cost is estimated at \$15 billion. Progress on Sakhalin II, which has total investment of \$10 billion, is a somewhat more distant prospect, with the first LNG contracts having recently been secured. Yet another mega-project is the oil pipeline to be constructed from Eastern Siberia (Taishet) to the Pacific coast (Perevoznaya Bay). The cost of implementing this project from 2005 is estimated at \$16 billion.

The Taishet-Pacific Pipeline

The Taishet-Pacific pipeline project is a modification of the "Angarsk-Nakhodka pipeline plus Daqing branch pipeline project". This project was endorsed in the Energy Strategy 2020, integrating Transneft's proposal to build a pipeline to the Pacific coast and the Yukos-CNPC plan to link Angarsk with Daqing. Neither plan was able to clear the environmental approval procedures because both proposed routes were too close to Lake Baikal.

The Investment Assessment study for the

¹² A consortium formed by Gazprom, Rosneft and Surgutneftegas.

Taishet-Pacific pipeline was contracted out to Transneft Company. The 1.22m wide pipeline, which is planned to be 4,130 km long, should pass through the territories of seven provinces: Irkutskaya, Chitinskaya and Amurskaya oblasts, Buriyatiya, Evreiskaya Autonomous Oblast and Khabarovskiy and Primorsky krajs. The pipeline will be operated with 32 pumping stations, 13 of which will be equipped with tank parks with a storage capacity of 2.67 million cubic meters. A new oil port will be constructed on the Pacific coast with several wharfs, including a terminal suitable for supertankers. The project is complex, as the pipeline has to cross more than 450 marshlands, more than 1,000 km of rocky terrain, and areas with permafrost and less-than-stable seismic conditions, as well as about 50 rivers and streams and dozens of railroads and motorways.

The crude oil needed to operate this system would originate from Tomskaya Oblast (92 discovered oil fields and 19 fields under exploration), Khanty-Mansiyskiy district (26 discovered oil fields), as well as from existing and newly discovered fields in Irkutskaya Oblast, Krasnoyarskiy Krai (Evenkiyskiy region) and Yakutiya. It is expected that about 56 Mt of oil will be transported annually from the fields located around the Taishet and Kazachinskoe segments of the pipeline. However, during the initial phase of the pipeline's operation, some of these sources may only complement oil originating from Western Siberia.

According to Transneft, a 30 Mt capacity branch pipeline from Skovorodino to Daqing could also be constructed as part of the Taishet-Pacific project, provided that the government confirms the plan. However, the company says that transportation of the

entire 80 Mt volume of oil to the Pacific coast would enhance the economics of the pipeline, enabling the diversification of markets and international price-setting rules to be adhered to.

The concept of an integrated, Trans-Eastern Russia gas pipeline system is also under discussion. Some Russian experts have suggested that in Eastern Russia such a system should link the gas-producing centers of Evenkiya (Krasnoyarskiy Krai), Irkutskaya Oblast and southwestern Yakutia, delivering gas to markets located east of the Enisei River and for exports.¹³

In fact, a number of hydrocarbon fields discovered in Eastern Siberia contain gas, gas condensate and oil, which must be recovered during and even prior to the full-scale production of natural gas. In this respect, the proposed Trans-Eastern Russia oil pipeline project that recently became known as the Taishet-Nakhodka trunk oil pipeline is very important for future natural gas pipeline projects. In order to reduce construction costs, the gas trunk pipeline could be routed through the same corridor as an oil pipeline, or about 150 km to the north of Lake Baikal.

According to the plans recently outlined by Gazprom – the monopoly in charge of coordinating all domestic and export-oriented gas pipeline projects – specific gas fields in Eastern Russia must be developed to supply designated export markets in order to avoid competition among the projects. It is therefore proposed that Kovykta be developed primarily to fulfill domestic needs, as the cost of production promises to be less expensive. Meanwhile, more expensive natural gas from remote and hard-to-develop areas will be directed to the export market. According to Gazprom,

13 See A. F. Safronov, "The Raw Materials Base for Natural Gas, Prospects for its Growth and the Export Strategy of the Republic of Sakha (Yakutia)", *8th International Conference on Northeast Asian Natural Gas and Pipelines: Multilateral Cooperation*, March 8-10, 2004, p. 115.

the development of the remote Chayanda gas field in Yakutia would be feasible only if domestic markets were added to those of China and the Koreas. In the event that the Kovykta project was promoted first and its output exported, the prospects for developing the Chayanda field would be bleak.

Sakhalin I

The Sakhalin I project operated by Exxon Neftegas Limited (ENL) will develop three oil and gas fields, including Chayvo, Odoptu and Arkutun-Dagi. The total anticipated recovery is 2.3 billion barrels of oil (307 Mt) and 17.1 trillion cubic feet of natural gas (485 Bcm). Chayvo production is scheduled to begin in late 2005.

Yastreb, a 70 m tall earthquake-resistant land rig, has been assembled to develop the first offshore field. The rig was designed specifically for drilling wells from shore to the Chayvo field, some 8 to 10 km offshore. More than 20 extended-reach wells are planned, making this project the largest cluster of such wells in the world. In addition, these wells will be the longest extended-reach wells ever built. The rig is designed to operate in very low temperatures. Yastreb is the first component in the development-and-production chain that will be created in the project's initial phase. Another component is the Orlan platform, an offshore concrete island drilling structure. This structure is being upgraded at the Sovetskaya Gavan shipyard and its installation is scheduled for 2005.

Oil produced from Yastreb and Orlan will be transported by pipeline at a rate of 250,000 barrels a day (12.5 Mt a year) to the Chayvo onshore processing facility and across the Tatar Strait to the De-Kastri

mainland export terminal. ENL has contracted out various operations to over 50 Russian enterprises, with the transport of crude oil being contracted out to two Russian shipping companies.¹⁴

Sakhalin II

The first phase of the Sakhalin II project is now producing about 70,000 bbl/d of oil at the Vityaz Production Complex, which has been built around the Molikpaq platform. Oil is transported from the Molikpaq to a floating offloading and storage area. Currently, oil production is seasonal and limited to seven months of the year. The second phase of the project includes the construction of onshore pipelines to transport oil and gas to the ice-free terminal in the south of Sakhalin.

Full-scale construction work on the LNG plant commenced in the spring of 2004 and includes the creation of an integrated oil and gas development and transportation system. Offshore platforms will be installed on the Piltun segment of the Piltun Astoskhskoye field and at the Lunskeye gas field. These platforms will be linked to the shore by pipelines. During the second phase, the Molikpaq platform will be also connected to the new pipeline infrastructure, allowing year-round production. Oil and gas will then be transported via an 800 km pipeline to Prigorodnoye, in the south of Sakhalin, the site of a new LNG plant and oil and LNG export terminals.

Other Sakhalin Projects

A draft production-sharing agreement (PSA) feasibility study for the Sakhalin III project was appraised in June 2003; it was

¹⁴ Contracts have been awarded for delivering three ice-class tankers (\$185 million), two similar tankers (\$240 million) and an ice-class vessel, as part of the program to procure drilling on the Orlan platform (\$77 million) and construction projects in Chaivo and Odoptu (\$70 million). Finally, a \$29 million contract has been awarded for providing helicopter services to onshore and offshore facilities.

decided that it should be reworked and submitted to the Commission for Mineral Use Conditions Development. Since the block has been deleted from the list of projects eligible for PSA treatment and the results of the 1993 tender had been invalidated, PegaStarNeftegaz was considering participating in an auction for the right to develop the block under the existing taxation system.

With regard to Sakhalin IV, the partners involved have adjusted the feasibility study for the Astrakhanov structure in order to analyze the efficiency of the project without conducting offshore drilling.

As part of the Sakhalin V project, the prospecting license for the Kaigan/Vasyukan block has been obtained by Rosneft as part of its alliance with BP. The allied partners have conducted 3D seismic prospecting across the entire block (approx. 2,500 sq. km) and have begun studying the data obtained from this. An agreement has been reached to create a joint operating company to carry out prospecting and to extract raw materials. Joint corporate structures with BP are being established and registered, including the operating company Elvari Neftegaz; in addition, a management company is being formed.

The Challenges

Energy cooperation and the coordination of energy policies and priority projects in Northeast Asia are the long-term goals for the countries of the subregion. The realization of these aims will take time, persistent policy efforts and thoughtful adjustments in economic and energy strategies. Numerous challenges are certainly likely to complicate progress, including the following problems:

- The lack of pipeline infrastructure in Japan and Northeastern China will slow down gas exports from Eastern Russia,

including Sakhalin

- It may be impossible to build cross-border pipelines without intergovernmental agreements and governments taking a leading role in such projects
- Massive long-term investment in delivery infrastructure has yet to be matched with relevant policy efforts similar to those adopted in the EU-Russia dialogue
- There are as yet no mechanisms for foreign investors to participate in financing exploration activities in eastern Russia
- In bilateral energy dialogues, little attention has thus far been paid to technological cooperation (GTL, energy efficiency, etc.)
- A much stronger system of economic incentives is needed to promote economically viable cleaner energy sources, hydroelectric power in particular
- The opportunities offered by international organizations such as APEC have yet to be utilized
- Uncertainties relating to the DPRK will not only impede overland energy infrastructure projects, but may spoil the emerging climate of cooperation in the area.

Both positive developments and the remaining problems require that efforts be concentrated on “Track Two” networking by practitioners. This type of informal networking could lead to better understanding at the official level of the opportunities offered by multilateral cooperation.

Thus far, multilateral energy discussions among the economies of Northeast Asia have taken place within the framework of ASEAN+3 consultations and, more recently, among the energy ministers of Japan, China and the ROK. These discussions have mainly

been focused on the policy coordination efforts of these countries as energy importers. As this overview demonstrates, this multilateral process has only recently begun to take shape and we have to wait and see whether, when and how Russia can join these consultations. Obviously, the need for it to do so could be questioned, given that the interests of Russia as the energy producer and those of China, Japan and the ROK as potential importers of Russian oil and gas may differ substantially. As far as oil and LNG exports are concerned, trade can and will take place among companies, without requiring government-level bilateral or multilateral cooperation. However, in natural gas pipeline and electricity projects that may require cross-

border links to be economically viable, multilateral cooperation could prove indispensable.

Furthermore, for Russia's eastern regions to develop economically and achieve higher standards of living and other social advances, the country must cultivate close economic ties with neighboring economies. Energy projects should be seen as a stepping-stone in forming long-term and mutually beneficial relations with neighbors. From this perspective, participating in multilateral dialogues could offer greater opportunities to Russia, which, in terms of its economic engagement with Northeast Asia, is only now taking its first serious steps forward.

NORTHEAST ASIA IN THE WORLD OF ENERGY: THE VIEW FROM THE BUSINESS WORLD

Takehiro Togo
Counselor, Mitsui & Co., Ltd.

As a relative newcomer to this Forum, I had the privilege of participating in the international workshop that took place in Khabarovsk in September 2002, and which was held under the very generous patronage of Governor Ishaev. It miraculously coincided with the historic visit of our Prime Minister Koizumi to Pyongyang, and I still remember the exchange of cordial greetings with our colleagues from the DPRK at the session when I showed them the Korean translation of the Joint Communiqué between the leaders of Japan and the DPRK. A year and four months have passed since then, and much water has passed under the bridge, as they say.

Today, there seems to be an unprecedented degree of urgency with regard to the topic under discussion, namely energy security in Northeast Asia. What was talked about then as more of an abstract, theoretical picture of the future of the region has suddenly emerged as an unavoidable reality, calling for much more accelerated and concerted efforts on the part of the countries of the region, both locally and with a more global strategy in mind. I would like to pay tribute to the initiators of the present dialogue, and in particular to ERINA for the foresightedness of their vision.

The changes that have taken place in the region in a relatively short space of time are closely related to major international incidents that have shaken the world and the Northeast Asian region in particular during that period, namely the war in Iraq and the collapse of the Korean Peninsula Energy Development Organization (KEDO) framework.

Because of the war in Iraq and the ensuing situation, there is a growing awareness in the world that the Middle East as a whole is still a very volatile and unstable region and that overdependence on the region for major energy resources such as oil and natural gas is unwise, with the diversification of sources outside that region – and beyond OPEC influence, if possible – being advisable. Naturally, any consideration of alternative sources of energy supply will focus on Russia, which is the largest supplier of natural gas, as well as being major supplier of oil, coming to occupy first place in 2003. Several moves in this direction have been observed.

Russia-US dialogue on energy cooperation is also motivated by this consideration. Since the Houston Energy Summit of September 2002, the US government has made a major political decision to place greater emphasis on Russia as a source of energy supply, in order to avoid overdependence on Middle East resources. It was agreed to establish a US-Russia working group on energy cooperation, which would provide a forum for the exchange of information on such areas as world oil markets, achieving a stable supply of oil, US investment in Russian resource development and oil transport infrastructure. Since the war in Iraq began, such cooperation has been further strengthened through a second round of talks.

China is the world's second-largest energy consumer after the US, and has been a net importer of crude oil since 1996. Whether it can maintain its high economic growth depends to a great extent on

whether it is able to improve energy security in the years to come. China is coming to be more dependent on oil and natural gas than on coal, and its dependence on Middle Eastern oil in 2001 was nearly 56%. The unstable situation in the Middle East is a significant destabilizing factor in China's future economic development.

The country is trying to solve this problem by increasing its stockpiles, opening up to direct foreign investment in domestic oil production, and diversifying the sources from which it procures its energy resources, with a particular shift in favor of CIS countries such as Kazakhstan and Turkmenistan. China is also trying to strengthen its cooperation with Russia and in April 2003, Russia and China concluded an agreement to build a 2,400 km pipeline from Angarsk to Daqing to deliver 600,000 barrels of oil per day at a cost of \$2.5 billion. Subsequently, the final decision was delayed by the Russian government so that it could coordinate the plans with the Angarsk-Nakhodka pipeline proposed by the Japanese side, as will be mentioned later.

The ROK is also in need of energy resources to support its rapidly expanding economy and, having completed a domestic pipeline system that supplies 86% of ROK households with natural gas, is trying to cooperate with Russia and China in the development of the Kovykta gas field in Eastern Siberia and the construction of a pipeline via China that runs along the seabed to the ROK, bypassing DPRK territory.

