A CURRENT ISSUE ANALYSIS AND APPROACH FOR NORTHEAST ASIA ENERGY COOPERATION

FOR THE KOREA ENERGY ECONOMICS INSTITUTE

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Contents

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Preface

The Northeast Asia Economic Forum (NEAEF) is a regional nongovernmental organization created in 1991 to sponsor and facilitate research, networking, and dialogue relevant to the economic and social development of Northeast Asia. The Forum is also committed to promoting understanding and relations among the peoples of Northeast Asia, North America and Europe. It is the only nongovernmental regional organization in which all the nations of Northeast Asia and the U.S. are consistent and active participants.

Since 1991, the NEAEF has held an annual international meeting, beginning in Changchun and Tianjin, China, bringing together government officials, business leaders and preeminent experts. Our previous meetings have taken place in Vladivostok, Russia; Ulaanbaatar, Mongolia; Pyongyang, DPRK; Alaska and Hawaii in the U.S.; Tianjin, Changchun, China; and Yongpyeong, South Korea. The annual meeting has been held in Japan, Niigata City in 1995 and 2003 and Yonago in 1998, and recently in Seoul, Korea in 2004, in Shenyang, China in 2005, Khabarovsk, Russia in 2006, Toyama, Japan in 2007, Tianjin in 2008, and this year's annual meeting in Busan, Korea.

This year, the NEAEF continued its focus on energy issues, since energy markets and infrastructure are at a critical crossroads for the Northeast Asia Region, as it is globally. NEAEF provided an opportunity for theoretical and policy discussion to tackle the Northeast Asia energy projects challenge. This activity included:

1. Carrying out an energy expert workshop at the Annual Conference and a working group meeting on energy,
2. Preparing reports about the Annual Conference energy workshop and the working group meeting on energy,
3. Understanding supply and demand regions (country and regional descriptions of energy supply and energy demand and end-use),
4. Summarizing the national energy policies and approaches.

This report, *A Current Analysis and Approach for Northeast Asia Energy Cooperation*, summarizes some information described in Points 3 and 4.

Introduction

Northeast Asia Economic Forum's (NEAEF) year-long cooperative program with the Korea Energy Economics Institute (KEEI) for 2009 resulted in the publication of this brief report entitled, *A Current Analysis and Approach for Northeast Asia Energy Cooperation.* This report is a companion document to two other reports prepared for KEEI - a report entitled, *The Fifth Expert Working Group Meeting on Energy: Economic Crisis and Green Energy Partnership* and a report entitled, *Report of the International Expert Workshop for Northeast Asian Energy Cooperation Held during the NEAEF Annual Meeting 2009 in Busan, Korea.*

In collaboration with KEEI, for the year 2009, the Northeast Asia Economic Forum focused on a research program and schedule of expert conferences and meetings that aimed at looking at energy cooperation for the region, as well as green energy cooperation and partnerships in energy efficiency and conservation.

This report, *A Current Analysis and Approach for Northeast Asia Energy Cooperation*, summarizes the information gathered over the year at several meetings, most notably, the Fifth Expert Working Group Meeting on Energy and also the International Expert Workshop for Northeast Asian Energy Cooperation held during the NEAEF annual conference. In addition, this report summarizes the 2008 Korea-Russia Summit Meeting. Finally, this report also looks at financing Northeast Asia energy projects, a subject that was also discussed at several specific meetings over the year.

The Forum's meetings related directly to energy issues included:

1) **The Fifth Expert Group Meeting on Energy Cooperation in Northeast Asia**. The meeting was held on the 19th and 20th of March 2009 in Honolulu, Hawaii, USA to tackle two major issues that face Northeast Asian energy cooperation: The Economic Crisis and the opportunity for a Green Energy Partnership. The first session was entitled *Green Energy Partnerships and a New Sustainable Energy Agenda for Northeast Asia.* The second session dealt with the *Post-economic Crisis Challenge: Rebuilding Supply and Demand Equilibrium in Northeast Asia.* The third session was entitled *Mobilizing Capital for Northeast Energy and the New World Economic Order.* A fourth session was a *Panel for Corporate Response to Energy Challenges.* The meeting was concluded with a policy recommendations session.

2) **The 18th Annual Northeast Asia Economic Forum**. The annual forum, held on August 27-28, 2009 in Busan, Korea, included two special sessions related to energy. It is these sessions that make up the energy workshop for 2009. The first of the two sessions was the session on *Energy Cooperation in Northeast Asia.* The second session was on *Green Energy Cooperation and Partnerships in Energy Efficiency and Conservation*.

In addition, the NEAEF staff has also reviewed the materials related to the 2008 Korea-Russia Summit Meeting.

The information about financing Northeast Asian energy projects is from several conferences and meetings the NEAEF held in 2009 where experts presented papers on several themes relevant to financing Northeast Asian energy projects. Specifically, there was considerable attention paid to the potential creation of a regional multi-lateral bank for cooperation and development. As way of background several topics were developed that defined the texture, context and environment that a multi-lateral bank for cooperation and development faces and is likely to face. The dramatic changes associated with the global financial crisis added an additional dimension to addressing all of the themes and topics.

The Forum's meetings related to financing included:

1) *Expert Group Meeting on Financial Issues in Northeast Asia: Cooperation and Integration for Development Finance* held on May 21-22, 2009 in Honolulu, Hawaii. The meeting included the following sessions:

    a. Session 1: *Northeast Asia's Enhancing Economic Cooperation: Accelerating Ongoing Functional Economic Integration*
    b. Session 2: *Building a Mechanism for Northeast Asia's Development Financing: Financing Infrastructure Development Projects in Northeast Asia*
    c. Session 3: *Current and Prospective International Financial Architecture and its Implications for Regional Financial Arrangements: Issues and Prospects*
    d. Session 4: *Relevant Features of the Proposed Multilateral Financial Institution and Issues Facing its Establishment*

2) *The 18th Annual Northeast Asia Economic Forum* included a *Special Session on Regional Financial Cooperation* on August 27-28, 2009 in Busan, Korea. This session was entitled, Financial Cooperation in Northeast Asia – Steps Towards a Regional Financial Institution for Cooperation and Development

3) In November 2009*, the Second Meeting of the Board of Directors of the Research Center for Financial Cooperation in Northeast Asia* was held in Tianjin, China. The main goal of the meeting was to discuss the formation of the Northeast Asia Bank for Cooperation and Development. At this meeting a consensus document, entitled the *Nankai Consensus*, was developed. This document summarized the steps necessary and an overall strategy to fast-track a Bank proposal for the region.

