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Power Play: Resource Nationalism, the Global Scramble for Energy, and the Need for Mutual Interdependence

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The New Great Game

Not the 1970s: Five Forces That Will Shape the New Great Game

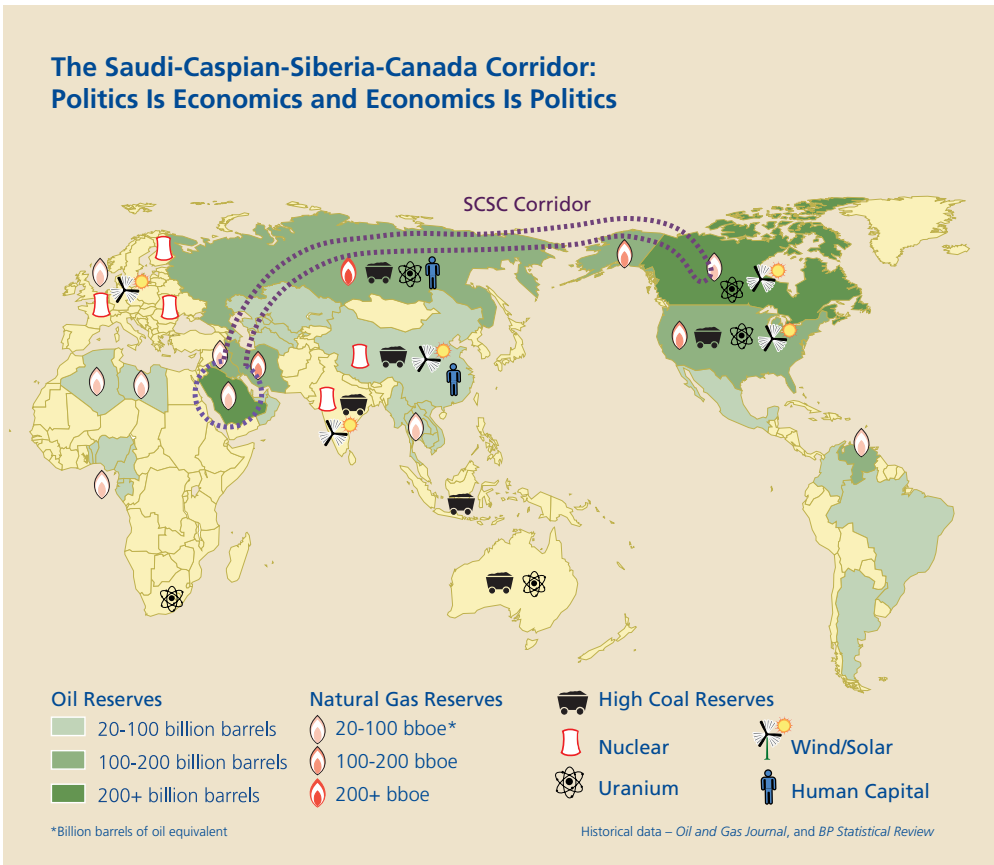
A new great game over energy is at hand.

The rules of this game are still being written, but its broad outlines are already clear. It is no longer confined to Central Asia—as was the original Great Game of the 19th century, pitting the British and Russian empires against each other. Today, while the energy resources of the Caspian feature prominently in the game, both the chessboard and the number of players have expanded.

The convergence of international concern about climate change and energy security is the principal force behind the shakeup, buffeting the agendas of energy producers (companies and governments) and energy consumers (companies and governments). Climate change and energy security are forcing energy prices higher; driving resource nationalism; spurring competition for resources; igniting public and private investment in alternative energies, challenging the relentless growth of energy demand, particularly in China and India; and stirring diverse positions and arguments about the post-Kyoto world. As importantly, the risk of misunderstanding between producers and consumers is growing. The key energy superpowers—Russia, Saudi Arabia, the Caspian—could come into increasing conflict with the key energy consumers—the United States, China, India, Japan, Brazil, and the EU. As important in the drive to create the post-Kyoto world is the risk of misunderstanding between the rich and the poor countries. The greatest challenge now to the international system is to foster understanding between and among producers and consumers. And this understanding must be built on the idea that mutual interdependence should be at the heart of the new global energy dynamic.

The geography of energy, meanwhile, is undergoing a radical shift. Whereas Saudi Arabia remains at the heart of production, the center of gravity has already begun to stretch north and east—the Saudi-Caspian-Siberia-Canada (SCSC) corridor will drive the “energy of geopolitics” in the 21st century. This corridor also captures the emerging new geography of competition in the global energy market: Tomorrow’s two giant energy demand markets—China and India—lie alongside this corridor and the US lies at the end of the corridor. This geography will alter the dynamics of the market for resources, in particular natural gas. It also is a critical force in negotiations on the successor treaty to the Kyoto Protocol, as several key actors who did not endorse Kyoto lie along this corridor and are now coming to grips with the convergence and collision of climate change and energy security.