Japan embarked upon active cooperation with Russia in the energy field following the official visit to Russia by Prime Minister Koizumi in January 2003. During this visit, it was agreed to strengthen cooperation in the development of energy resources, the construction of pipelines in the Far Eastern region and Siberia, and further development of the Sakhalin I and II projects. In May

2003, the construction of the Angarsk-Nakhodka pipeline with a branch to Daqing was approved in the Russian Government's Energy Strategy to 2020.

In December 2003, during the visit to Japan of Prime Minister Kasyanov, the importance of the development of energy resources in Eastern Siberia and the Far Eastern region, as well as the construction of a pipeline to the Pacific coast, were recognized as being conducive to the development of the Far Eastern region, and to the stability of the energy supply to the whole Pacific area.

Experts from both governments are studying the feasibility of constructing a 3,900 km pipeline capable of transporting 1 million barrels per day of oil to the Pacific coast at a cost of \$16 billion. Following on from the two Sakhalin projects, this substantial energy cooperation initiative between Japan and Russia may reduce Japan's dependence on Middle Eastern oil by 20%, and as such, is generally welcomed by the Japanese business community. However, because of the scale of the project, we should not depend too much on its short-term economic effects, rather viewing it as a model regional multilateral cooperation project that will steadily build up mutual cooperation, particularly trilateral cooperation among Japan, Russia and China. This project could play a crucial geopolitical role in many ways, and the Russian government is subjecting it to a thorough analysis before making a final decision.

Such geopolitical roles, in my view, may be 1) contributing to the development of Siberia and the Far Eastern region; 2) deepening regional multilateral energy cooperation; and 3) creating a favorable environment for the solution of the territorial issue and opening the way for the conclusion of a peace treaty and the full

normalization of relations between Japan and Russia.

The two Sakhalin projects are progressing successfully. In Sakhalin I, the route for the pipeline still has to be decided, with 250,000 barrels of oil a day and 2.2 Bcm of natural gas being supplied by pipeline from 2008. This project has a symbolic significance, as it will be the first time natural gas will have been imported to Japan by way of a pipeline, and is strongly supported by the Japanese government. Sakhalin II will provide LNG, and two LNG trains with a liquefaction capacity of 4.8 million tons each are now being built in Prigorodnoye, a small town in the south of Sakhalin. At present, Tokyo Gas Co., Tokyo Electric Co. and Kyushu Electric Co. have entered into long-term supply contracts for natural gas, which are due to run for over 20 years from 2007. This is the first LNG to be produced in Russia. The appearance of this new source of oil and natural gas in the Far Eastern region as a result of these two projects is of historic significance and is already attracting the attention of prospective users not only in Japan, but also in other countries of East Asia. This may well lead to changes in the map of world oil and natural gas markets in the future.

Another challenge we are now facing in Northeast Asia is the question of maintaining the non-nuclear status of the Korean Peninsula. Several years ago, the DPRK was found to be intending to develop nuclear weapons through the enrichment of uranium. In 1994, Japan, the US, the ROK and the EU established a framework called KEDO (Korean Peninsula Energy Development Organization) to encourage the DPRK to abandon its policy of developing nuclear weapons. This was to be achieved by building nuclear power stations that would be unsuitable for nuclear weapons development and by supplying crude oil to

meet the country's energy needs

Recently, the DPRK admitted that it was still engaged in the enrichment of weapons grade uranium in contravention of the KEDO framework agreement, and withdrew from the Nuclear Non-Proliferation Treaty, as well as refusing continued inspection by the IAEA. Kim Jong Il seems to have been alarmed by the US's statement referring to the DPRK as part of the "Axis of Evil", not to mention the invasion of Iraq, and the DPRK is demanding a non-aggression treaty with the US. Thanks to Chinese efforts to mediate in the situation, a framework for six-party talks between Japan, the US, China, Russia, the ROK and the DPRK has been established. They are trying to reach an agreement under which the DPRK will renounce its policy of developing nuclear weapons in exchange for security guarantees and economic aid. The five countries other than the DPRK are strongly determined to achieve a nuclear-free Korean Peninsula.

The DPRK is the only country in the region that has maintained its rigid policy of isolation and tight control by the military, even after the end of Cold War. In the 50 years since the end of the Korean War, the situation in this area has seen dramatic changes as a result of the rapid economic development of the ROK and China, and the demise of the Soviet Union. There is no objective reason whatsoever why the DPRK should maintain its isolationist and antagonistic position *vis-à-vis* the outside world.

If negotiations within the six-party framework succeed and a comprehensive agreement can be reached, it will open up the way for the normalization of relations between the DPRK and Japan, the US and the ROK, as well as solving many pending questions and contributing greatly to the peace and stability of the region. A nuclear DPRK is an unacceptable threat to all

neighboring countries.

If the aforementioned success could be achieved, the six-party framework will be the ideal institution for further continuing regional energy cooperation. This might assist in consolidating collaboration among the five regional states, including the DPRK , and prepare them to lead efforts aimed at establishing the East Asian Economic Union, which would include the ASEAN countries, as well as Taiwan and Hong Kong. This may sound like a fantastic New Year's dream, but let us recall that the expanded European Union of 25 countries was founded over 50

years ago, in post-war Europe, through the historic reconciliation of the arch-enemies, France and Germany, which worked in partnership to establish the European Steel and Coal Community (ECSC), in order to overcome their centuries-old rivalry concerning coal and steel.

What is important is the recognition of the necessity of regional energy cooperation and the will to put it into practice. The spirit of the 21st Century gives us ample reason to take this step forward towards a brave new world.

ENERGY COOPERATION IN NORTHEAST ASIA: RUSSIA–CHINA AND RUSSIA–KOREAN PENINSULA LINKS*

Evgeniy V. Afanasiev

Director-General, First Asia Department
Russian Federation Ministry of Foreign Affairs

Russia is interested in developing economic links with the countries of the Asia-Pacific region, expecting that this will assist in the economic revival of its Far Eastern provinces, as well as the integration of the Russian economy with this dynamic region. Eastern Russia could become involved in the ambitious projects currently being discussed in the fields of energy supply, transport, communications and the environment. In addition to its significant raw material production and export potential, Russia possesses considerable science and technology skills that could enhance its role in these fields.

Political stability and security in East Asia appear to be the main prerequisites for attaining these goals. Improved bilateral relations with its neighbors and emerging multilateral frameworks will create the necessary conditions for closer economic links with the region.

Energy Cooperation in Northeast Asia

According to some forecasts, in the next 15–20 years the economies of the Asia-Pacific region could face shortages in the supply of oil, natural gas and coal. In this context, Eastern Russia – Siberia and the Far Eastern provinces – appears to be the main potential source of fossil fuels, in addition to existing ones. However, permafrost and a lack of infrastructure complicate access to this wealth of energy.

Obviously, there are other economies in the region that could export additional supplies of fossil fuels, but their potential to satisfy projected demand is limited. Currently, about 80% of the oil consumed by Japan and the ROK originates from the Middle East. This narrow dependence places these two economies in a vulnerable position, given the potential for political instability in the Persian Gulf region. On the other hand, the demand for fossil fuels is likely to expand fast. By 2010, China, with its huge population and rising standards of living, will consume about 15% of the world's oil production. India is likely to become yet another large importer of oil and natural gas.

In this context, exploiting Russia's potential to produce and export hydrocarbons and the "energy opening" of Siberia and the Far Eastern region are important geopolitical and geo-economic imperatives. In order to manage the changing situation with regard to oil and natural gas supplies, all the parties involved – producers and consumers, governments and private sector – must adopt new approaches to oil and gas projects, involving advanced technologies and innovative project-financing mechanisms, as well as multilateral oil stockpiling schemes.

In a geo-political context, Eastern Russia, rich in resources but sparsely populated, has found itself sandwiched between the densely populated energy-importing

* The views expressed in this paper are the author's own and do not necessarily represent the position of the Russian Ministry of Foreign Affairs.

economies of Northeast Asia and the “rich West”, including the United States and the European Union, which, in addition to Japan and the ROK, depend on Middle Eastern sources of oil. Such a unique combination of needs, interests and economic power must be managed wisely, leading to the realization of a host of cross-border energy projects – regional in geography, but global in their potential impact on energy markets and energy supply networks.

Russo-Chinese Cooperation in the Energy Sector

Energy cooperation is one of the most important and most promising areas in which Russia and China can develop close links based on the complementarity of their respective economies.

a) Sino-Russian oil pipeline

This much talked-about project arises from several political statements and joint communiqués signed at various levels between 2000–2003. Practical work by experts from the two countries on developing a technical feasibility study (TFS) began two years ago and was focused on one potential route, from Angarsk (Irkutsk region) to Daqing (Northeast China). The Chinese government has already approved this TFS, but the Russian side has stated that the project needs additional study.

Further work was conducted after the Russian government’s March 2003 decision about the country’s general energy strategy up to the year 2020, including an assessment of the ecological aspects of the project, as well as a study of the alternative routes. The three most likely scenarios for transporting East Siberian oil to external markets at the moment are as follows:

- A pipeline to Daqing (China) with a capacity of 30 million tons annually

(about 2,200 km);

- A pipeline to Nakhodka (Far Eastern Russia) with a capacity of 50 million tons annually (about 4,000 km);
- A combined pipeline to Nakhodka and Daqing with a capacity of 80 million tons annually (about 4,800 km).

All three scenarios have had to be examined from various points of view, including the available resource base, prospective oil deposits, the cost-effectiveness of each route, the need to develop the Far Eastern and Siberian regions, considerations relating to the preservation of nature, and the availability of financing from internal and external sources.

During his visit to Japan in December last year, former Prime Minister Kasyanov stated that the Angarsk-Daqing project is a local project connected to the existing resources of oil companies. The Angarsk-Nakhodka project is connected to the exploration of new resources in East Siberia. He emphasized that the pipeline is not an alternative to or a substitute for the Angarsk-Daqing pipeline.

He also indicated that these two projects could be united into a single project: Angarsk-Nakhodka with a branch-line to Daqing, if it were possible and economically viable. If it were not economically viable, Russia would implement the projects separately. The final decision, he said, will be taken only when both economic and political factors have become clear. We cannot construct something that is not backed up by concrete estimates and cannot be supported by the economy.

Meanwhile, Yukos continued to supply oil to China by railway. In 2002, the total volume amounted to 1.4 million tons, but this figure is expected to increase to 4–5 million tons a year.

b) Natural gas cooperation

Gazprom continues to cooperate with the China National Oil and Gas Corporation in constructing underground natural gas reservoirs in Northeast China, as well as working on the Kela-2 gas deposit. There is a possibility that an agreement on strategic cooperation between the two companies will be signed. Work also is being done on the Sakha-China project and the possibility of constructing a gas pipeline to China from Chayanda and other gas deposits in Yakutia.

In November 2003, an international technical feasibility study on the Kovykta gas project was completed. The three parties in the project are now negotiating prices. Russia-Petroleum has also signed a preliminary letter of intention, fixing the volume of natural gas to be supplied to China and the ROK during the next 30 years at 600 Bcm and 300 Bcm respectively.

The further development of Kovykta gas project depends on several factors, including technical aspects, international gas markets and the availability of financial resources, as well as the creation of favorable conditions with regard to economic, marketing and business-related aspects. Support – both direct and indirect – from the governments involved will also be a key factor. Companies participating in this project are now preparing for negotiations with possible investors, including the World Bank.

Following a decision taken by the Russian government, work is now being conducted on a project aimed at creating a united system for gas exploration, transportation and supply from Eastern Siberia and the Far Eastern region to the countries of the Asia-Pacific region.

c) Electricity cooperation

Russia continues to supply electric energy across the border to the northern provinces of China. Up to April 2000, Amurenergo

supplied China with 367 million kWh of electricity; since 2000, two electric lines have been functioning between Blagoveshensk and Heihe (Heilongjing Province) and between Sivakhi and Shipazhan. The total amount of energy supplied in the period 2000–2002 totaled almost 400 million kWh, while in 2003, about 250 million kWh was supplied to the city of Heihe. An agreement was recently reached, concerning the construction of a power grid line from Amurskaya Oblast to Heilongjing Province.

d) Coal cooperation

Since 1975, the Zarubezhugol Company has provided technical assistance to China in the construction and exploitation of coal mines. As a result of this cooperation, two coal preparation plants with a total capacity of 3.6 million tons were built, while another coal preparation plant was modernized, giving it a capacity of 2.2 million tons. A technical feasibility study was also conducted for the sizeable Iminhe coal deposit, which has a capacity of 45 million tons.

One possible direction for future cooperation in this area is a joint project by Russian and Chinese experts, focusing on the modernization and construction of coalmines in both Russia and China, as well as in third countries, such as India.

Russia-DPRK Energy Cooperation

The problem of a stable electricity supply is central to the economy of the DPRK. As long as this problem remains unsolved, the DPRK will be unable to promote industrial modernization or carry out large-scale projects, including projects implemented in partnership with other countries. The energy crisis in the DPRK also has a humanitarian aspect. This situation requires particular attention when the world community

decides to provide assistance to the DPRK.

While discussing bilateral economic and trade issues with Russia, the DPRK consistently raises the question of reconstructing and modernizing the four key power plants built with the assistance of the former Soviet Union: the Pyongyang, East Pyongyang and Chongjŭng heat-and-power plants, and the Pukchang thermo-power station. In the meantime, the DPRK government is paying special attention to the construction of the East Pyongyang heat-and-power plant.

The commissioning of the second phase of the East Pyongyang heat-and-power plant appears to be the priority objective, opening up an opportunity for cooperation. Timely funding of this project is essential to the extent that granting such funds could positively affect the economic climate on the Korean Peninsula and encourage the DPRK to treat other projects more constructively. On the whole, this project will help to reinforce trust between the North and the South, as well as between the DPRK and other countries.

It is important to note that the technical aspects of cooperation in the power sector have already been worked out, including project design, equipment manufacturing and delivery for the Pukchang plant and the Pyongyang plant, the extension of the Chongjŭng plant and the construction of the second phase of the East Pyongyang plant. All the equipment required for these projects can be swiftly produced and delivered to the DPRK.

Russian subcontractors and potential investors are well positioned to build new industrial enterprises in the DPRK and reconstruct existing ones, given that many of the latter were designed in the former Soviet Union and built with the participation of Russian experts. Their experience is invaluable, with the potential to confer

various benefits in terms of the costs and timeframes of the projects.