In general, the results of the year-long program gave rise to three significant themes developing out of the meetings and discussions. The first theme focused on specific issues of regional financial cooperation within the context of a regional economic environment coping with a global crisis. The second theme related to mechanisms and structural architecture needed to actualize a proposed multilateral regional financial institution. Finally, there was a review of the history, roadmap and a specific set of strategies outlined that would need to be implemented to establish a Northeast Asia Bank for Cooperation and Development.

The Northeast Asia Economic Forum is grateful for the cooperation in this research of a number of people from government, research institutes, international and non-governmental organizations. NEAEF would like especially to thank the Korea Energy Economics Institute (KEEI) whose generous support made the research and activities covered in this report possible. It is the support and leadership of institutes such as KEEI that allows for the analyses and various perspectives included in this report to reach a wider audience.

Clearly, the work carried out under this NEAEF program made a considerable contribution to the year's results. We further believe that the contents of this analysis go a long way to outline the year's achievements and set a path that will allow for significant cooperation in the area of energy Northeast Asia for the coming years.

Part I: Global Issues that Drive Northeast Asia Energy Issues

Several crucial global issues drive the Northeast Asia energy environment.

The main current overarching issue is clearly the aftermath of the global financial crisis and the recovery strategies of the Northeast Asian countries. Clearly, the dynamic changes in the global economy translate as a significant change in the energy supply and demand equilibrium for Northeast Asian. As devastating as some of the changes might be, they also allow for unprecedented changes in policy and strategy in addressing changes in the structure of energy markets.

Price of energy over the last three years has been another overarching issue for the region. Price reflects the general tension the region feels among global and local forces. Price profoundly affects the economic equilibrium of main energy "demand" countries, China, Japan and Republic of Korea. This economic equilibrium further influences the overall regional economy and the political structure of the demand countries of Northeast Asia. However, the issue of energy price also profoundly affects the supply countries of Russian Far East, Mongolia, and the northeastern provinces of China—areas that are well endowed with natural resources that have not come to the market as quickly and as

efficiently as “demand” countries might have hoped. The political consequences of the change in energy prices was probably was most noticeable in the Republic of Korea where the extremely high energy prices of the summer of 2008 caused political pressures that put the government in crisis. At the same time, a severe drop in energy prices helped the Korean government recover from considerable political instability.

For the most part, “energy security” as a concept has been important to the three Northeast Asian countries of energy demand as they continue to be heavily dependent upon energy imports. They feel they are highly vulnerable to potential energy crisis when energy prices are high and extremely vulnerable at the suggestion that energy supplies can be interrupted -- especially in the case of oil and natural gas. Price stability is seen as a particular virtue by a significant portion of the presentations at NEAEF meetings. Various incarnations of energy security come out of a genuine concern that the global economic environment and globalization can be in direct conflict with national, regional and local needs. Concepts of what energy security seems to be consistent among the countries of Northeast Asia. The assumption that supply and demand countries would diverge in concept of energy security is not true. Based on national policy, and when analyzing the research coming from Mongolia and Russia, there seems to be a significant acceptance of energy security concepts, just as in energy demand countries. The greatest debate comes from within countries in terms of setting national policy. In general, a high price environment for energy and resources leads to an increase in the discussion of the benefits of energy security strategies among all countries, rather than such traits such as political system, culture or whether a country is rich in resource and has high demand for energy.

Further, from analyzing presentations submitted to NEAEF over the year it can be generalized that proponents of a strong energy security model are distrustful that market barriers can be dropped or alleviated in order to quickly re-structure the supply and demand changes effectively. In this case there is usually the suggestion that the overall government energy plan accommodate what are viewed as energy security issues.

The consequence of an energy security strategy is that a whole-scale effort to promote a greater domestic supply of energy or, if this is not possible, for increased diversification of the energy supply, usually through a domestic planning mechanism. For diversification, the natural tendency within Northeast Asia is to look upon the mostly untapped reserves of energy in the Russian Far East, as well as eastern Siberia, as a solution to alleviate regional vulnerability. Some presentations at NEAEF meetings have looked further west to Central Asian supplies, even as far as Kazakhstan. Here the distance of proposed infrastructure are extremely long, and have few world-wide analogies.

However, even the nearby resources of the Russian Far East have not been forthcoming in providing its supplies to the Northeast Asian markets, with the notable exception of the Sakhalin Island oil and gas development projects. As large as the Sakhalin Island projects are, they are not as significant as a full alignment of Russian Far East resources would be for Northeast Asian markets. Instead, the general national strategy in Russia has been a

mild disinterest in the Far East. When oil and gas prices where high, Russia sought to self-finance development in the Russian Far East and focused on developing infrastructure networks that only benefited the Russian Far East domestic market. The little planning and projects that were implemented focused on bi-lateral projects, primarily between Russia and China. Of course, the overwhelming issue with mobilizing Russian Far East resources for Northeast Asian markets is the requirement for any large-scale cross-border initiatives that involve energy.

Severe price volatility, coupled with the financial crisis, lead to an encouraging conclusion by many stakeholders in the region that the challenges of reinventing the energy balance in Northeast Asia is an effort that can be taken cooperatively. Moreover, the countries see the additional environmental crisis of global climate change, coupled with the economic aftermath of high energy prices and financial implosion as a challenge that requires a regional cooperative approach. The regional stakeholders feel that the current situation necessitates that considerable contributions can be made through increasing energy efficiency and taking significant steps toward decreasing greenhouse gas emissions. In one respect, it could be viewed as a worst time to implement large-scale efforts of social and economic change. On the other hand, perhaps no other time provides a better opportunity for change.