The Saudi-Caspian-Siberia-Canada Corridor: Politics Is Economics and Economics Is Politics



Source: The JASTanislaw Group LLC

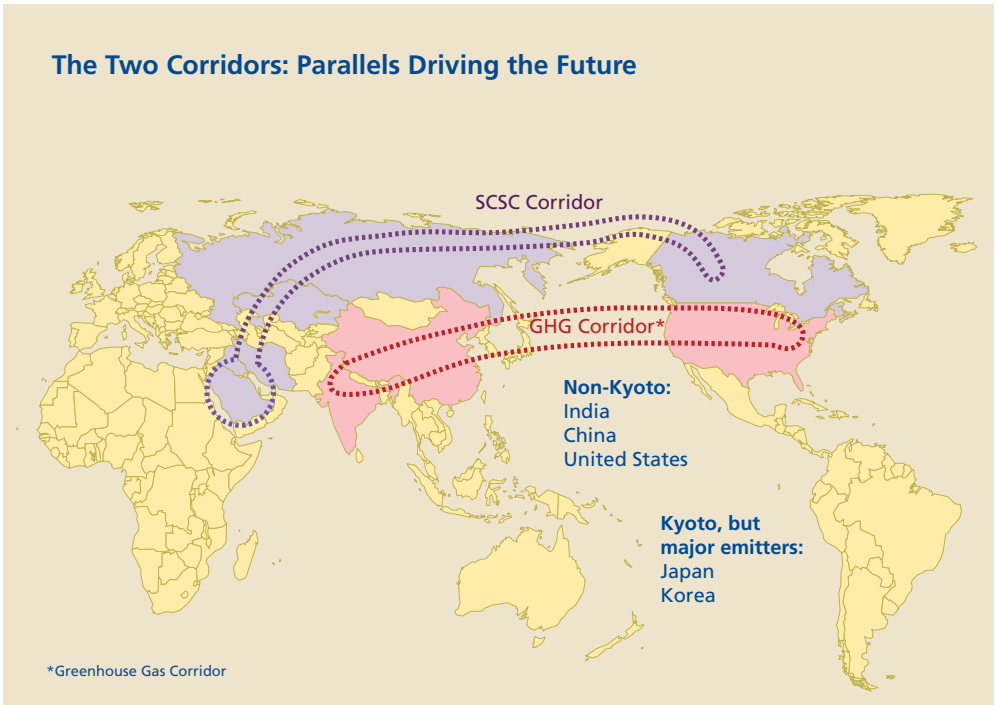
Critically, nearly all the nations alongside the SCSC corridor are inclined to use their market and might, as consumers or producers, to advance their foreign policy goals. For some, energy is their most important tool for asserting themselves on the world stage.

The guiding principle of the new great game is that economics is politics and politics is economics.

The Golden Principle: Mutual Interdependence

As such, the guiding principle of the new great game is that economics is politics and politics is economics. A corollary to this principle is that some nations, in order to exert their energy power, amass it in state-controlled corporations (which often are publicly floated). As a result, the role of the state is on the rise, forcing the private sector to adjust. Corporations, unlike in the past, must play by the rules of the global marketplace, while also contending with the power that states can exert both through the marketplace *and* through political systems. Meanwhile, global markets are being reshaped by another new, game-changing force that is an outgrowth of the energy boom—sovereign wealth funds. These are projected to control tens of trillions of dollars by 2015.

The Two Corridors: Parallels Driving the Future



Source: The JASTanislaw Group LLC

The US, EU, China, and India are scrambling to secure energy supplies while simultaneously fighting climate change. Exporters, led by Russia and OPEC, are husbanding their resources and increasing the role of the state in the search for a greater share of higher oil prices. Meanwhile, the convergence of concerns over energy security and climate change—coupled with the stubbornly high price of oil—has led to a rush by investors and innovators to advance clean and alternative energy technologies.

Consumers are pursuing—some more proactively than others—strategies to shift their energy balance, reducing future demand growth, increasing efficiency, promoting clean fuels and alternatives, and seeking greater domestic production. Producers fear that such trends could severely shrink markets for fossil fuels within the next generation. By way of self-defense, producer states are moving downstream to acquire markets so that they can “own” (lock up) demand. In this way, a producer can ensure that it is *their* oil or *their* natural gas that will be sold. Ironically, this seemingly monopolistic instinct actually can enhance competition in consumer markets.

Consumers, governments, and energy companies are trying to understand how to adapt their strategies in light of this new great game, in which the interests of state are playing an increasing role within traditional market rules. One major oil company recently unveiled two scenarios for how this game might pan out: The first, entitled “Scramble,” is described by the company’s CEO as a “fierce competition” among states for resources that is tantamount to

“an off-road rally through a mountainous desert”; the second, called “Blueprints”, posits a more orderly international energy architecture.