Russia has also informed Pyongyang regarding its intention to rely on external funding to finance bilateral projects; this proposal was accepted by the DPRK during the Moscow summit in August 2001 and on other occasions. However, the prospects for project financing aimed at the modernization and enlargement of industrial enterprises in the DPRK will be determined in the context of the DPRK's debt repayments.

It is also quite possible to promote trilateral Russia-DPRK-ROK cooperation on the basis of pragmatism and mutual economic benefits. Such a pragmatic approach towards trilateral economic links could contribute to better relations between the two Koreas, as well as to multilateral cooperation on the Korean Peninsula and in Northeast Asia in general.

Electricity Supply from the Far Eastern Region East to the Korean Peninsula

On October 28, 2001, during the ESCAP seminar held in Khabarovsk on interstate cooperation in the field of power cooperation in Northeast Asia, a delegation from the Ministry of Energy and Coal Industry of the DPRK and representatives of Vostokenergo discussed the possibility of forming a cross-border power supply system, involving the DPRK and Far Eastern Russia.

On November 22–29, 2001, a delegation from the Energy Systems Institute (ESI) of the Siberian branch of the Russian Academy of Sciences visited Pyongyang. The purpose of the visit was to discuss the situation in the DPRK's power sector and possible options for cross-border cooperation based on the understanding between the DPRK's Ministry of Energy and Coal Industry and Vostokenergo. As a result, the Russian

delegation and the Institute of Automation of the DPRK's Academy of Science signed a cooperation agreement. The ESI expressed its readiness to prepare a technical and economic assessment of the project, including the required funding estimate.

The DPRK side suggested the idea of exchanging electricity between the cities of Vladivostok and Chongjin during peak hours, supplying electricity to Far Eastern Russia in the morning and evening, and to the DPRK in the daytime. This proposal was not accepted, however, because Russia's Far Eastern region does not currently have a significant electricity deficit. Furthermore, with the Bureya hydroelectric station beginning to operate, there will be an oversupply of electricity.

Nevertheless, the idea itself now is being studied from a different angle—the construction of an electric power line to the territory of the ROK via the DPRK. This plan has some merits. For example, the ROK can receive cheaper electricity and also cover its

electric power shortages, which are estimated at 2–6 billion kWh. This could also form the basis for constructing an interstate electric power line between Russia (Bureya station), the DPRK, China and the ROK.

The cost of research focusing on this electric power line from Vladivostok to the DPRK border (225 km) and then on to Chongjin (120–130 km) is estimated to be between \$300,000 and \$500,000, with the cost of the section on DPRK territory estimated at around \$150 million and the cost of the section on the ROK's territory estimated at around \$170 million. In 2004, the three parties agreed to conduct a technical feasibility study on the project. Of course, before starting such a sizeable international project, a considerable amount of work still had to be done in terms of constructing electric power lines on Russia's own territory, for example in Khabarovskiy and Primorskiy krais.

NIIGATA AS THE “ENERGY REGION”

Susumu Abe

Advisor, GIF Research Foundation

I would like to share my thoughts on the concept of Niigata as the “energy region”. As the home of Japan’s oil and gas industry, Niigata Prefecture is one of Japan’s leading regions with links to the energy sector. It has a large LNG facility and a high-efficiency combined-cycle power plant, not to mention Kashiwazaki Kariwa, the world’s largest nuclear power station.

In my presentation, I would like to provide an overview of Niigata’s history and the energy sector in Niigata Prefecture; in addition, I would like to discuss the potential for Niigata to play a part in Northeast Asian energy cooperation.

First of all, I would like to highlight some major points in Niigata’s history. Niigata Port was one of only five Japanese ports to be opened to international trade in 1868, following the end of the country’s long isolation, as a result of the conclusion of the Japan–US Treaty of Amity and Commerce. As it was the only port on Japan Sea coast to be opened up to foreign ships, countries such as the UK, the US and the Netherlands established consulates here. Today, Niigata Port is the only international hub port on the Japan Sea coast.

Another noteworthy point is the fact that a gold mine was discovered on Sado Island in the 16th century. This gold mine supported the finances of the Edo government, producing 78 tons of gold and a further 2,330 tons of silver over the 388 years until its closure in 1989.

Another aspect of Niigata Prefecture is its natural resources, in the form of crude oil and natural gas. In ancient times, Niigata became famous for its “burnable soil”, with a gift of this soil being made to the Emperor

in AD660. In the early 20th century, Niigata supported the development of Japan through the production of petroleum and the Niitsu area of Niigata became famous for its oil products in the 1930s. In those days, this area produced 80% of Japan’s supply of lamp oil. Today, oil production has moved to offshore areas.

There are 24 LNG facilities in Japan, with the only LNG facility on the Japan Sea coast being located in Niigata. Domestically produced gas and LNG are supplied through pipelines from Niigata to Tokyo and Sendai. Natural gas production in Niigata Prefecture in fiscal 2000 was 1.6 Bcm, accounting for 70% of domestic production. The main gas field in Niigata is Minami-Nagaoka, located in the central part of the prefecture. As you know, two routes for the pipeline to be constructed as part of the Sakhalin I project are currently under consideration: the Japan Sea route and the Pacific Ocean route.

With regard to electricity, the ten independent private-sector power companies provide a stable electricity supply in their areas. The Tohoku Electric Power Company supplies a large area that amounts to roughly 21% of the total area of Japan and includes seven prefectures in the Tohoku region, in addition to Niigata Prefecture. Japan’s electricity companies operate some 1,800 major power generation facilities of varying types and capacities. Niigata has many electric power stations, with 73% of the electricity generated within the prefecture (93.2 billion kWh) being supplied to other areas, mainly the Tokyo metropolitan region.

The Kashiwazaki Kariwa nuclear power station, which is operated by Tokyo Electric

Power Company and is the largest nuclear power station in the world, is located in the central part of the prefecture. This power station nominally produces 60 TWh of electricity annually, supplying electricity directly to the Tokyo area. The ABWR (advanced boiling water reactor) of Unit 7 at Kariwa has been operating for about 10 years, with all reactors, turbines and generators being operated and monitored from the main control room 24 hours a day.

The East Port area of Niigata City is the largest industrial district on the Japan Sea coast and is home to a large LNG facility and the Higashi-Niigata thermal power station, which is powered by LNG. Half (805 MW) of Unit 4, which boasts a world-class high-efficiency combined-cycle power generation facility, began operating in July 1999 and has continued to run smoothly since then. The inlet temperature of the gas turbine is 1450°C and the unit has a thermal efficiency of 50% or more. The completion of the construction of the other half of the unit makes this power station (with a total generating capacity of 4,600 MW) one of Japan's largest thermal power stations.

Natural gas will be used not only for power generation, but also for newly designed "natural gas-supported regions", particularly those located in northern areas of the country. Studies of the residential use of fuel cells are currently ongoing and one testing site is located in Niigata. PEFC (proton-exchange membrane fuel cell) technology is the key to achieving remarkable reductions in both the cost and size of fuel cells.

In the last part of my presentation, I would like to turn to Niigata's potential to play a part in energy cooperation in Northeast Asia. I wish to point out the "policy direction" of Niigata Prefecture, Niigata's geographical features, the accumulation of experience in the energy

sector here and the potential for creating a world in which hydrogen will be the main fuel.

The government of Niigata Prefecture has made a policy commitment to the process of internationalization. It is focusing on promoting Northeast Asian cooperation, with the aim of establishing Niigata as a major gateway for international exchange by expanding human, trade, and communications networks in Northeast Asia. The annual "Northeast Asia Economic Conference", which is organized by Niigata Prefecture in collaboration with a number of other organizations within the prefecture, is attended by representatives from the countries of Northeast Asia. It serves as a forum for practical discussions about regional economic development. Through such initiatives, Niigata Prefecture is actively promoting the formation of relationships of mutual trust and cooperation in this region.

I would like to highlight one example of energy and environmental cooperation in Niigata. With funding from UNESCAP, ERINA organized a visit to Japan in December 2002 by a study team composed of senior energy sector officials and company representatives from Far Eastern Russia and Mongolia. The participants took part in site visits to the Tohoku Electric Power Co.'s LNG power plant and Tokyo Electric Power Co.'s nuclear power plants, as well as various coal-fueled and hydroelectric power plants and a manufacturer of town gas. The members of the group were mainly interested in the operation and maintenance of power plants, and discussed the management of power companies, the costs of producing electricity, and the construction costs and organizational structures involved in generation, transmission and distribution systems. I believe that such activities are very important in promoting the concept of an energy community for

Northeast Asia.

I think that Niigata has valuable potential that can be utilized in creating a world in which hydrogen is the main fuel: the so-called “Age of Hydrogen”. Hydrogen will be produced using nuclear power stations and supplied to the Pacific coast through existing pipelines.

Finally, I would like to emphasize the following two points. Firstly, discussing how to use Niigata’s potential in the energy

sector to promote energy cooperation in Northeast Asia should be assigned a much higher priority. Secondly, we should recognize the contribution made by ERINA to promoting energy and environmental cooperation in Northeast Asia. We hope that ERINA will be even more active in this field in the future. I sincerely hope that my hometown of Niigata will continue to play an important role in energy and environmental cooperation in Northeast Asia.

PROJECT FINDINGS, RECOMMENDATIONS AND COMMENTS

A NOTE ON SUCCESS FACTORS FOR ENERGY INFRASTRUCTURE INTERCONNECTION IN A REGIONAL MARKET SETTING

Ki Joong Kim

Korea Energy Economics Institute

It seems that those involved in ongoing discussions perceive energy projects in Northeast Asia as the number one solution to the political problems in the region, which mainly relate to the DPRK. This may imply that the projects should be financed mainly by the governments or other public organizations of the countries involved, particularly in the case of the ROK, as well as international development banks. However, numerous projects are competing for scarce public funds, leading to the need for the private sector to play a major role. Private capital will need to be repaid at high interest rates from projects implemented in politically unstable regions as a means of solving political problems, in addition to the normal project revenue involved in cost recovery.

Given that private companies cannot solve problems concerning international relations themselves, the emphasis should be placed on structuring a favorable environment for private investment. Once political tension has been relaxed, the preparatory work will function as a foundation enabling projects to proceed smoothly. I will discuss a few medium- to long-term microeconomic success factors for regional market formation in general terms, focusing on energy infrastructure development, and try to derive from these the implications for energy cooperation in Northeast Asia.

Let me start with a few examples, although the context may be a little different from that of Northeast Asian regional energy

cooperation. All the economies in the Greater Mekong Subregion have facilitated the beginnings of trade in electric power by opening the generation market to independent power producers (IPPs), though their success in attracting private capital has varied. IPP projects are permitted in all economies in the Subregion. Although IPPs have been active in Laos, Malaysia and Thailand, they have not attracted much interest in other economies.

From the perspective of the industry structure and governance mode, nearly all governments in the Greater Mekong Subregion are moving toward a single buyer model as mentioned, but with a wide variation in the degree of independent regulation, transmission access by third parties, wholesale competition, and unbundling of the power sector. Many argue that if such differing rules for governing the industry prevail, the full potential of regional power interconnection will be hard to realize.

Harmonizing the national energy sector structures of each partner economy is crucial to realizing the benefits of energy trade through grid interconnection. The case of a sharp decrease in the volume of power exchange in the NORDEL system (covering the five Nordic countries) during 1991 to 1992 is an example of the importance of the harmonization of power sector structures. Following the unilateral restructuring of Norway's power sector, its net exports to Sweden dropped from about 12,000 GWh in

1990 to about 2,000 GWh in 1991 and 6,000 GWh in 1992.

Although other factors were involved, such as forecast demand growth and the volume of reserves, the slow pace of the development of natural gas and related infrastructure in Eastern Siberia and Far Eastern Russia in the early days is another example of the lack of consistent, harmonized international business rules and resultant risks. In this region, one of the main issues was the passage of the law on production-sharing agreements on the Russian side.

Some commentators argue that one of the reasons for the blackout in California was the different power sector regulations across the interconnected system. The environmental regulations were said to be more stringent in California than in neighboring states and Canada. In addition, wholesale price regulation in the former differed from the latter. This case shows that, even when there are no political problems between countries or states, discrepancies in regulatory frameworks can lead to inadequate investment in energy projects, resulting in a serious energy security problem. In the case of the ROK, one significant obstacle in the process of restructuring the gas industry has been a reluctance on the part of the gas sellers to accept or adjust to the restructuring of the ROK's utility industry.

The first and foremost critical factor for facilitating investment in energy infrastructure development, particularly if the major role is to be played by the private sector, is to reduce policy risks to the greatest degree possible. Efforts should be made to set up institutions and policies in a harmonized, transparent way across the economies involved in the regional market, as the fundamental business environment for investors is the major issue here. Higher

uncertainties and risks attached to the investment environment will block the influx of capital to the energy sector. Items that must be put on the agenda for this include laws, rules and regulations, the structure of the industry, the ownership structure of assets for energy production and transmission, policy on open access or third-party access, and (independent) regulation. Rules on sharing and pricing practices relating to the environmental burden must also be carefully designed among the countries involved in the regional market.

Closely related to the above are country-specific risks and cross-border risks. These issues stem from the characteristics of multinational projects. Guaranteed rights of way and stable energy, fiscal and financial policies, including currency convertibility and free repatriation of returns, are critical. Within the framework of a cross-border project, uneven financial health among project entities may well hamper the advancement of the project.

Under these circumstances, in addition to efforts for developing regionally consistent and coordinated pricing practices for energy products and transport services that are sufficient to cover project costs, some contractual commitments on the part of host governments in partnership with international financial institutions will be useful in raising finance. For instance, the World Bank program that provides partial guarantees for governments' financial obligations to commercial investors in oil and gas projects enhances the credit rating of the projects. A new financing body may partly contribute to this, for example, the Northeast Asian Development Bank.

Another issue is concerned with creating an environment in which investors do not bear unnecessary commercial risks. It is generally accepted that the potential of a regional energy market to increase mutual

benefits in terms of energy efficiency, welfare and environmental protection cannot be fully materialized solely through bilateral energy trade. In other words, a form of fully-fledged trade will do the job.