A major impediment in implementing any large-scale change in Northeast Asia is clearly the inability to finance cross-border infrastructure. Financing requirements for this kind of investment are likely to be large, and there is a growing consensus that a regional development bank is a key in meeting such a financing need. This is discussed in greater detail below.

In almost all discussions over the year, it was clear that any long-term ability to organize a large-scale solution in bringing more and more diverse energy sources into the Northeast Asian region demanded market solutions and the alleviation of barriers of a political or national nature. This seems to be easy to state in meetings and conference, but quite another thing to implement into reality. To a large extent the question is how global capital markets can be made to find Northeast Asia an attractive market. The added challenges of a relatively high price energy environment make it seem that the market alone struggles to address stated regional needs. On the other hand, some of the stakeholder and analysts argue that a high price environment creates opportunities that allow entire markets to shift. Although this process of shifting in response to persistent high prices is painful, it might not be as painful as not shifting at all. In addition, environmental challenges and global climate change add an additional burden of complexity that is difficult to convey to the market. In this case, however, high prices seem to promote great incentives to having large segments of the population to accept costs to shifting to new behaviors or paying the costs associated with technology shifting.

Finally, the Northeast Asian Economic Forum has worked extensively throughout the year on potentially providing the region with an institutional mechanism to act as an intermediary between the global market and the regional needs for infrastructure and other economic development within the region, particular in the area of energy.

Part II: Energy and regional cooperation in Northeast Asia

The question, “Is there a model of Northeast Asia cooperation?” is answered probably most accurately by stating that there are several models of Northeast Asian cooperation, and is at this point unclear which one seems to be developing within Northeast Asia. The dramatic economic change following a high price energy regime and an economic collapse presents significant uncertainty in the system.

While Northeast Asia may borrow specific features of EU, North American or South American cooperation, it is clear that the ultimate system of regional cooperation will be uniquely Northeast Asian. While the area shares commonalities that span centuries, for example, a writing system based in a common system based on character writing, in some areas great cultural and structural differences are present. However, many of the differences seem be acceptable to the various parties who do seem to focus on cooperation. If any theme seems to resound with the majority of the presenters, analysts and stakeholders of the region it is the expectation that cooperation is the preferred process and some level of regional integration is inevitable. In spite of the varied current barriers, the theme of inevitability of future persistent cooperation seems to be almost universal.

In the coming year, NEAEF will focus at its meetings and try to create an inventory of “deal-breakers” for Northeast Asian regional energy cooperation, as well as an inventory of universal features for Northeast Asian regional energy cooperation. In addition, it will set the challenge to participants in its meetings and conferences to suggest how to mitigate, avoid or diminish the role of Northeast Asian regional energy cooperation “deal breakers” and ask for suggestions to strategically enhance the roles for cooperation universals.

At this time it is worth presenting some of the specific views presented at the Expert Group Meeting on Energy cooperation in Northeast Asia, held on the 19th and 20th of March 2009 in Honolulu, Hawaii, USA, as well as the two sessions were held at the NEAEF Annual meeting. This presentation of the specific views shows the level of sophistication and complexity presented by specific specialists and stakeholders of the Northeast Asian region at present.

The Fifth Expert Group Meeting on Energy Cooperation in Northeast Asia set a goal to tackle two major issues that face North East Asian energy cooperation: The Economic Crisis and the opportunity for a Green Energy Partnership.

In spite of the fact that the region, as the rest of the world, faces some of the hardest economic choices in over eighty years, the conference participants focused on the opportunities the crisis offered in terms of allowing for both gradual and radical solutions to long term problems in the region.

The two day meeting included four sessions.

The first session was entitled *Green Energy Partnerships and a New Sustainable Energy Agenda for Northeast Asia,* and was a comprehensive overview of green energy policies for Korea, China and Japan. Dr. Toh gave a very detailed presentation of Korea's "green growth" policy. He gave an overview of the motivation of the policy, the general government concept of "green growth" and outlined the elements of "green growth." Dr. Toh explained the green growth strategies that the Korean government intended to use to implement transition to a low carbon economy (as part of the national energy plan), foster green energy industries and tackle climate change and a reduction in greenhouse gas emissions. Dr. Shen described the results that the Chinese government has achieved in the area of energy saving and emission reduction. He gave an overview of the kind of policies the Chinese government promoted to develop and use new forms of energy and renewable energy. Finally, Dr. Shen reiterated that China supported a policy strengthen "green energy" cooperation among Northeast Asia and to advance the sustainable energy supply and development. Mr. Tanabe overviewed the Japanese vision for a new sustainable energy agenda for Northeast Asia and how Japan imagined green energy partnerships for the regions. Mr. Tanabe suggested that Japan felt that Northeast Asia should share the long-term vision for "cool earth," or "cool Asia." This "cool" vision is defined as an economy with low emissions. Mr. Tanabe related that as part of this strategy for Japan meant that government and business investment and activities, both for long-term and short-term should be focused on energy conservation and cleaner energy. Japan is committed to collaborate in the continuation of cool economy with its Asian partners. He concluded that political leaders, technocrats and business sectors should work together on concrete policies, programs and projects. There were two specific industry presentations that related green energy with the work of the Korean Electric Power Corporation, by Dr. Lee, and a presentation that related Japanese electricity production with green policies, by Mr. Iinuma and Dr. Uchida.

The second session dealt with the *Post-economic Crisis Challenge: Rebuilding Supply and Demand Equilibrium in Northeast Asia.* This session featured presentations that provided extremely up-to-date presentations on the energy demand of China, Korea and Japan, as well as an energy supply presentation about Russia. All of these presentations are included in this volume.