However, this implies that there are fundamental commercial issues to be resolved. Whether the trade is between state-owned utilities or between other private entities, it will be based on cost comparisons across energy sources such as various power generation plants and gas fields. Therefore, certain measures must be taken to make the cost comparison possible, for example, by developing a standard accounting practice and by ensuring that local currencies are fully convertible. Moreover, tariff systems must be compatible on the basis of separate energy charges and transportation charges. Again, this highlights the importance of harmonizing the institutions and policies of the economies in the regional market. Preliminary work on this issue that cuts across potential projects is essential.

One technical issue that still has profound commercial implications is the establishment of a well-coordinated transmission protocol, or a pooling arrangement in a power market setting. Without this, the security and supply reliability of a power grid system constructed

to a higher standard would be at risk. If a country or utility along a long-distance gas pipeline were to remove gas at will, it might well result in costs being incurred by the one obtaining the gas at the end of the pipeline.

Moreover, an energy network or interconnected energy systems should not be developed in a piecemeal manner of point-to-point links but in a way that maximizes system efficiency to the greatest extent possible from the design stage. Doing it the other way round would mean more risks, less investment, and less than full benefits to all participants. However, this does not mean that each piece of a network is not important. Rather, all the puzzle pieces should be designed to fit in with each other, in order to make the entire system as efficient as possible.

In conclusion, whether it is going to be something like an energy charter treaty or another loose form of multilateral cooperation, a big institutional umbrella is needed for a multinational cross-border project to proceed. In addition to studies of the specifics of individual projects, greater effort should be made with regard to compiling, analyzing, and harmonizing the institutions of the countries of Northeast Asia.

THE POTENTIAL FOR CROSS-BORDER ENERGY LINKS IN EASTERN RUSSIA

Vladimir V. Kuchuk

Advisor to the Governor of Khabarovskiy Krai

For Russia, economic cooperation with the economies of the Asia-Pacific region, including Northeast Asia, is the priority in developing external economic links. In particular, its development plans for the oil and gas sector in Eastern Russia require access to the markets of neighboring countries. On the other hand, recent developments in the Middle East have made Russia's Asian neighbors, as well as the United States keenly interested in exploring alternative sources of oil supply.

In ten years from now, demand for oil in the Asia-Pacific region is projected to increase by 35%, while oil production within the region will be leveling off. As a result, the share of intra-regional oil trade will decline from 42% today to about 27–30%, while the share of oil imported from the Middle East will grow to 50–65%.

A need to diversify sources of oil supply, on the one hand, and Russia's capacity to export oil to eastern markets, on the other, would certainly encourage the development of cooperative policies. With the demand for such key energy sources as oil and natural gas expanding, Russia's economic involvement in Northeast Asia and the broader Asia-Pacific region is bound to grow.

Russia possesses sufficient oil and natural gas reserves to become a major source of energy for Northeast Asia. The irony is that the eastern regions of Russia, which are considered to be energy-deficient parts of the country, contain more than 8 billion tons of oil and 40,000 billion cubic meters of natural gas. Moreover, according to many geologists, these estimates are rather modest and there is potential for a considerable increase in reserves, provided

that more investment is directed towards exploration.

The major oil and gas reserves offshore from Sakhalin Island have been studied and evaluated in greater detail. The Sakhalin I and Sakhalin II projects are already undergoing active development, with oil production having been taking place in Sakhalin II since 1998. Other projects (Sakhalin I through Sakhalin IX) are in the process of licensing and pre-license exploration. However, Sakhalin III and Sakhalin V are already believed to be much larger in terms of reserves of oil and natural gas. In optimistic assessments, these and other projects offshore from Sakhalin Island could, at their peak, produce about 45–50 million tons of oil and 45 Bcm of natural gas a year.

In the long-term, the hydrocarbon reaches of Khabarovskiy Krai and Magadanskaya Oblast could be developed, as well as those offshore from the Kamchatskiy and Chukotskiy peninsulas, as the combined recoverable resources of these areas are estimated at 4 billion tons of oil and 19,000 Bcm of natural gas. To confirm these volumes and begin commercial production, however, considerable investment will have to be made in geological exploration over the next 10–15 years.

Furthermore, the commercialization of these resources will require the construction of high-capacity delivery infrastructure, particularly long-distance pipelines. In Khabarovskiy Krai, a gas pipeline project is underway, linking Sakhalin with Khabarovsk via Komsomolsk-on-Amur. In general, the Taishet-Nakhodka oil pipeline will become the backbone of the entire system to be

built in Eastern Russia, while also serving as a catalyst for natural gas pipeline network development in Northeast Asia.

Eastern Russia, including the Far Eastern region, is endowed with unique hydroelectric power potential, and will be able to supply electricity for export and domestic use, provided that long-distance, high capacity transmission lines are constructed. Currently, the share of hydroelectric power plants in electricity generation in the Far Eastern region is 30%, but less than 4% of the region's hydroelectric power potential is actually being utilized.

After 2007, the commissioning of Bureiskaya power plant in Amurskaya Oblast (2,000 MW capacity; 7,100 million kWh annual output) will permit electricity exports to China and the Korean Peninsula. As of today, the Far Eastern region can export between 3 million kWh and 4 million kWh of electricity a year. However, a number of new projects at the feasibility study phase (1,500 MW) could, if implemented, provide an additional 6,000 million kWh of electricity a year.

Moreover, there is a proposal to build a vast hydroelectric power production center in southern Yakutia (5,000 MW capacity; 23,450 million kWh annual output). A feasibility study has been completed for the Tugurskaya tidal power plant in Khabarovskiy Krai ((6,800 MW capacity; 16,200 million

kWh annual output), but international cooperation and access to neighboring markets will be required to make these projects commercially viable.

Currently, the cross-border supply of electric power to China is taking place in Amurskaya Oblast. As you know, there is also a project aimed at the construction of a transmission line from the Far Eastern region to the Korean Peninsula (Vostokenergo), as well as a proposal involving building a "power bridge" between Sakhalin and Japan (UES Russia and Sumitomo). As far as domestic priorities are concerned, the construction of the 500 kV west-east transmission line traversing the whole of eastern Russia is now taking place.

The value of hydroelectric power projects, including exports of electricity to neighboring markets, should be evaluated from both their economic and environmental aspects. The geographical, climatic and geological conditions for promoting large-scale hydroelectric power generation in Eastern Russia are much better than in other regions around the world.

In summary, in eastern Russia, there is huge potential for developing mutually beneficial, economically viable and environmentally sound cross-border energy links with the neighboring economies of the Northeast Asian subregion.

ENERGY AS A CATALYST FOR PROMOTING REGIONAL INTEGRATION

Karla S. Smith

Northeast Asia Economic Forum/East-West Center

At the beginning of December 2003, the Northeast Asia Economic Forum (NEAEF) held a small, informal meeting in Brussels with the cooperation of Japan's National Institute for Research Advancement (NIRA) and the European Parliament. The aim of this meeting was to examine the potential for establishing an informal network of parliamentarians from Europe and Northeast Asia, for them to discuss experiences of community-building and economic integration, with the possibility of opening this network up to the US and other interested parties later on.

In addition to these broader themes, which were initially brought up in presentations on community, a common market and free-trade areas, there were some more technical presentations on development financing mechanisms, including the concept of a Northeast Asian Development Bank. The other presentation was the regional energy profile of Northeast Asia and it was this theme that attracted the attention of parliamentarians, with all the participants tending to return to it. They rapidly reached a consensus that this network of parliamentarians was both possible and desirable, and that it should initially focus on energy issues, with its scope being expanded later on to encompass other fields.

As a consensus on the issue had been reached rather sooner than was expected, the second day was devoted to a series of proposals regarding the topics that these parliamentarians should be discussing. The preliminary list includes the long-term energy relationship between Russia and Europe, and what lessons might be drawn from it for Northeast Asia, as well as the

possibilities that might be derived from a trilateral energy relationship between Russia, Japan and China in oil, gas and electricity trade. Another issue is the investment environment in Northeast Asia, including financing mechanisms and legislation as it relates to energy. Finally, the energy crisis and nuclear issues in the DPRK were raised; despite the political sensitivities, the parliamentarians present did not shy away from the topic and appeared enthusiastic about pursuing this as one of the main areas to focus on, or possibly even the principal challenge to be tackled.

This can perhaps be explained if we recall that, during the 1993 nuclear crisis, the apparent solution seemed to come from energy. This field still seems to hold out the best hope for promoting peace and cooperation in the region today, as can be seen from the cross-border electricity interconnection and gas pipeline projects that have been outlined by other participants in the Niigata Energy Forum.

A further reason for this is that the European Union and its member countries are pursuing a policy of engagement with the DPRK; 13 of the EU's member countries have established or are in the process of establishing diplomatic relations with it. In addition, they have already sent parliamentary delegations to the state, with another one due to visit at the end of this month. As politicians, they understand that the situation in the DPRK is not simply a technical problem that requires a technical solution, but also a problem that requires the establishment of confidence that the DPRK no longer has any nuclear capacity

parliamentarians, as representatives of their people, can play a critical role in enhancing this confidence.

In this context, this proposed network of parliamentarians can be considered as an extension of the research project that ERINA has been conducting. It may be worth considering similar networks focusing on different layers, such as practitioners and policy-makers. At the Brussels meeting, the possibility of similar informal networks of foreign ministries, energy ministries, regional governments and state energy companies in this region was discussed.

It should be emphasized that the NEAEF is a non-governmental organization and our role is to be a facilitator or catalyst. The measure of the success of this network of

parliamentarians, or any other type of network, will be whether or not it continues to operate on its own and yield results. Furthermore, what we are trying to do is not only provide a forum for dialogue among these parliamentarians and other groups, such as practitioners and policy-makers, although this is an important task; our ultimate aim is to attract attention to and support for projects such as those that have been outlined at the Niigata Energy Forum, as well as some of the concepts and proposals generated by this CGP-funded project. More importantly, our goal is to find ways to feed these ideas into government agenda and, ultimately, into the policy-making process, which is one of the reasons why we chose to start with parliamentarians.

RENEWED OPTIMISM REGARDING A SOLUTION TO THE DPRK ISSUE

Roy Kim

Professor, Drexel University

Several participants in the Niigata Energy Forum have touched upon issues relating to the DPRK, KEDO and the latest developments on the Korean Peninsula. From my own perspective, my findings from this project have been somewhat in contrast to what has been expressed in the press, particularly in the US. This can be demonstrated by comparing what has happened to the situation ten years ago. In 1994, there was a major crisis in the DPRK and the Defense Secretary of the US at the time, William Perry, even had plans for pre-emptive strikes on the country, as he revealed in 1999, following his visit to Pyongyang.

I happened to be in Pyongyang in the fall of 1994, right at the time when discussions were taking place in Geneva between the DPRK and the US. I was very alarmed because the whole idea of establishing KEDO in 1994 was based on a completely false assumption. Kim Il Sung passed away in 1994 and the expectation around the world, particularly in the corridors of power in Washington, was that the DPRK would collapse immediately.

My visit to Pyongyang in 1994 was at the behest of the DPRK government and I dealt with a man who was responsible for negotiating with the US. I was there for about two weeks and was able to communicate with Washington while the negotiations were in progress. There were two additional issues that emerged during the course of the talks that were not included in the Geneva Accord. One was a transmission grid system, which the DPRK side insisted was an absolute necessity; my contact was very worried that, without an

adequate transmission grid system, the two nuclear power plants would not become operative. The second issue was insurance: neither Lloyd's of London nor any other insurance company would agree to insure the Kumho project. To cut a long story short, I was very surprised – and remain so today – that KEDO lasted as long as it did. Of course, the project is now limping, with construction on one of the power plants having stopped completely, while the other is still just about clinging to life.

Why did I mention this? Most of the negotiations and calculations on the part of Washington were based on a fallacious assumption. If we fast-forward to today, I am much more optimistic than Ambassador Afanasiev. There are several reasons for this. Firstly, in 1994, the negotiations were bilateral, involving only the US and the DPRK, but today the framework is multilateral. I vividly recall a heated argument I had with my contact during my visit to Pyongyang in 1994. He was in favor of multilateral negotiations, which were not possible at the time. However, today we have a multilateral framework in the form of the six-party conference. The neighboring countries are very actively involved in the negotiation process, particularly China. This is a very encouraging sign. Russia is no less active in supporting a solution to the issue, both from Moscow and Far Eastern Russia. Most of all, diplomatic activity between President Putin and Kim Jong-Il has taken place.

We have already heard from Ms. Smith about the role of the EU. Even as we speak, EU representatives are now in Pyongyang, establishing a commercial liaison office. Another important element is the role of the

ROK. Unlike in 1994, the ROK is very actively involved in rapprochement with the DPRK. One example of this is the Kaesong Free Economic and Industrial Zone that is now being constructed. At the same time, there is the Hyundai-initiated Kumgang tourism development program, which is

now used year-round.

The final reason why I feel a greater sense of optimism about the prospects ten years on is that DPRK and the powers that surround it are all becoming very transparent, which differs greatly from the situation in 1994.

CHINA IN NORTHEAST ASIA: THE ENERGY-SECURITY NEXUS

Daojiong Zha

Director, Center for International Energy Security
Renmin University of China

Introduction

This comment offers an answer to a key question involved in thinking about energy security in Northeast Asia: what is the emerging competition between China and Japan for Russian energy likely to entail for security in the region as a whole? I will try to accomplish the task by taking the following steps. Firstly, I will provide a brief overview of the growing awareness within China of its dependence on offshore sources of energy, principally oil. Secondly, I will address the security issues associated with the competition between China and Japan for Russian sources of energy. Finally, I will argue for an alternative conceptualization of the links between energy and security in the Northeast Asian region.

China's Heightened Awareness of its Energy Vulnerability

China's dependence on offshore sources of energy, particularly oil, is a decade-old phenomenon, dating back to at least 1993, when China became a net oil importer. 2003, however, saw a number of developments that were powerful reminders of the country's vulnerability when it comes to securing sufficient offshore oil supplies for sustaining economic growth.

In January and February of 2003, China's import of crude oil rose by 78% on the same period of 2002. Payments for oil imports accounted for the first month-to-month trade deficit for China in six years. The pending US invasion of Iraq led Chinese oil companies into panic buying of oil on the world market, partly because China had yet

to establish a meaningful strategic oil stockpiling capacity. When crude oil prices fell after the actual invasion began, the external dimension of China's energy security attracted much discussion among Chinese economic policymakers and the public at large.

There was little surprise that energy security became a prominent issue for debate among the deputies of the National People's Congress and the Chinese People's Political Consultation Congress, both of which were convened in March last year. Chinese media summaries of views aired in the two Congresses focused on reducing the level of dependency on offshore sources of oil.

Policy proposals included the establishment of a national strategic oil stockpiling system, further development of the coal industry, promotion of hydropower generation and clean energy, and the relaxation of government policies for the purpose of enlisting private capital to finance the development of oil fields both on land and close to China's territorial waters. Obviously, such proposals were informed by a desire to reduce China's dependence on the outside world for energy.

While energy independence is a politically desirable goal, to implement policies so inspired would imply massive capital injections by the central government. In addition, it would require a re-centralization of energy policy decision-making by way of re-establishing a ministerial level bureaucracy under the State Council. In 1998, the government abolished the Ministry of Energy and put some of its functions under the control of the Ministry of Land and

Natural Resources. The idea was to let the market play a larger role in meeting China's energy needs. The new leadership of the national government chose to maintain the status quo by setting up a small energy bureau under the re-structured State Development and Reform Commission.

For much of the rest of 2003, energy became a topic for discussion in the public domain. This was in part due to relaxed government controls on media reporting of international affairs, beginning with coverage of the war against Iraq. More importantly, the new national leadership champions the notion of 'governing for the people'. Energy became one of those issues upon which concerns about the wellbeing of the average Chinese and the energy security of the nation were focused. The intensity of media coverage about energy-related developments – both domestic and overseas – is unprecedented in recent years.

Competition Between China and Japan for Russian Oil

Against this background, there were high hopes in China for the beginning of construction work on the Angarsk-Daqing pipeline in 2003. The entry of Japan as a party interested in the same Russian source of oil is perceived as an untimely change of dynamic, at best. It would take a separate research project to provide a full account of the range of Chinese views about the pipeline and issues originating from the ups and downs of its progression. In this section, I will report a few recurrent themes in Chinese reactions to the ongoing indecision by the Russian government.

Firstly, the failure to start construction of the pipeline, which, according to an agreement signed by the prime ministers of China and Russia in 2001, was designed to transport 20–30 million tons of crude oil

annually for at least 25 years beginning in 2005, is largely the result of the changing dynamics of government-business relationships within Russia. With hindsight, the China National Petroleum Corporation (CNPC) probably overlooked the complexities in Russian politics by choosing Yukos rather than Gazprom as its Russian counterpart in the pipeline project. This seems to have been particularly true when the idea of a Russian pipeline to Nakhodka emerged in the second half of 2002. CNPC still went ahead by presenting the negotiations it had entered into with Yukos as a virtual certainty when China's President Hu Jintao visited Russia in May 2003. After all, all things considered, Gazprom has both experience and a share in cooperating with CNPC in China's West-East gas pipeline project. It might have been less politically sensitive to Russia had CNPC chosen Gazprom as its partner.

Secondly, Japan's formal entry into the competition, beginning with a visit by the Japanese prime minister to Moscow in January 2003, in the context of continuing difficulties in political ties between China and Japan, complicated Chinese understanding of the geo-strategic implications of the oil pipeline project. Some Chinese international relations experts challenged the Russian government to live up to its prior commitment to seeing oil flow to China from Siberia. According to this view, Russian governmental support for an oil pipeline to China is a necessary manifestation of the kind of rhetoric of 'strategic partnership' so characteristic of relations between Russia and China in the post-Cold War era. Yet the power of Japan, which was willing to provide funding for the construction of the pipeline itself, in contrast with China, which offered no such funding, is undeniable. It remains a mystery why China has not made a counter-offer to Russia after the Japanese

entry into the competition became apparent.

Thirdly, although analysts in the Chinese oil industry feel that it would be both desirable and feasible to see between 20% and 30% of China's imported oil coming from Russian sources by 2010, now that Nakhodka has become a viable option for the Russian government, China will have to work harder to convince both the Russian and Japanese governments that enabling it to access Russian sources of oil and gas is in their interests as well.

Energy featured as a key commodity in Chinese exports to Japan until the mid-1980s. Since then, Japan has become a key supplier of energy products (aviation oil, for example). In other words, there continues to be mutual dependence between the Chinese and Japanese economies in terms of energy. The challenge now facing all three governments is to find the requisite wisdom and utilize the competition as an opportunity for a three-way cooperation.

There is no cause-and-effect relationship between political ties in Sino-Japanese relations and Japan's pursuit of a Russian pipeline. After all, like China, it is in Japan's interests to diversify its sources of offshore energy as well. The unfortunate state of affairs is that the political atmosphere in Sino-Japanese diplomacy makes it difficult, if not impossible, to put the competition in a proper context.

An Alternative Conceptualization of Energy-Security Links in Northeast Asia

Realistic logic in international relations has us see the competition between China and Japan for Russian oil as a zero-sum game. The security arrangement in the Northeast Asian region remains unchanged from the Cold War era. Since the thrust of the regional security arrangement continues to

be bilateral alliances and agreements between the United States and countries in the region, the regional strategic landscape is bound to be a volatile one.

In this context, China's success in diversifying its sources of offshore oil means a strategic gain on several grounds. The Angarsk-Daqing pipeline would indeed serve as a boost to the strategic ties between Russia and China, in addition to aiding the development of China's northeastern provinces, a rustbelt industrial region that has fallen behind in China's high-speed development of the past two decades. China's gain would then mean a loss for Japan, a country that is struggling to regain the kind of regional prominence it enjoyed until the burst of the bubble economy. It is therefore not surprising that, in the Japanese proposal to Russia, Nakhodka is presented as a strategic choice in that it serves as a convenient transit port for Russian oil to third destinations, including the United States and Taiwan. Ideas being floated in Russia about a pipeline that connects to both Nakhodka and Daqing reflect a desire to maximize the strategic gains Russia can reap from selling the same source of oil.

Such logic fails to pay adequate attention to a number of important issues associated with the Chinese and Japanese search for reduced dependence on oil from the Middle East by turning to Russia. Recognition of such issues can lead us to view the current state of affairs less strategically.

Firstly, China's securing of supplies of oil from Russia through a pipeline would be conducive to avoiding the same kind of Chinese panic buying of oil as was seen in early 2003. Panic buying by China works against the interests of all oil importing countries, as it pushes up the prices of oil for all. Theoretically, China can also avoid panic buying through strategic oil stockpiling

and it has just begun to take concrete steps towards constructing a strategic oil stockpiling system. In this process, it is still in the interests of all oil importing countries, Japan included, that China has a high degree of confidence in its ability to secure uninterrupted access to offshore oil.

Secondly, China is becoming the ‘factory of the world’, referring to the extent to which products made in China are supplying the economies of the entire world. Because the majority of Chinese exports remain labor-intensive and low-tech, it benefits the rest of the global economy if the Chinese economy is experiencing stable development. Major shocks to Chinese access to offshore oil are not only detrimental to the Chinese economy but also entail costs for countries importing products manufactured in China as well. In other words, there is scope for perceiving economic growth in China free from major interruptions to its access to offshore oil as being in the interests of all China’s neighbors as well.

Thirdly, there has been a quiet change in China’s handling of military security in the Northeast Asian region. China’s shift towards enlisting international collaboration in order to put an end to the DPRK’s nuclear weapons program is a good case in point. Although the parties to the international

framework for dealing with the DPRK may have differences as to the process and eventual goal of engaging the DPRK, through action China has demonstrated its willingness to cooperate with interested parties in managing a common security challenge. The change in China’s policy towards the DPRK’s nuclear weapons program, together with the end of official rhetoric from China with regard to the deployment of Theater Missile Defense systems in China’s Northeast Asian neighborhood, points to a level of confidence in China’s regional security environment in the foreseeable future.

An alternative conceptualization of the China-Japan competition for Russian sources of energy means that we de-emphasize the geo-strategic imaginings associated with the design of the pipeline. Instead, we should begin to ask ourselves:

- What do China, Japan, and Russia each stand to gain from the joint development of oil and gas in Siberia and Far Eastern Russia?
- How can China and Japan contribute to fostering overall economic development in those Russian regions, rather than concentrating solely on the mineral resources there?

ENERGY SECURITY AND NORTHEAST ASIA: SOME OBSERVATIONS

Yonghun Jung

Vice-President, Asia-Pacific Energy Research Center (APERC)

Energy security as a definition has been evolving to become more comprehensive and inclusive, reflecting ever-changing global concerns about the stability and cost of energy supply. A comprehensive approach to energy security now responds to such factors as continued economic growth, sustainable development, environmental protection and globalization.

While the traditional definition of energy security emphasized securing supplies of energy at any cost, the new definition looks at ways of securing a sustainable energy supply at economically competitive price. In a regional context, Northeast Asia is attracting growing attention for several reasons.

Firstly, apart from Russia and China, the countries of Northeast Asia are not endowed with sufficient energy resources to meet their own needs. Furthermore, China's energy imports are bound to grow.

Secondly, the economies of this subregion are becoming increasingly dependent on the Middle East for oil. Moreover, oil importers in the subregion are paying the so-called Asian Premium, which adds \$1–2 per barrel to the market price of oil.

Thirdly, while short-term problems require immediate attention, debate is unfolding concerning the need for long-term strategies for diversifying sources of supply. The most pressing issues at present are the prospects for nuclear power expansion in Japan, rolling blackouts in some parts of China, the future of KEDO and the energy situation in the DPRK and the modernization of Russia's energy industry.

In discussing these problems and longer-term energy supply options, national experts

and representatives of international organizations tend to speak more often in terms of regional energy cooperation. Have the potential benefits of regional cooperation in solving some energy security problems been neglected in Northeast Asia?

This subregion is becoming a more important part of the world economy. Its share of world trade has grown rapidly from 5.5% in 1960 to 15% in 2003. Energy consumption is also rising, reaching 18.2% of the global total primary energy supply (TPES).

However, unlike in Europe and North America, the economies of Northeast Asia are "energy islands" with no power interconnection among them, no cross-border natural gas pipelines and very little in the way of subregional oil trade.

There is a widening consensus that trade in energy goods and cross-border energy links will make everyone better off and the market is the best mechanism for organizing such trade. Ultimately, a subregional power market could emerge and a gas market will become a reality, linking all cities and towns through pipes and wires.

To achieve all this, national governments, regional administrations and energy companies need to overcome numerous hurdles: technical, economic and political. As of today, the lack of political coordination in Northeast Asia can be explained by its rather short history of diplomatic relations compared to Europe and North America. Nevertheless, the lack of both formal and informal channels that would allow subregional energy issues to be addressed with the involvement of all parties, such as ASEAN, for example, can also be explained

by the various national energy policies of the subregion, which are focused on achieving self-sufficiency.

Entering closer, cooperative relationships in the realm of energy has been associated with perceptions of risk and doubts on the economics of the proposed projects. The vast investment requirement is troubling and the existence of competitive, but extra-regional alternatives for oil and gas supplies has thus far hampered policy initiatives aimed at developing cross-border energy ties. Moreover, the uncertainty associated with the DPRK and the nuclear issue makes the whole of Northeast Asia an unstable zone. In terms of demand and the economics of some projects, the market is still growing and its not-insignificant share of demand for power and natural gas has yet to be confirmed.

In summary, difficult decisions have been delayed, on the one hand, while on the other, a tough question is looming large: “Are we waiting for a crisis?” The role of a possible crisis in shaping the environment for subregional energy cooperation cannot be underestimated. A crisis could instantly alter the meaning of measures: what is considered to be politically impossible today may become politically inevitable tomorrow. Examples include the improvements in energy efficiency and the expansion in nuclear power generation and LNG use in Japan in the wake of the first oil crisis.

We may need time to overcome all the hurdles in promoting the spirit of regional energy cooperation in Northeast Asia. However, political will could significantly

lessen the transition time toward the early implementation of regional cross-border projects.

There are major benefits stemming from the ERINA project. One of these is the establishment of a network of regional energy experts and channels of communication with policymakers, business practitioners and researchers, including those from the DPRK. Secondly, the project organized by ERINA facilitated the identification of critical issues for enhancing energy security in Northeast Asia. Thirdly, we had an in-depth discussion of the DPRK issue. Furthermore, the project team and invited experts discussed the relative merits and demerits of regional projects of various kinds and sizes. Finally, the project’s value also lay in the role it played in enhancing public awareness of the need for and desirability of subregional energy cooperation, which would help to build consensus among stakeholders.

While considering a way forward, we should pay attention to maintaining the current network of the regional experts and promoting informal communication channels among policymakers. An in-depth study of energy cooperation issues relevant to Northeast Asia with the participation of regional organizations will help in fully exploring the potential of a wide range of endeavors and options, from power system interconnection to joint research and development efforts in critical fields such as new and renewable energies, and in assembling and publishing a “White Paper on Northeast Asian Energy”.

PROPOSALS FOR PRACTICAL PROJECTS

THE 500kV CROSS-BORDER TRANSMISSION LINE PROJECT LINKING THE RUSSIAN FAR EAST WITH THE DPRK (CHONGJIN)

Victor N. Minakov

Director-General, Vostokenergo
Far Eastern Representative Office, UES of Russia

The project that is the focus of this presentation is currently in the very early stages of development. Consequently, many of its parameters are tentative. Nevertheless, we believe that the timeliness of the project and the significance of the problems it is intended to solve, not to mention the opportunities that it will open up will be of great interest to the participants of this conference.

The Problems

The power supply shortages from which the DPRK began to suffer in the mid-1990s have become the principal obstacle to national development, exacerbating the economic and humanitarian crisis within the country and contributing somewhat to maintaining international tension in Northeast Asia.

We are of the opinion that solving this problem will not only be in the interests of the DPRK, but will also promote economic development and stability in Northeast Asia as a whole.

Scenarios for Solving These Problems

Until now, neither the DPRK's own efforts nor the few international attempts that have been made to solve the problem of power shortages by constructing new generating facilities have yielded successful outcomes. In our opinion, such initiatives are unable to provide fast and fruitful solutions:

- Thermal power stations: the finance and fossil fuels available are insufficient to allow the construction of new thermal power stations.
- Nuclear power stations: the KEDO program has been suspended for at least a year with only a very dim prospect of resumption, particularly given that the available nuclear power station is too small.
- Hydroelectric power stations: the DPRK's existing hydroelectric power stations require reconstruction or the replacement of equipment. The construction of new and bigger hydroelectric power stations requires large-scale investment and a longer completion period.