The third session was entitled *Mobilizing Capital for Northeast Energy and the New World Economic Order* and included three presentations dealing with regional financing for cross-border infrastructure in the area of energy development.

A fourth session was a *Panel for Corporate Response to Energy Challenges* and included representatives of industry Japan, Korea, and China. Some US input was provided by two American moderators.

The meeting was concluded with a policy recommendations session. All the countries in the region, especially those that have a net demand in energy, stated that they see the need to promote "Green Growth" as a new sustainable energy agenda in a post-crisis

environment. That is, a transition to economies where economic growth and development are in synergy with the environment and health of the planet. Specifically, presentations showed that all the demand countries where committed to continue to focus such "Green Growth". An overview of the specific green energy policies and practices for China, Korea and Japan were presented. In Japan, the strategy for "green energy" is also often referred to as "cool" energy. In pursuing green growth the policies include such efforts to decrease carbon emission through changes in energy efficiency through changes in behavior and new technologies that leave smaller carbon footprints and a change in the mix of primary fuel consumption. The result is to tackle the overriding issue of climate change due to greenhouse gas emission, as well as fostering a green energy sector that would act as an engine of economic growth.

Two challenges were pointed out – how do you promote a green energy economy when non-green energy is available at low prices? What will be the results of the new approaches of much greater government intervention in energy within the last year?

Energy conservation and energy efficiency was the centerpiece of many of the presentations as a solution to decreasing energy demand, as well as reducing the overall carbon footprint. There is a huge potential in improving energy efficiency throughout the world, but in particular in Northeast Asia. It was pointed out by several speakers that energy efficiency can be improved at the same time that costs can be reduced. In addition, speakers also suggested that a demand side rationalization, through tools such as increased efficiency, are as important, or more important, as increasing supply capacity as Northeast Asia addresses a "green recovery."

There were presentations about the new general trends of demand for energy within the Northeast Asian area, given a radically different pricing and financing environment. This was cutting edge information and data and represents the newest and best available overview for the energy balance for Northeast Energy.

The sessions related to energy at the annual meeting continued the discussion began by experts earlier in the year. Specifically, there was a session on *Energy Cooperation in Northeast Asia.* This session showcased the opportunity for cross-border cooperation created by economic recovery conditions. In addition, a second session spoke to the topic of *Green Energy Cooperation and Partnerships in Energy Efficiency and Conservation*. The second session informed the participants about the new Green Growth Policy of the Republic of Korea, provided information on the tangible recent achievements within China in energy efficiency and reduction of greenhouse gas emissions, and featured technological solutions, specifically the use of electricity within Japan, were offered as a significant pathway for energy efficiency and emissions reduction.

In the first session, presentations included significant detail about Global factors such as restructuring of energy markets, the problem of carbon emissions and global climate change, and a new US administration with a green energy and environment agenda suggests a significant opportunity to develop regional strategies to diversify sources of energy resources to meet a diverse profile of energy needs. . These strategies should

promote stability for the Northeast Asian region and continue to support the region's position as the fastest growing region of the world. It was proposed that Northeast Asia would likely continue to have growing demand for energy resources and that this demand would require significant investment in infrastructure in order to take advantage of real efficiencies in utilizing energy, as well as gaining access to new sources of energy.

In addition to a summary about green growth in Korea and energy conservation in China and Japan, the second session concluded that energy storage and smart-grid technology was identified as areas of particular promise. At the same time at the session, there was a key presentation concerning the Green Growth Policy of the Republic of Korea. Specifically, that Korea proposes a new pathway, via Green Growth Policy, that provides a solution to the issue of climate change, energy vulnerability and economic recovery. Finally, it was recognized by the second session that Northeast Asia should feature its strength as a leader in Green Growth that is broadly defined as an approach that simultaneously promoted economic growth, quality of life, job creation and concern for the environment, especially the role of emissions in global climate change.

International Expert Workshop for Northeast Asian Energy Cooperation Results

Both sessions had very specific and detailed discussion of policy, technology and likely outcomes in redefining issues of energy, green growth, conservation and energy efficiency.

Dr. Zhang reported that in the context of global economic crisis, the economic growth rate of Northeast Asian countries has significantly receded, and energy supply and demand balance has marked reversal, from short supply to oversupply. He added that with the global energy price reduction, together with global economic crisis, that major energy producing and consuming countries in Northeast Asia had an historic opportunity to rebuild the energy structure in this region. Dr. Zhang stated that Northeast Asian countries should take advantage of the opportunity that conflict between energy supply and demand has mitigated, to build confidence, create mutual benefit and take advantage of an environment of a win-win situation. That this environment could accelerate the promotion of large-scale cross-border energy cooperation projects. Based on their own advantages, Northeast Asian countries should establish a long-term energy cooperation mechanism in Northeast Asia to stabilize the energy market and keep energy supply and demand balance in this region.

Dr. Tichotsky summarize the Obama Administration's "Guiding Principles" and related President Obama Administration's press statement "To take this country in a new direction, the President is working with Congress to pass comprehensive legislation to protect our nation from the serious economic and strategic risks associated with our reliance on foreign oil and the destabilizing effects of a changing climate. Policies to advance energy and climate security should promote economic recovery efforts, accelerate job creation, and drive clean energy manufacturing…," and further that the Administration would begin by investing $150 billion over ten years in "energy research and development to transition to a clean energy economy." Dr. Tichotsky pointed out that

these goals were rather unrealistic given the scale of foreign imports, especially from places close to home like Mexico and Canada, and that $150 billion is dwarfed by the actual scale of the oil and gas industry. He made detail references to the North American gas market, as well as the potential role of pipeline natural gas from Alaska and Arctic Canada. In general, he added, that financing the capital investment in new energy sources, new energy infrastructure or new energy technology requires conditions that are not being met and pointed out that probably, the most effective place for revolutionary technology development is with entrepreneurs, yet that is not the focus of government funding.