A speedy alternative solution might be the construction of a 500 kV transmission line linking the Far Eastern region (Vladivostok) with the northern part of the DPRK (Chongjin). The construction of new generating facilities would inevitably take more time than the construction of a power transmission line. This factor is no less significant than the financial aspect.

The Essence of the Project

The project essentially involves the construction of a 500 kV cross-border transmission line between the Far Eastern Region and the DPRK, and the provision of power supplies to consumers in the northern part of the DPRK.

The advantages of such a project are that it is unarguably in the interests of the DPRK, allowing it to overcome its acute shortage of power supplies, while being in the interests of Russia, enabling it to solve problems in stabilizing both its energy sector and the loads of its thermal power generation facilities, not to mention being in the interests of all the countries of Northeast Asia.

The proposed infrastructure project, which involves the construction of a power transmission line during the period 2004–2007, would facilitate the development of the DPRK economy as well as contributing to easing political tension in the region.

The successful accomplishment of this infrastructure project with the participation of international organizations is a prerequisite for implementing larger-scale infrastructure projects in the region.

Project Parameters

The proposed transmission line is a 500 kV 50 Hz AC line with a total length of 380 km. The Russian section will run 250 km from Vladivostok to Kraskino, while the DPRK section will run 130 km from Kraskino to Chongjin.

The conditions along the route that the transmission line is due to follow make its construction rather challenging. As it is planned, it will pass through a narrow strip of land between the sea and the border with China, crossing several national parks and national nature reserves.

Those sections of the transmission line that pass through national nature reserves are subject to special requirements. As ecological regulations restrict the expansion of the high voltage transmission line, it will be extremely difficult to obtain a license if a problem arises that necessitates the laying of an additional transmission line.

This situation means that special multipurpose pylons that can carry several power lines simultaneously, including one for AC and another for DC, must be erected in the several sections of the line that are subject to environmental regulations. This will allow the masts to be used to carry the wires for the power line to the ROK that may eventually be built. It is hoped that one thing that will work in the plan's favor, as far as the regulations are concerned, is the fact that the passage that will have to be cut through the forest for the transmission line will help to prevent the spread of forest fires.

◇ Power consumers:

- The Rajin-Sonbong economic and trade zone, close to the border between Russia and the DPRK;
- The railway line that passes close to the route of the power transmission line;
- A projected oil pipeline;
- Chongjin consumers of the 500 MW load provided by the project.

Taking into consideration existing plans for joint Russian–Korean projects, including plans to modernize the railway, the program for the feasibility study of the transmission line will also look at the construction of an intermediate 500 kV substation at Kraskino, close to the border with the DPRK.

◇ The volume of the power supply from Russia to the DPRK:

	Unit	Volume of supply	Period when power supply is estimated to begin
Electric power	Million kWh/year	1500–2500	2006–2007
Load	MW	300– 500	2006–2007

◇ The cost of constructing the Russia–DPRK transmission line is estimated at about \$160–180 million, which includes the cost of conducting studies and designing the line.

- ◇ From the design stage, the project will take 3–4 years to complete.
- ◇ The investment repayment period should not exceed 8–10 years; the actual time required for repayments will depend on the actual volume of power supplied.

Project Phases

Current estimates of the various phases in the realization of this project are as follows:
2004:

Feasibility study completed

July 2005:

Design of the transmission line completed

July 2005:

Construction of the transmission line begins

December 2006:

Construction of the transmission line completed

January 2007:

220 kV transmission line commissioned

December 2007:

500 kV transmission line connected

These dates are estimates and may therefore be revised in the event of any delays, arising from such problems as those encountered in securing sources of finance for the pre-feasibility studies.

In 2001, following an enquiry concerning the possibility of supplying power to the DPRK, UES of Russia initiated a study of the effectiveness of power exports from the Far Eastern region to the DPRK. Preliminary studies have demonstrated the sales price boundaries and minimum volumes required to ensure that the investment is repaid and the intercountry transmission line functions efficiently. Preparations are now being made to conduct a feasibility study of the 500kV Russia–DPRK transmission line, which should be completed in 2005, once a source of financing has been found.

The first practical step in the cooperation

between Russia and the DPRK is to be a training course for technicians and team leaders from the DPRK, which is due to take place in 2004 on the site where the transmission line is being constructed, in the southern part of the Far Eastern region. The course is being organized by UES of Russia's representative office Vostokenergo, following cabinet approval of a request by the DPRK's Ministry of Electric Power and Coal Industry, but some issues have yet to be settled.

The Current Status of Work

The preliminary studies conducted by UES of Russia indicate that the project would be sufficiently effective as long as the price gradually increased to \$0.05 per kWh and the volume of power supplied was about 2,500–3,000 MWh. Taking into consideration solvent demand, this would ensure the profitability of the investment in constructing the transmission line and the substations, and provide the project with a competitive advantage over the alternative proposal involving the construction of new generating facilities.

Vostokenergo has been conducting negotiations with the DPRK's Ministry of Electric Power and Coal Industry, looking at all possible problems that may arise in implementing the project. Seven meetings have taken place since October 2001 and work has already begun on pre-feasibility studies for the transmission line.

Power Generation in the Southern Far Eastern Region

The question arises as to whether or not Russia is able to supply the necessary quantity of power to the DPRK. Our estimates are based on current power generation levels and plans to develop new

	2003 (report)	2007 (estimate)
Installed capacity, MW	7270	9200
Electric power generation, billion kWh	26.0	31.0
500kV transmission lines, km	1800	2800

generation facilities and transmission lines in the United Energy System of the East.

The growth of internal power consumption in Eastern Russia is estimated to be fairly high, at about 3% per year. If energy-saving measures are taken into consideration, this corresponds to an internal regional product growth rate of 6–7%. It is evident that the plans to commission the Bureya hydropower generation facilities and transmission lines are necessary in order to meet the demand that will result from the growth of the Russian economy.

The general strategy for renewing the capital of the electrical power sector in the Russian Far East envisages the development of the region's hydroelectric potential, with more hydroelectric power stations being built and their share in the energy balance of the region being increased. Should there be considerable growth in the demand for electric power from foreign consumers, thermal power stations can also be assigned additional loads via the cross-border interconnection.

The Russian program for constructing new generation facilities and modernizing existing plants could be modified by including the total potential power demand after a decision on the construction of the 500 kV Vladivostok–Chongjin transmission line has been taken and large-scale exports of power have been organized.

It should be noted that the potential offered by the numerous rivers in the Far Eastern region has been explored, with pre-feasibility studies of promising hydroelectric power stations having been conducted. The

existing power potential of the United Power System of the East (the southern portion of the region) would allow up to 2–3 billion kWh to be exported annually. After construction of the Bureya hydroelectric power station is completed in 2007, 4–5 billion kWh will eventually be exported, as long as adequate voltage transmission lines have been constructed, including a DC transmission line of ± 500 –600 kW to the ROK. New hydroelectric power stations will have to be built if demand for power increases, as these hydroelectricity projects were developed in earlier years.

The possibility is already being examined of implementing HPS projects with a total capacity of 1,500 MW, which will eventually generate a total of 6 billion kWh, and the appropriate pre-project documents have already been drawn up. Other proposals have already been prepared, in case there is an even greater demand for power; these involve a hydropower complex on the Uchur River and the Trompton River in South Yakutia, with a total capacity of 5,000 MW and which will eventually generate a total of 23,450 million kWh.

A pre-feasibility study of the Tugur tidal power station in the Khabarovsk Region assessed its capacity at 6,800 MW, with a generation volume of 16,200 million kWh. It seems unlikely that there will be any demand for these projects in the Far Eastern region until at least 2020 and their development will only be possible within the context of international cooperation with neighboring countries interested in importing power from Russia. Such countries would have to agree to invest in the construction of high-capacity environmentally friendly energy complexes that do not use fossil fuels, located in the southern part of the Far Eastern region.

The figures cited with regard to power and possible generation volumes allow us to

draw conclusions with regard to the potential for larger scale trans-boundary power flows and the practicality of further developing cross-border power interconnection in Northeast Asia.

Uncertainties

1. The foreign policy situation on the Korean Peninsula.
2. Legislation and investment protection in the DPRK.
3. Estimates of the volumes, structure and solvent electric power demand of the DPRK.
4. The price of the electric power supplied by Russia to the DPRK.

As part of the work on estimating the potential for power consumption in the DPRK, an analysis of the external trade of the DPRK has been conducted. This analysis confirms that growth will take place in energy-consuming industries: mining, fishery, timber cutting and woodworking. Enterprises in these industries could potentially balance out solvent demand for electric power in the very near future.

A joint venture is the preferred organizational form for the enterprise conducting the construction and maintenance of the transmission line. As the project is an infrastructure venture and is significant for the country as a whole, it is essential to obtain support and preferential treatment for the electric supply venture being created.

For reference only: five special territorial economic and trade zones being formed in the DPRK have been granted preferential operating regulations. These include the Rajin-Sonbong economic and trade zone, which is located on the eastern coast of the DPRK, close to the border with Russia and through which the proposed route of the power transmission line runs.

The exact price of the power delivered

will be determined once the results of the feasibility study have been disclosed. The market will determine the price, based on the cost of establishing cross-border power interconnection and expanding cross-border power supplies.

Project participants and their functions

- UES of Russia
- DPRK Ministry of Electric Power and Coal Industry
- Large corporate power consumers in the DPRK
- Private companies willing to act as co-investors
- Project trustees: the state and senior political officials (representatives) of the Russian Federation, the DPRK and, eventually, other countries in Northeast Asia.

UES of Russia is in charge of the overall initiative and the guidance of the project.

A managing company in Russia or another country, or a specially formed bilateral (or multilateral) joint venture may be designated as the operator of the newly established property.

A Russian company may be designated as the subcontractor for all of the project work in the relevant bilateral agreements between Russia and the DPRK. If the investors insist, the work may be put out to tender.

Any company may be designated as the electric power supplier for export, within the framework of the existing legislative and regulatory system; this makes it reasonable to continue examining the potential for reforming the price zone of the Vostok Unified Energy System, as well as developing adequate mechanisms for determining the objective price, procedures for concluding transactions and securing guarantees that transaction obligations will

be fulfilled, including obligations relating to spot transactions.

The investors will be determined depending on the degree of the political guarantees that can be given, both in connection with the project and within the scope of dialogue between Russia and the DPRK. At most, one may rely on long-term, relatively inexpensive credits from the international financial market. A more realistic version would involve attracting Russian funds by providing investors with certain incentives.

Opportunities Resulting From the Project

There is potential for supplying power to the ROK; this would require the transmission line, supplying about 2.5–3.0 GW of 500–600 kV DC power, to be extended about 900 km to the ROK border and beyond.

Factors Conducive to the Success of the Project

- The existence of private business as a solvent consumer in the territory of the DPRK (the Rajin-Sonbong economic and trade zone).
- The interest of guiding organizations in the DPRK, confirmed by the minutes of negotiations and practical organizational undertakings (training of specialists).
- The support to the project extended by top officials in the Far East Federal District of Russia.
- The potential held by the power sector in the Far Eastern region and the role of UES of Russia in the project.
- The fact that the project would require less time and money to complete than any of the alternatives.
- Cooperation with international organizations such as UN ESCAP, UN ESC and ERINA, and their support for and participation in the project.

ENERGY AND POLITICAL COOPERATION IN NORTHEAST ASIA: THE KORUS GAS PIPELINE

John Fetter

President, FSI Energy

Rimtaig Lee

President & CEO, Korean Southern Power Company

Issues, Markets and Energy Integration

The KoRus pipeline connecting Eastern Siberia to the ROK via the DPRK will provide significant political opportunities in addition to its established economic benefits. Opening new markets for Russian natural gas, the pipeline will enable the country neighbors to be partners in energy and economic development.

KoRus will support Russia by providing new markets for their otherwise “stranded” energy resources. KoRus will support China by improving the economic potential of its otherwise dependent neighbor, the DPRK. KoRus will support the ROK and Japan by improving regional security, thereby reducing the likelihood that nuclear weapons and delivery mechanisms would be developed by the DPRK. KoRus will provide a vehicle for improving strained relations between the US and the DPRK. By increasing the economic and energy integration of Northeast Asia, KoRus will decrease political tensions, increase access to energy and stimulate economic development.

The DPRK is geographically and politically central to Northeast Asian cooperation. The DPRK’s military and weapons programs are unsettling to Northeast Asian cooperation, but the economic situation in the DPRK has even more potential for disrupting life in Northeast Asia. To stabilize the economic and political environment of the DPRK will require industrial investment to create the jobs that the DPRK so desperately needs.

This investment will not happen without access to reliable energy in the DPRK.

China is the ally of the DPRK, and shares the longest border with it, but China is looking for outside investment for its own development, so may not be inclined to make significant investments in the DPRK. Russia is becoming more involved in the DPRK, but again, it is not in a position to make substantial investments. Therefore, investment is most likely to come from the ROK in the form of industrial and infrastructure development. KoRus provides a vehicle through which the DPRK can earn transit fees from the pipeline, as well as gain access to critical energy resources.

In addition to this, however, the DPRK will need access to financing from international financial institutions in order to build infrastructure and make other improvements necessary to participate in the economic growth of Northeast Asia. The ROK, Japan and the US need to support the DPRK’s application for membership of international financial institutions such as the World Bank, International Monetary Fund and Asian Development Bank so that the DPRK will have access to the resources it needs to develop a peaceful economy.

KoRus would provide the ROK, Japan and US with a non-nuclear option for providing the DPRK with the electricity it needs much more quickly. Since the DPRK needs electricity, it would be receptive to this more responsive solution, and since it would be non-nuclear, the ROK, Japan and US are likely to prefer the gas-fired option

Multiple Projects, Multiple Opportunities

Multiple projects have been proposed for energy integration in Northeast Asia, and multiple projects will be required to support the growth and stability of the region. The discussion needs to focus not on choosing which of the projects should proceed, but in what order the projects should proceed and how will they be integrated. We have just heard about an electrical interconnection project that makes sense, and should proceed, as it will enhance the stability of the region. It is just one of several electrical transmission and generation projects that will be needed in the region if the goal of providing stable, reliable electrical energy to the region is to be realized.

Two pipeline projects have been proposed for bringing natural gas to the Korean Peninsula. One pipeline would come from Irkutsk and supply China and Korea, while the KoRus pipeline would come from Sakhalin and supply Russia, Korea and possibly China and Japan. These two projects have been discussed as competing, but in reality they complement each other. They have distinctly different attributes, both of which support the needs of the Korean Peninsula as well as their different gas suppliers.

We will not explore the possibilities for interconnection between these two pipelines in this paper, but by simply looking at the map, you can see how these options could be explored to enhance the reliability of both lines. We will establish, however, how these two pipelines are mutually supportive, and should be viewed as such. We will also explore the timing of these two lines, and how they provide distinct attributes to their shareholders and customers, and provide different strategic value to Northeast Asia and Korea.

The KoRus pipeline will be operational in a 2008 to 2009 time frame, and thus will be

able to provide pipeline gas to Korea 5-7 years before Irkutsk. This is not meant to establish a competitive advantage of KoRus over Irkutsk, but simply to explain that the two pipelines will be supplying two entirely different tranches of gas demand in Korea. Gas demand in the ROK will exceed 40 Bcm per year by 2015. Thus, by there will be more than 15 Bcm of new demand by the time the Irkutsk pipeline could be operational. Since the ROK's share of the Irkutsk pipeline is a maximum of 7 Bcm per year, that leaves 8 Bcm that will need to be supplied by KoRus. This 8 Bcm is precisely what the KoRus pipeline is targeting. Furthermore, since there is potential for an expansion of capacity in the KoRus line, the growth past 2015, the growth in the DPRK market, and the potential for extending KoRus to China and Japan all provide increased opportunities for the KoRus pipeline.

Scope, Schedule and Support

The KoRus pipeline is currently envisaged as being between 1 and 1.3 meters in diameter, with the capacity to supply between 18 and 25 Bcm per year of gas. Market studies that are ongoing as part of the initial economic feasibility analysis will determine the optimal size and operating conditions of the pipeline. These analyses are being conducted in parallel with the development of the initial letters of intent with suppliers and customers. Engineering, permit acquisition and financing activities will all be ongoing for at least the next calendar year. It is envisaged that construction will begin in 2005, with a construction schedule of 2-3 years. It is possible to expedite construction if there are economic factors that require it, however reducing the scheduled construction time carries with it an economic penalty.

Although the initial estimate for construction cost is \$3 billion, the final operating model will determine the exact size and cost of the pipeline. The cost will only exceed \$3 billion if there is a market for additional gas that would require that investment, as well as the expansion capability that would be associated with that cost. For instance, if the Chinese, or other customers for capacity within the DPRK were to enter into long-term arrangements during the engineering phase of the pipeline, it is conceivable that both the capacity and the cost could go up slightly. For reasons that are outside the scope of this paper, however, it is reasonable to assume that even a significant increase in capacity would result in only a minor increase in cost.

No infrastructure project such as KoRus can be achieved unless the priorities of the multiple countries involved are aligned. Government support and involvement in negotiating project agreements is a necessary prerequisite for financing and construction. This support will not be forthcoming unless governments are educated about their stake in the economic and political advantages of the project. Support for KoRus is building as recognition of its positive attributes becomes more widespread. The ROK government is turning to Sakhalin as the closest and least expensive option for pipeline natural gas. The Russian government recognizes the value of KoRus to all of Russia, and has pledged its support in whatever way it is needed. The US Department of Energy has committed significant funding to feasibility confirmation studies, as the US recognizes the need to support its allies, and at the same time exploit precious energy resources for developing Northeast Asian economies, thereby reducing their dependence on the Middle East. The political aspects of the project require more

thought to determine how best to maximize value. The orientations of different governments will align in the end, as they realize that KoRus has value to each of them, but in the short run, KoRus must clarify these common values for all to recognize.

KoRus Gas Company

The KoRus Gas Company is a Korean company formed to develop the Korean market for pipeline gas. While there will be minority shareholders from Russia, the US and other countries, it is primarily a Korean initiative to establish the most economic and reliable supplies for natural gas. The KoRus Gas Company reflects the recognition of private industries and government that large infrastructure projects can be developed based on their own economics given the necessary government support.

For the first quarter of a century of the gas market, the ROK has been totally dependent on LNG. While the markets for LNG are expanding, and the economics of LNG are improving, there are still physical and economic limitations on LNG. While there is the occasional spot cargo of LNG available, it is essentially an inelastic market established to support long-term contracts between specific suppliers and their customers. The nature of LNG carriers does not enable them to be available at short notice. While there may be excess capacity in some liquefaction facilities, the transportation logistics do not lend themselves to having an inventory of shipping available to support spot cargoes and variable voyage lengths.

These inherent limitations of LNG supply have prompted the KoRus Gas Company and its participants to find a better supply option for Korea. The inherent flexibility of pipeline supply will provide customers of the

KoRus Gas Company with greater flexibility in their operating and consumption nominations, and thus will allow them to make economic decisions based on the market, and not on supply.

The core market for the KoRus Gas Company initially will be supplying the electric generators of the ROK with gas for electric generation. Thus, growth in electric demand will translate into growth in demand for gas and for supply from the KoRus Gas Company. As the DPRK's demand for electricity grows, gas-fired generation will acquire its own share of that market as well, creating new demand for the KoRus Gas Company's gas. Finally, due to the proximity of the KoRus pipeline to both China and Japan, it is the intent of the KoRus Gas Company to position itself as a provider of long-term capacity for both of these markets.

Regional Energy Issues

When the energy picture of Northeast Asia is considered as a whole, the necessity of including the multiple projects we mentioned at the beginning of this discussion becomes clear. In order to manage the seasonal fluctuations in electrical demand, as well as the regional disparities between generation availability and demand, it is becoming clear that numerous electrical transmission projects will be necessary to bring the regional grid up to a point where it is both robust as well as stable. One need only look to the upper Midwest and New York in the US last August to recognize that, even where the electrical grid might be thought to be adequate and stable, there is the potential for failure. Significant investment in Northeast Asia will be required before the grid is as robust as the Midwest of the US was, even before the recent failure.

Looking at the multiple energy projects that will be required and how they are interrelated demonstrates the realities of how fuel, technology and infrastructure combine to form an integrated energy strategy. The dominant fuel available in the region outside Russia is coal, which explains why coal makes up almost half of the energy consumed in the region. Coal plants, however, take a long time to build, and are difficult to operate in an environmentally friendly way. Therefore, the movement in the near future will be away from coal, and toward gas because gas plants can be built in a fraction of the time and are cleaner to operate.

China will be building vast amounts of new gas fired generation to fuel the economic growth they are experiencing, but they will be unable to reduce the amount of coal they are consuming in the near term. This is because China will be building new capacity as fast as it can to support growth, but it cannot build enough to support growth and retire existing facilities. Even though more than half of the \$8 billion budget that China has set aside for the 2008 Beijing Olympics has been earmarked for environmental projects, it will not have enough to retire significant amounts of coal-fired electrical generation and replace it with gas. Therefore, while the percentage of coal-fired generation in China may decline slightly, that is only due to the rate of growth of total generation, not due to retiring existing facilities. In fact, China will be going from a coal-exporting country to a coal-importing country as total energy consumption soars to support the staggering real economic growth rate in China of 4.8% over the next quarter of a century. This is a third greater than either the ROK or Russia, and fully three times the growth of Japan over the same period.

Only about 3% of China's total energy is

currently derived from natural gas, compared with a global average of 23%. Projections suggest that, while China will probably triple its consumption of natural gas over the next decade or so to about 9% of its total energy consumption, gas will still represent only about 40% as much of the Chinese energy mix as it does on a global basis. Therefore, there is still significant room for growth in Chinese gas demand, and gas projects that go into or through China will see significant pressure to expand their capacity to serve China.

Regional growth will be fueled by gas, however, because fully 40% of the world's natural gas is in Siberia. While some reserves are easier to access than others, vast amounts are ideal for fueling the growing economies of Northeast Asia with clean, inexpensive, but difficult-to-transport gas. Therefore Northeast Asia has a built-in advantage when it comes to consuming these vast gas supplies because of their geographic proximity.

Again, the integration of infrastructure projects will lead us to realize that when the more remote gas supplies of Saha and other areas come online, they will only need to build pipelines as far as Khabarovsk, for instance, where they can link up with existing pipeline networks.

Follow-on Opportunities

As we have shown, there will be a great need not only for access to fuel, but for also for the facilities to convert it into the forms

that energy industry and people demand. Therefore, there will be opportunities for building and operating the vast gas-fired generation facilities that will be built in Northeast Asia over the next couple of decades. While there will be opportunities for transmission projects throughout Northeast Asia, there will also be opportunities to build combined cycle and cogeneration plants to support the industry that will flourish as a result. For every transmission project, there will be a generation project for grid stabilization.

KoRus Gas Company envisages their role to be not only that of a fuel supplier to the growing markets of Northeast Asia, but also that of a preferred provider of fuel conversion facilities. While the Chinese market will grow at 4.8%, the potential for the DPRK market is even greater, because it is starting from such a low level.

In summary, there are resources and opportunities in Northeast Asia. The opportunities are not such that they conflict with each other, but complement each other. The growth rate will be a driving force for multiple projects, and it is incumbent on us to prioritize the investments so that the most important and highest value projects are built first. It is for us to recognize the challenges and limitations of projects so that we can realistically forecast when resources will be available. And finally, it is imperative that we be responsible about how we develop these resources for our children, and for theirs.

PROSPECTS FOR THE PROPOSED PROJECTS

Boris G. Saneev

Deputy Director, Energy Systems Institute

The two projects under discussion are of great political and economic significance and their implementation would contribute to economic development and stability in the subregion of Northeast Asia. It should also be stressed that both projects are technically feasible, with a reliable resource base in the form of the natural gas reserves of the Sakhalin shelf and available generating capacity in the form of the power system of the Far Eastern region.

The power transmission project is less expensive and requires a shorter implementation time. This project could also alleviate the power shortages in the DPRK, albeit to a limited extent, but it could do this relatively quickly. Finally, the power transmission line could be the first phase of a larger project, involving a cross-border power grid covering the entire subregion. Such a grid would interconnect the power systems of the Far Eastern region and the two Koreas, operating in parallel. If these

long-term plans were realized, the subregional power grid would become part of the transmission infrastructure, including cross-border gas and oil pipelines.

There are two export pipelines currently under discussion: a gas pipeline from Eastern Siberia to China and the ROK and a gas pipeline from the Far Eastern region to both Koreas. Let us review these two projects from the perspective of their readiness for implementation, time required and certain other factors.

In summary, these two projects share some points in common, including the expectation that such cross-border pipelines could have major political significance. However, both projects would be competing with the LNG option in supplying natural gas to these markets. On the other hand, they could constitute parts of a subregional gas pipeline network. The Kovykta project would be used primarily for the gasification of Eastern Siberia and the northeastern

Cross-Border Gas Pipelines: Comparative Characteristics

	Eastern Siberia–China–ROK	Far Eastern Region–DPRK–ROK
Project type	Interstate	Interstate
Availability of resources	Sufficient	Sufficient
Readiness of consumers	Adequate demand studies conducted	Demand must be studied (DPRK)
Alternative technologies	LNG	LNG
Political impact	Significant	Very significant
Complexity of implementation	Very complicated	Moderately complicated
Scientific and design validity	Trilateral feasibility study (Russia, China, ROK)	No feasibility study
Pilot implementation	None	Gas pipeline between Komsomolsk-on-Amur–Khabarovsk

provinces of China, and would deliver gas to the ROK. The Sakhalin gas pipeline would supply gas to the Far Eastern region, as well as the two Koreas.

It seems only logical that priority should be given to the gas pipeline linking the Far Eastern region with the two Koreas. First of all, the construction time for such a pipeline would be shorter; the Komsomolsk-on-Amur – Khabarovsk pipeline, which is currently under construction, could be extended to Vladivostok, followed by an extension to the Korean Peninsula.

It is important to note that the ROK already has a developed gas pipeline network and a nationwide gas transportation system. Moreover, unlike the natural gas of the Siberian platform, the Sakhalin gas does not contain components such as helium. The separation and storage of helium would require additional investment, adding to the cost and implementation time of the project.

On the other hand, there are currently plans to supply about 14 Bcm of Sakhalin gas as LNG (the Sakhalin II project). The

construction of a gas pipeline from the Far Eastern region to the two Koreas would imply the necessity of dedicating gas to a pipeline from other sources, including from the Sakhalin I project.

The Komsomolsk-on-Amur – Khabarovsk gas pipeline with a possible extension to Vladivostok, if commissioned, would only be capable of meeting demand from consumers in Khabarovskiy and Primorskiy krajs. A second line would be needed to supply gas to both Koreas along the same route.

At present, the basic outlines of the long-term strategy for energy cooperation in Northeast Asia are clear enough. The resource bases of the supplying countries and energy markets of the consuming countries have been studied well. However, greater attention should be paid to coordination among the countries, regions and companies involved in these projects. Furthermore, economic, legal and other incentives to implement large cross-border, multi-state energy projects will be needed.

THE FUEL AND ENERGY COMPLEX OF PRIMORSKIY REGION: PROBLEMS AND PROSPECTS FOR DEVELOPMENT

Victor V. Gorchakov,
Deputy Governor, Primorskiy Krai

In the context of these very useful presentations, I would like to mention that the energy projects that are a high priority for attracting foreign investment in Primorskiy Krai and Far Eastern Russia are the following:

- The Sakhalin offshore oil and gas projects
- The export of natural gas from the Far Eastern region to neighboring markets
- The power bridge project between Primorskiy Krai and the two Koreas
- Local electricity transmission projects to China and the DPRK
- A gas pipeline linking Sakhalin–Komsomolsk-on-Amur–Khabarovsk–Vladivostok

Leading Russian companies and well-known global corporations are involved in various preparatory activities concerning these projects.

The oil and gas industry in Primorskiy Krai is going to be developed in five main directions: (1) the development of oil and gas transportation systems on the region's territory, (2) the manufacturing of construction equipment, as well as the production of materials for the oil and gas industry, (3) the expansion of the raw material base on the region's territory, (4) the construction of oil and gas processing facilities, and (5) the gasification of Primorskiy Krai.