Dr. Gulidov presented the work related to energy as part of the Greater Tumen Initiative. Specifically he described the Tumen Initiative's *Energy Policy Coordination and Co-operation*. The intention is to develop the GTI Energy Board as effective regional energy cooperative mechanism. In addition, there is an effort to identify and further promote new and ongoing GTI energy cooperative activities. *There is also the attempt to expand Capacity Building* through further assistance to GTI member countries in human capacity building through education and training programs, joint studies and workshops. Also the GTI program attempts to help in *reducing non-physical barriers through the* support of the transparency of the institutional environment in the GTI member countries. Moreover there is an attempt to work on *Partnership Building* through the creation of an effective cooperative network among energy companies, think-tanks, financial institutions and other relevant organizations and establishment and promotion of a region-wide database on energy-related information.

Dr. Toh presented a very effective keynote address about Green Growth and Korea. In his address he related the importance of Green Growth for the Korean government. Green Growth is not "Plan B," it is "Plan A" for the Korean government. It is the strategy of change that jumps over the chasm and problems of climate change and energy costs. It is also a concept of creativity that opens all possibilities. He gave quite a detailed set of strategies that would be used by the Korean government to implement the Green Growth strategy. This is outlined in his presentation within this volume.

Dr. Uchida presented the idea that natural gas was a quick way to cut CO2 emissions and to secure energy in NEA. He pointed out that renewable energy supplies, such as solar and wind power, represented an unstable supply. At the same time huge gas fields are close by Northeast Asia, such as Russia Far East, Australia, Southeast Asia and Central Asia. Given that it was likely that almost the entire power generation infrastructure in Japan and Korea would likely need to be replaced. The advantage of replacing conventional coal-fired generation by latest gas combined cycle could cut CO2 emissions by more than half. Dr. Uchida noted that for the NEA Energy Community priorities included to start with the integration of infrastructure in energy (gas and electricity), transport and communications in NEA countries. The availability of such infrastructure and efficiency encouraged entrepreneurship and investments, leading to economic prosperity in the region. Dr. Uchida pointed out that climate change is a long-term issue, which will need to be tackled over the next 50 years or more and added that if we delay our actions, our cumulative emissions will require steeper reductions and lead to higher

costs. He concluded that any actions to tackle with the climate challenge needed huge investment and international cooperation and that the global energy-climate challenges require a global approach.

Dr. Iinuma provided a very compelling review of how electrification might be a key to reducing greenhouse gas emissions. He noted that CO2 mitigation needs both demand and supply options and that electrification at the end-use level is effective measure to reduce CO2 emission. He further added that Japan is vanguard in the development of energy-saving technologies, especially in heat pumps, and that these leading edge technologies can be key options for CO2 reduction in NEA countries.

Dr Shen made a presentation on the progress China has made in energy saving and greenhouse emission reduction, as well as the country's achievements in developing and using of renewable energy sources. He noted that energy saving is the key measure to cope with climate change and that China's policy attaches great importance in energy saving and its relation to reducing emission and that the country considered its progress in energy savings and emissions reduction remarkable in recent years. He added that part of China's success is based on the development and use or renewable energy sources. He concluded that to strengthen the cooperation among Northeast Asia in energy saving and emission reduction and renewable energy fields that China could play a significant role since China owns large market with tremendous energy saving potential and China will to enhance comprehensive cooperation with the nations in Northeast Asia in the technology and energy saving service to explore the energy saving potentials. The main energy in China is coal, strengthening the R&D and cooperation in the technology of clean coal could reduce more CO2 emission. He further hoped that there would be more cooperation in R&D and utilization of new energy and renewable energy in Northeast Asia. Further, in order to cope with climate change, all nations in Northeast Asia should strengthen the technology cooperation in emissions mitigation and adaptation of new technologies.

The Fifth Expert Group Meeting on Energy Cooperation in Northeast Asia began with a set of conclusions that set the tone for discussions for the rest of the year. That is, that it is most important for regional cooperation needs to be the careful consideration of the menu of solutions that can be crucial in attending Northeast Asia's energy and conservation issues in the environment of crisis and post-crisis. It is likely that there will be a continuation to be lively discussion on how the solutions will manifest themselves, well into 2010. For example, with continued discussion and reporting on energy efficiency efforts, in the development of physical infrastructure that could unite the region, the creation of new institutions and mechanisms or the effective utilization of existing institutions and mechanism.

Discussion should also continue concerning the role of market mechanisms as well as government participation in dealing with energy markets, energy efficiency, environment and economic crisis. Those discussants and presenters that expressed support for large-scale, cross-border infrastructure projects showed a clear preference that this

infrastructure focus on the delivery of energy and power to the region. It is for this reason this will continue to be a major agenda item for NEAEF discussions in 2010.

A commitment to physical connectivity would also, in turn, require cooperation and partnership in developing a financing plan and package to implement such a strategy. However, some speakers pointed out that the financing plan should not be prejudged, but, rather, all possible solutions should be analyzed. Specifically, at the same time as looking at the creation of new institutions or new mechanisms, the ability of focusing the attention and efforts existing institutions and mechanisms to the problems of Northeast Asia.

United States and Northeast Asia Energy

There was an overwhelming agreement throughout the various discussions at NEAEF meetings and conferences that there is a need to understand President Obama's "New Energy Policy" and the USA's commitment to "Green Growth" so that the opportunity for The Northeast Asian to expand its cooperation and transfer its hard learned lessons with its nearest eastern neighbor. This is important in light of a new US administration and the fact that the US economy is extremely intertwined with Northeast Asia.

Since the election of Barak Obama as president a new energy policy is being presented from the US that several ways is anticipated to be significantly different from the Bush administration policy, in implementation. An analysis of the stated Bush Administration policy compared to the stated policy of Obama campaign may be argued as not being that different. There recognition of global climate change (although with the Bush Administration very late in the game), an increase in renewable, increasing efficiency and conservation and new technological solutions such as carbon capture and increase use of nuclear are the stated direction in both camps.

Upon his election, President Obama promised to, "Invest in alternative and renewable energy, end our addiction to foreign oil, address the global climate crisis and create millions of new jobs."

Of course all US administrations have been focused on the rhetoric of decreasing oil imports, seen as a symbol for the US solving many energy problems. However, oil imports continue to rise, now at 60%. However, the rhetoric is confusing to the average American who believes that most oil imports are from the Middle East. In reality, the US is relatively better diversified in its imports than probably generally accepted within the US. Americans generally do not consider that considerable oil imports by source, that are "foreign" come from Mexico and Canada and that almost as much comes from Venezuela and Nigeria as the Middle East.

However, the most likely and extremely crucial difference where the Obama Administration will set itself apart will be in the effort it expends to implement a "green approach." Especially, strong will be the policy imperative to make significant reduction in green house gas emissions within the context of a global agreement. This is an area

where Northeast Asia stands to best interact with the US, especially as an initial starting point for serious discussion.

The current policy substance in the "New Energy in America" promises to:

- Help create five million new jobs by strategically investing $150 billion over the next ten years to catalyze private efforts to build a clean energy future.
- Within 10 years save more oil than the US currently imports from the Middle East and Venezuela combined.
- Put 1 million Plug-In Hybrid cars -- cars that can get up to 150 miles per gallon -- on the road by 2015, cars that we will work to make sure are built here in America.
- Ensure 10 percent of our electricity comes from renewable sources by 2012, and 25 percent by 2025.
- Implement an economy-wide cap-and-trade program to reduce greenhouse gas emissions 80 percent by 2050.

The priorities are not without their problems.

A $150 billion OVER TEN YEARS is equal to $15 billion a year investment in a "clean energy future." Although this seems like a considerable investment, its scale relative to the size of the industry can be said to be barely significant. In 2008, $45.22 billion in profits were made only by Exxon Mobil. The top ten companies earned over $1.5 trillion in revenue in the US in a single year. So, a government investment of $150 billion is not in line with the scale of the industry for a policy of radical change.

Currently, the environmental and political pressure to increase share of nuclear and renewable fuels generation to replace dirtier petroleum and coal sources of fuel is considerable. Whether it remains so in a low price energy environment is unknown and is likely to be a key question in the future.

The first major proposal related to energy made by the Obama Administration has been the recent higher CAFE (Corporate Average Fuel Economy) Standards- measured in average miles per gallon. The new CAFE regulations would increase the standards to 39 miles per gallon by 2016. Further a proposal to put 1 million plug-In hybrid cars - cars that can get up to 150 miles per gallon - on the road by 2015was made. These kinds of vehicles increase the average price at $1200 per vehicle in higher cost. In connection with this proposal a further proposal to ensure 10 percent of US electricity comes from renewable sources by 2012, and 25 percent by 2025 has been made.

While electric cars are "green," a more pertinent question is to ask where does/will the electricity come from? A look at the current US electricity generation by fuel shows that the majority of electricity is produced by coal, which continues to be a base fuel within the US.

Coal is one of the worst emitters of green house gas emissions. Natural gas is number two in terms of an energy used for electricity generation. Natural gas emits green house gases, but half of the amount that coal produces when burned. It may be realized by the American public, but has not been until now.

Investment in alternative energies and implementing new technologies is a long and difficult process. This is clearly not recognized by the majority of the American people. There needs to be a recognition that it is a long time to implement a technological innovation in the area of energy to bring an idea to mass use. It takes at least 3 years from idea to proto-type. Then, it takes at least 3 years to bring a proto-type to pilot plant stage and at least a further 2 years from a pilot to mass use of technology. Elections cycles are much shorter. "Clean Coal" technology is one possible technology for carbon capture. The current available technology uses supercritical and ultra-supercritical steam to reduce coal consumption through the sublimation of coal, the coal goes from solid to gas by-passing a liquid phase, at the plant. The USA has not introduced a single new technology "clean coal" plant while China has introduced more than forty.

Finally, Northeast Asia shares a commonality with the continental United States, that both areas are likely to pursue gas resources to the north of the areas of demand.

Conclusion

The overall conclusion from all the meetings and sessions is that significant work on understanding the issues for energy supply and demand, as well as the role of policy, conservation and technological efficiency, in Northeast Asia has been done, especially in 2009. It has been a remarkable year for energy markets, especially prices, given the global financial crisis. The need for a cooperative and long-term strategy in the area of energy, energy infrastructure and financing energy project for the region is likely the key for regional prosperity.

Part III: 2008 Korea-Russia Summit Meeting and NEA Energy Cooperation

The most pertinent extract from the joint statement of the Republic of Korea President Lee Myung-bak and Russian President Dmitry Medvedev, following a state visit to the Russian Federation by the Korean president from September 28-30, 2008 as it relates to energy is the following:

> *"The two Presidents expressed their commitment to strengthen their cooperation in energy, which is one of the most important fields in bilateral economic cooperation. In this context, both Presidents endorsed the joint implementation of energy projects by the Russian Federation, the Republic of Korea and third countries. Furthermore, both Presidents agreed to develop close cooperation for the success of projects in developing oil fields in Russia, including the West*

Kamchatka Project. President Medvedev acclaimed Korea's commitment to participate in the open competition and bid for natural resources, and in the construction of petro- and gas-chemical complexes and the development of liquefied natural gas deposits in the Russian Far East region.

Both Presidents shared the view that Korea's import of Russian natural gas would bring benefits to both countries, and welcomed the conclusion of the MOU on cooperation between the state-run gas companies of the two countries."