The Development of Oil and Gas Transportation Systems

The implementation of the oil and gas

pipeline projects proposed by Transneft and Gazprom will allow the development of an integrated approach to the exploration and development of oil and gas resources, as well as dramatically expanding the fuel and energy complex of the region. One can also say that such an approach would provide the maximum economic benefits for the economic and social development of the area. The construction of pipelines through the territory of Primorskiy Krai could be the key to attracting foreign investment in the exploration of natural resources and other industries in Eastern Siberia and the Far Eastern region.

Equipment Manufacturing

There are plans to build several plants in the southern area of Primorskiy Krai for manufacturing platform bases and their superstructures. One plant has been already commissioned in Vrangal Bay, with the dry dock for the reinforced concrete bases of the offshore platforms to be used in the Sakhalin II project. The superstructure of the platform is due to be built in the shipyards and dockyards of Primorskiy Krai with the participation of Russian companies from a number of regions.

Expanding the Raw Material Base

In 2000, the Ministry of Natural Resources announced its intention to implement regional geological work in the Suifun district. Under the sub-program on mineral resources contained in the federal program entitled The Environment and Natural

Resources of the Russian Federation, 2002–2010, which was approved by the government on December 7, 2001, offshore geological exploration in Primorskiy Krai is to be conducted with the purpose of estimating oil and gas resources in Peter the Great Gulf. If this yields positive results, the work will proceed to the next stage, including seismic searches and drilling.

Oil and Gas Processing

As of today, there are no plants for processing oil and gas in Primorskiy Krai. There is a clear necessity for building such plants, given the implementation of the pipeline projects and their transit through the territory of Primorskiy Krai. The section of the federal program entitled Economic and Social Development of Far Eastern

Russia in 1996–2010 dealing with measures of inter-regional significance makes special mention of the potential for developing the oil and gas industry, including the construction in Primorskiy Krai of an oil refinery and a gas processing complex with a production capacity of 2 million tons of crude oil a year.

The Gasification of Primorskiy Krai

The first natural gas supply system in Primorskiy Krai will be constructed simultaneously with the construction of export-oriented oil and gas pipelines. At present, oil and gas production in the Far Eastern region is mostly limited to Sakhalin, as well as Yakutia and Kamchatka, albeit to a lesser extent.

PROSPECTS FOR ENERGY COOPERATION

Tatsujiro Suzuki

Central Research Institute of the Electric Power Industry

The prospects for energy cooperation among the countries of Northeast Asia are becoming more realistic. This is very good news for enhancing energy security in the region, but at the same time, conflict may well arise if the policies of major countries in the region are not coordinated properly. Unfortunately, signs of tension have already appeared between China, Japan and Russia, over possible oil pipeline projects from Western Siberia to the Pacific.

It is important to be aware of the general energy situation in the region based on recent trends and facts. Four major observations can be made:

1. Energy resources in the region are in plentiful supply, particularly natural gas, thus there should be no concern over physical shortages of supply for the foreseeable future.
2. However, infrastructure investment (e.g. pipelines, transmission lines, etc.) is needed in order to bring such resources to markets, and short-term energy crises could occur at any time for a variety of reasons that are as yet still unclear.
3. Although national boundaries are less important in more liberalized energy markets, geopolitical considerations are essential. Furthermore, differences such as those in policy priorities, regulations and industrial structures should be clearly recognized.
4. Non-carbon, less polluting energy sources, such as natural gas, renewable energy and nuclear power, may not be able to grow fast enough to reach GHG (greenhouse gas) reduction goals, as the economic hurdles seem to be very

high, not to mention the political ones.

Based on the recognition of these facts, I would like to recommend the following.

1. Energy security policy should shift its emphasis to regional rather than national energy security in order to reduce the likelihood of conflicts over energy resources in the region.

It is understandable that Japan and China would like to pursue their own interests in securing oil and gas supplies from Russia. However, it would be a terrible mistake if officials of both governments perceived this as a “win-lose” resource war. This should not be the case. For example, if there is a supply shortage in any of these two countries, the other country (or countries) in the region will inevitably suffer negative impacts as a result. In short, we are in the same boat. Multilateral rather than bilateral cooperative schemes should be pursued further in order to create a “win-win” situation for all countries in the region.

2. In order to maximize the efficiency of energy supply and infrastructure, regional governments should coordinate regulations, taxes and/or liberalization rules.

It is often the case that the international transfer of any good can take place more smoothly if related regulations and policies are coordinated among those countries. The energy trade should be the same. A good example can be seen in the case of safety regulations governing

pipelines and transmission lines. An energy tax could also be a subject for discussion, as it could change the relative economics of fuel.

3. In order to achieve such objectives, a regional energy charter treaty (or agreement) could be established to enhance the free and secure trade of energy (goods and services) in the region.

Although a number of initiatives are already underway among the countries involved, these endeavors have so far been conducted primarily on a bilateral basis. Given European experiences of facilitating similar regional energy trade, it would be a good idea for countries in the region to explore the possibility of concluding a regional energy charter treaty (or agreement). The Energy Charter Treaty, which is intended to facilitate energy trade while maintaining energy security and environment, could be a good model for a regional institutional scheme in Northeast Asia.

4. Many policy hurdles need to be overcome in order for nuclear power to be a socially acceptable and affordable carbon-free energy source. Meanwhile, the large-scale deployment of other non-carbon energy technologies, such as solar power, wind power, biomass energy, and carbon-capture and sequestration, would also require stronger policy instruments.

There is growing concern over the future of nuclear power, in particular, in Japan. Public confidence in nuclear power in Japan has been lost, and it will not be easy to recover it. Unless there is a fundamental change in nuclear energy policy and the related policy-making process, the future of nuclear power in Japan will continue to be very uncertain. This could have significant negative impacts, both for energy security and the environment in the region. While international cooperation in the research and development of carbon-free technologies is already underway, the diffusion of such technologies requires stronger policy initiatives. It would be desirable for countries to start discussing the pros and cons of such policy measures.

CONCLUDING COMMENTS

Katsuhiko Suetsugu

Secretary-General, Asia-Pacific Energy Forum

ERINA's efforts to promote the consensus-building process with regard to this very complex, long-term agenda of creating a Northeast Asian energy community are admirable. The interim results of ERINA's reports on mega-project proposals are of great interest. One important factor is identifying which model will be most effective in creating a new regional energy community. Three models for building institutional preparedness have been suggested. The first is a competitive relationship between an IEA-type organization and OPEC, as a form of dialogue between producers and consumers. However, I feel that this model would be rather difficult to apply to the Northeast Asian energy community.

The second model proposed is that adopted by Norway and the UK with regard to the North Sea. I believe that, as a concept, this is becoming relatively politically acceptable in Northeast Asia, because we need a vast source of energy resources that is accessible to all in the relevant region, which is the role fulfilled by the North Sea in Europe. However, this second proposal differs slightly from the political reality of this region. In the case of the North Sea, there were two suppliers – Norway and the UK – but in Northeast Asia only Russia has the potential to pump significant energy resources into the region. Moreover, the UK

has played a dual role as both a producer and a major consumer, but in Northeast Asia, it is uncertain as to whether Russia could fulfill a similar role. In order to implement the “North Sea model”, a strategy is needed for developing demand, consumption and markets in Far Eastern Russia as a friendly, neighboring entity in the region.

I believe that the most promising model is that based on the dialogue between Russia, as a producer/supplier, and the EU, as a consumer region. This seems to be the most appropriate one for implementing a variety of policy agenda in Northeast Asia.

In identifying the best model for implementing these agenda, we need to identify common targets. At this point in time, the concept of a common energy market may be more practical than that of a regional energy community, as the latter entails more complex and difficult political factors. However, even now we can see the need and potential for production and consumption in this region, so the market concept is much more realistic. We can create a Northeast Asian energy market by formulating rules and commitments regarding access, and initiatives concerning investment, trade, transport and technology transfer. The involvement of policy-makers in this will be absolutely crucial.

LIST OF PARTICIPANTS

REGIONAL GOVERNMENTS

Niigata Prefecture

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Koichi SAKAI, Director, International Affairs
Department
Naoki SHIDA, Section Head, Nuclear Safety &
Resource Policy Department

Khabarovskiy Krai

Victor ISHAEV, Governor
Vladimir KUCHUK, Advisor to Governor
Vladimir SYRKIN, Vice-Governor
Gennadiy KONDRATOV, Director, International
Protocol Department

Primorskiy Krai

Victor GORCHAKOV, Vice-Governor

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Natural Resources and Energy

Ministry of Justice, Japan

Isaku OKADA, Public Security Investigation
Agency

Ministry of Foreign Affairs, Russia

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Asia Department

Ministry of Economic Development and Trade

Vladimir METELKIN, Trade Representative in
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Ministry of Infrastructure, Mongolia

TSENGEL, State Secretary

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Russian Federation, Embassy in Japan

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Russian Federation, Consulate General in Niigata

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Sergei BUTIN, Consul

GOVERNMENT AGENCIES

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Japan Bank for International Cooperation

Shigeru NOZAKI, Senior Executive Director

Japan National Oil Corporation

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Planning Department

INTERNATIONAL ORGANIZATIONS

International Energy Agency

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UNDP Tumen Secretariat

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COMPANIES

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Alexei MASTEPANOV, Deputy Director,
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KEPCO

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Osaka Gas

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Division

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Vostokenergo

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Asia Pacific Energy Research Center

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Karla SMITH, Project Director

Economic Research Institute, Khabarovsk

Pavel MINAKIR, Director

Energy Systems Institute, Irkutsk

Boris SANEEV, Deputy Director

Institute of Energy Economics Japan

Tsutomu TOICHI, Managing Director
Kensuke KANEKIYO, General Manager,
International Cooperation Department

Japan Institute of International Affairs

Elena SHADRINA, Visiting Research Fellow

Korea Energy Economics Institute

Ki Joong KIM, Research Fellow

Korea Transportation Institute

Byung-Min AHN, Head, Northeast Asia
Research Team

Mitsubishi Research Institute

Takeshi KANEDA, Project Manager, Energy
Technology Department

National Institute for Defense Studies

Hideshi TAKESADA, Professor

UNIVERSITIES

Nobuo ARAI, Slavic Research Center,
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Yasuhiro CHIBA, Faculty of Economics, Akita
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Division
Eleanor GOLDSMITH, Research Assistant,
Research Division
Ivan POKROVSKY, Research Assistant,
Research Division

THE NIIGATA ENERGY FORUM 2004

Co-organized by the Economic Research Institute for Northeast Asia (ERINA)
and the Northeast Asia Economic Forum (NEAEF)
with the support of the Japan Foundation Center for Global Partnership

Evening Session

8th Floor, Sado Island Ferry Terminal Building
17:00–20:30, January 31, 2004

Introductory remarks by Ikuo HIRAYAMA, Governor of Niigata Prefecture
Introductory remarks by Victor ISHAEV, Governor of Khabarovskiy Krai

Presentation by Victor MINAKOV, Director General, Vostokenergo
Presentation by John FETTER and Rimtaig LEE, KoRUS Project

Comments by Boris SANEEV, Energy Systems Institute, Irkutsk
Comments by Ki Joong KIM, Korea Energy Economics Institute
Comments by Victor V. GORCHAKOV, Vice-Governor, Primorskiy Krai

Dinner

Q & A

Informal talk by Ambassador AFANASIEV

Main Session

Room 201, Toki Messe Convention Center
09:00–15:00, February 1, 2004

09:00–09:10 **INTRODUCTORY REMARKS FROM THE CHAIR**

Lee-Jay CHO, Chairman, Northeast Asia Economic Forum
Hisao KANAMORI, Honorary Chairman of the Board of Trustees, ERINA

09:10–09:45 **NORTHEAST ASIA IN THE WORLD OF ENERGY**

Keynote Address by Robert J. PRIDDLE, Executive Director (1994-2002),
International Energy Agency/OECD

09:45–10:15 **MEGA-PROJECTS FOR THE 21ST CENTURY**

Special Address by Alexei M. MASTEPANOV, Deputy Director, Department of
Prospective Development, Science and Environment, Gazprom

10:30–10:45 VIEWS FROM THE PROJECT TEAM: AN OVERVIEW

Vladimir I. IVANOV, Research Division Director, ERINA

10:45–11:30 PANEL DISCUSSION ONE: FINDINGS AND RECOMMENDATIONS

Tatsujiro SUZUKI, Senior Fellow, CRIEPI

Ki Joong KIM, Senior Fellow, Korea Energy Economics Institute

Vladimir KUCHUK, Advisor to Governor, Khabarovskiy Krai

Karla SMITH, NEAEF & East-West Center

Moderated by Kenji SUMIDA, former President, East-West Center

12:30–12:50 VIEWS FROM THE PROJECT TEAM: BUSINESS WORLD

Takehiro TOGO, Senior Advisor, GSSI/Mitsui Co.

12:50–13:10 VIEWS FROM THE PROJECT TEAM: GOVERNMENT PRACTITIONERS

Yevgeniy AFANASIEV, Director, 1st Asia Department, MoFA

13:10–13:25 Break

13:25–13:45 VIEWS FROM THE PROJECT TEAM: NIIGATA AS THE “ENERGY REGION”

SUSUMU ABE, Advisor, GIF Research Foundation

13:45–14:40 PANEL DISCUSSION TWO: FINDINGS AND RECOMMENDATIONS

Victor V. GORCHAKOV, Vice-Governor, Primorskiy Krai

Roy KIM, Professor, Drexel University

Daojiong ZHA, Director, Center for Energy Security, Renmin University

Yonghun JUNG, Vice-President, APERC

Moderated by Vladimir IVANOV

14:40–15:10 Q & A, COMMENTS, CONCLUSIONS

Comments by:

Katsuhiko SUETSUGU, Secretary-General, Asia-Pacific Energy Forum

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Edited by Vladimir Ivanov
Director, Research Division, ERINA
Eleanor Goldsmith
Research Assistant, Research Division, ERINA

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Economic Research Institute for Northeast Asia (ERINA)
12th Fl., Bandaijima Bldg., Bandaijima 5-1, Niigata, 950-0078, Japan
Phone: 81-25-290-5545
Fax: 81-25-249-7550

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