In reviewing the 2008 Korea and Russia Summit Meeting, NEAEF looked at the following presentations. Note that some of the presentations were not directly from the Summit Meeting:

- *Korea-Russia Joint Statement,* as reported by Cheong Wa Dae
- *Energy Cooperation between Russia and NEA Countries Perspectives, Possible Directions and Problems of their Realization,* B. Saneev, Energy Systems Institute SB RAS, Irkutsk
- *Trends in developing of natural gas resources in Eastern Siberia and on Sakhalin Island (what is already done and what is commencing within the frameworks of realization of The Eastern Gas Program),* A. M. Mastepanov, Adviser to the Deputy Chairman, Gazprom Management Committee, presented at the Japan-Russia Energy and Environment, Dialogue in Niigata – 2009, November 10, 2009.
- *Natural gas pipeline network creation projects in North East Asia countries: Russian Perspective*, Dmitry Sokolov, Energy Systems Institute SB RAS, Irkutsk, Russian Federation, COEX, Seoul, Republic of Korea, June 27, 2008
- *A Vision of Gas Cooperation between Korea and Russia*, 5 December 2008, Mr. Byung Ho Lee, KOGAS
- *Implementation Issues of the Energy Action Plan between Korea and Russia,* 2009 KEEI – ESI Joint Workshop, September 27 – 29, 2009, Incheon, Korea, *Ji-Chul Ryu, Ph.D.,* Korea Energy Economics Institute (KEEI)
- *Study results and future prospect on power system interconnection between ROK-DPRK-RU*, 2007. 10. 8., KERI , J. YOON
- *Strategy of power energy supply from RF to the Republic of Korea, The first step to connecting the two power systems ,* The geographic division of Central Asia – the Far East , Russian Company INTER RAO UES

Overall, looking at the analysis, information, plans and interpretation that has been made by experts and company representatives of considerable skill and caliber, as part of the Korean-Russian energy strategy it is easy to conclude that there is an impressive understanding and overview considerable detail of the energy supply and energy demand and the necessary infrastructure that it would take to bring the two together.

NEAEF would argue a simplistic assertion that any potential for natural gas pipeline projects from Russia to Korea, as well as a potential for electricity transmission projects from Russia to Korea, would rely on the projects ability to attract capital from

international capital markets. This would require the same conditions that financing the capital investment for any new energy sources, any new energy infrastructure or any new energy technology and include:

- A promise of an upward trend demand in energy, infrastructure and technology,
- A promise of an upward trend in prices, that is represented by greater demand,
- OR much greater volume of demand with falling prices – the process of commoditization.

None of these conditions are currently being met within Northeast Asia, or between Korea and Russia. Moreover, the financial crisis resulted in a simple, but virtually insurmountable barrier, prices are not high enough and do not promise to be high enough in any horizon acceptable for investors. Of course, this can change, but that does not help the current impasse.

So that the most critical issues to the success of the Korean-Russian plans, all things being equal, is the likelihood of global markets being ready to back a project of such a scale in the Northeast Asian region. There is an argument that Russian and Korean state-owned company commitment, coupled with the financial support of the respective governments' would be sufficient to initiate such large-scale projects.

However, NEAEF, based on its overall analysis believe a multi-lateral approach is more likely to garner sufficient investment, if any effort can. It will also likely bring in the participation of not just investors from other countries, but the countries themselves. Most notably for other countries in Northeast Asia, but also a potential role for the US and the Obama Administration, a situation that no one could have foreseen in discussing US participation in the twilight of the Bush Administration and a market where energy prices that could not be pictured as anything but high and rising.

In the next section an update on what is being done in the area of financing Northeast Asia Energy projects is discussed.

Part IV: Financing Northeast Asia Energy Projects 2009

Over 2009 NEAEF spent considerable effort to bring together research about the economic environment of Northeast Asia, in relation to the global economic crisis. Specifically, much of the research was focused on how and whether the economic climate was conducive to the creation of a regional multilateral institution. In general, there is considerable information that supports that such an institution's time has come and could be extremely useful during a period of regional economic recovery. Moreover, considerable specific work was done on the actual logistics of putting a Northeast Asian Bank of Cooperation and Development in place.

NEAEF's year at looking at financing and energy projects consisted of three major activities. First, an expert group meeting on *Financial Issues in Northeast Asia* was held on the 21st and 22nd of May 2009 in Honolulu, Hawaii, USA to tackle the overall issue of cooperation and integration of development finance for Northeast Asia. This meeting was subtitled *Cooperation and Integration for Development Finance*. Second, there was a special session dedicated to financing issues in Northeast Asia entitled, *Financial Cooperation in Northeast Asia and Steps towards a Regional Financial Institution for Cooperation and Development in Northeast Asia*.

A summary of the main two activities follows.

Expert Group on Financial Issues in Northeast Asia Meeting Results

The major outcome of the expert group meeting (May meeting) was the implementation of the task set by the NEAEF in its Tianjin Declaration (28 October 2008) to continue to develop concept materials to establish a Northeast Asian Bank for Cooperation and Development (NEABCD). The bank is envisioned as a tool to attract capital for large-scale, cross-border projects, further the economic and regional integration of Northeast Asian nations and promote economic development in a socially and environmentally responsible manner.

Prior to the specific discussion of the NEABCD, the Expert Group presented and discussed broad issues, as well as technical issues, organized around three broad session topics: regional financial architecture and arrangements, financing infrastructure development projects in the region, and the issue of accelerating functional economic integration within Northeast Asia.

Several themes emerged over two days of presentations and discussion. First, the experts noted the importance for the region of institutions and governance as a catalyst for continued economic integration in the wake of the global financial crisis. Second, the experts noted the importance of currency stability and noted significant changes in trade patterns within the region in the wake of the financial crisis. Third, the experts noted the importance of considering the interests of the Northeast Asian economies that excelled in manufacturing (China, Japan and Republic of Korea) as well as the interests of the Northeast Asian economies that are resource-oriented (Russian Federation and Mongolia). The issue of DPRK's unique role was also noted. Further, it was pointed out that significant regional integration was already occurring across national borders and there were many examples demonstrated in the various presentations. Fourth, the experts discussed the major issues of the existing economic environment and the difficulty of attracting capital for cross-border projects in Northeast Asia. Several of the presentations suggested that priority programs in need of financing are projects that can deliver of energy and other resources in an environmentally and socially responsible manner to the manufacturing centers, while at the same time increasing the value-added capacity of the supply areas. Fifth, current information and data was presented to provide a best available overview of the issues facing the economic development of the entire Northeast Asia. Finally, many of the expert presentations noted that a multilateral financial institution would be a catalyst for resolving the existing bottleneck and could developed a solution within a context and framework acceptable to Northeast Asian nations.

Several experts pointed out that Northeast Asia needed to find a path to include US in future discussions, given the election of a new administration with potentially new approaches and the specific regional interests where US participation may be particularly relevant and useful. Several speakers also noted that an institution like the NEABCD would be welcome by the governments of the countries within Northeast Asia and could be an excellent response to the urgent need to efficiently mobilize capital to finance cross-border infrastructure and development projects.

The Expert Group held a lively discussion of how to encourage the process of establishing a development bank and providing a practical framework for the NEAEF to move closer to its overall goal. The Chinese researching group of the Research Center for Financial Cooperation in Northeast Asia ("the Research Center") presented two significant draft documents as a preliminary point of discussion for the expert group: An "exploratory study" that described the potential structure for the NEABCD and a "roadmap" process document for promoting the NEABCD. The Research Center provided considerable detail that summarized the Research Center's efforts in moving the NEABCD process forward and the preparation of the two primary documents. Mr. Wang, Former vice Mayor of Tianjin Municipal Government and the Executive Vice Chairman of the Research Center, gave a summary of the regional need the establishment of an NEABCD provided, as well as China's view of why a regional institution is necessary. It was recognized that the NEABCD concept has a long and rich history within the NEAEF process.

Stanley Katz, former Vice President, Asia Development Bank suggested that a briefing report (briefing memo) suitable for review by the countries' ministers. This briefing report would address and explain some of the major issues that need to be confronted. It would be important to have a document that could respond to likely potential questions regarding the value of the proposed bank. Dr. Cho suggested that there be prepared a series of reports that deal with major issues. Other multilateral institutions do not have experience in dealing with multi-country projects where more than one country carries the debt (with the notable exception of the Mekong Delta Project). Dr. Katz stated it would be good to have a technical report that deals with borrowing structure for financing multi-country projects that described financial analogs (like a New York/New Jersey tunnel financing). Dr. Katz suggested a special funds lending program for countries within Northeast Asia that cannot meet traditional (World Bank, ADB) terms. Mr. Maeda raised the issue of allowing for the ability of the institution to have a structure that allows participatory financing from other multi-lateral institutions or the private sector for cross-border projects. Further, Mr. Maeda added that NEABCD have a mechanism to allow for the participation of sub-sovereign governments and authorities; that the NEABCD could act as a catalyst to attracting other capital; and that the NEABCD could provide viability gap financing commercial banks cannot provide. Finally, Mr. Maeda stated that a preliminary list of potential projects be generated as part of the planning process for the NEABCD. The list should include the Busan-Fukuoka Cross-Border Cooperation Project and the Infrastructure project of Southern Mongolia.

There was support for organizing additional meetings of experts that could work specifically to put together a research plan and identifying research priorities for the NEABCD that would represent the many stakeholders and secure governmental support within all the potential country participants for the NEABCD. There was unanimous agreement that considerable work on NEABCD was carried out in a short time and there was unanimous consent that works on the NEABCD and the NEABCD process should continue.

Finance Session at the NEAEF Annual Meeting

The next meeting that the Financing Program was active was during the Northeast Asia Economic Annual Forum (NEAEF). NEAEF, in partnership with the Busan Metropolitan Government, convened the 18th annual Northeast Asia Economic Forum meeting in Busan, Republic of Korea, from 27-28 August 2009. Representatives from the People's Republic of China, Japan, Republic of Korea, Russian Federation, Mongolia and the United States met to take steps toward greater cooperation and integration among Northeast Asian nations.

A dynamic opening ceremony included a statement delivered on behalf of President Lee Myung-bak of the Republic of Korea and noted the importance of the work of the Northeast Asia Economic Forum in providing direction for future regional economic development, especially the potential for NEAEF to act as a catalyst for multilateral functional cooperation. Congratulatory remarks from China, Japan, Russia, Mongolia, the EU and USA included a statement from the President of Mongolia. The keynote address was delivered by Dr. Il Sakong, the Chairman of the Korean International Trade Association and of the G20 Summit Coordinating Committee of the Office of the President of the Republic of Korea, who stressed the importance of Northeast Asia's role in bringing rapid stability to the global economy. Issues of financing were paramount in many of the keynote speeches.

A major topic that the participants discussed throughout the conference was the timing, structure and financing requirements for establishing a Northeast Asian Bank for Cooperation and Development (NEABCD). The regional bank is seen as an ideal regional and multilateral vehicle for capitalizing cross-border infrastructure development projects. The potential of a multilateral regional bank was seen as a powerful tool in a recovery environment. The annual conference also provided another milestone toward a common goal of regional integration through productive discussion of the vital theme entitled *Financial Cooperation in Northeast Asia and Steps towards a Regional Financial Institution for Cooperation and Development in Northeast Asia*.

The specific session on Financial Cooperation and Development highlighted the role a Northeast Asian bank would play in the region in attracting sufficient capital for cross-border projects for Northeast Asia. It was noted that the NEA is the only region in the world without a multi-lateral bank to serve it. It was noted that the NEAEF would be the ideal organization to organize and prepare relevant documents for policy makers and the general public. The research center for financial cooperation under the leadership of NEAEF is located at Nankai University. The presentations and comments provided tangible and functional approaches to create a multi-lateral development bank.

However, much work lies ahead in realizing the overall goals set by Northeast Asia Economic Forum. Specifically, The Forum should accelerate the work in the area of financing and its linkage to the development of the energy economy, as well as helping direct the manner in which the energy economy interacts with the strategies of "green" and "cool" growth in the region, in the coming year, 2010.