If a blueprint is to prevail over a scramble, then at its heart will have to be the notion of mutual interdependence—wherein producer and consumer nations come to understand that they need each other equally. Today’s scramble for resources could set the stage for a new market balance from an old economic reality—supply seeds demand and demand seeds supply—that eventually settles into a calm period of mutual interdependence. Alternatively, it could lead to sustained uncertainty and mutual suspicion between producers and consumers. Producers need European, Asian, and American partners for the modernization of their countries. Energy provides a bridging function—and cooperation in energy is a prerequisite for stable and secure political frameworks. The challenge and the opportunity are to create understanding out of the current misunderstanding and to make mutual interdependence work.

If a blueprint is to prevail over a scramble, then at its heart will have to be the notion of mutual interdependence—wherein producer and consumer nations come to understand that they need each other equally. Today’s scramble for resources could set the stage for a new market balance from an old economic reality—supply seeds demand and demand seeds supply.

To help shape the outcome, it is critical to understand the forces that are driving the new great game.

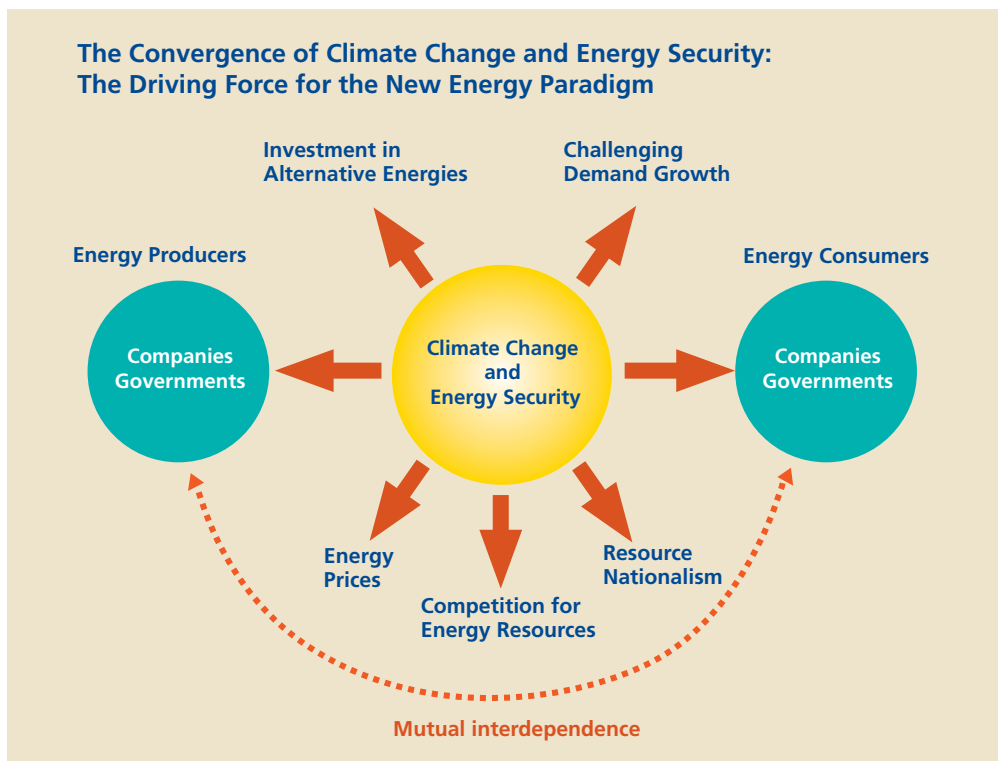
Let the Game Begin: Five Forces to Consider

Five principal forces will shape the development of energy in the coming generation:

- 1. State dominance of energy resources:** Already, states control the vast majority of energy resources. In 1978, the major international oil companies controlled production from 70 percent of oil and gas reserves; today, they control production from just under 20 percent. National or state-dominated oil companies presently control access to about three-quarters of the world’s proven conventional reserves. This fact fundamentally changes the relationship between states and private companies, with numerous consequences. It also has spurred a race for the last great unclaimed oil and gas frontier—the Arctic seabed.
- 2. The use of resource nationalism:** Resource nationalism, which differs from the resource nationalizations of the 1970s, is on the rise. Many producer states, led by Russia and OPEC, are increasingly using control of natural resources to advance policy goals—both economic and foreign policies. As a result, resource nationalism threatens to unsettle the system of international relations as we now know it. A subtle but growing shift is occurring: The balance of economic might is tilting towards the companies and economies of the resource-rich nations and the newly emerging markets of Asia, the Middle East, and South America. Major importing nations, meanwhile, also have bent or are bending their foreign policies to allay their energy anxieties. Resource nationalism will remain a strong driving force, driven by high prices and fears over future availability of oil.
- 3. The market and the might of China and India:** By almost any metric, the sway of China and India in energy markets is becoming formidable: By 2010, China will be the world’s largest energy consumer. Today, China and India comprise over one-third of the global population

but consume less than 20 percent of global energy. This share is changing, though. By 2015, the US, China, and India will together produce the majority of global carbon emissions; and today, nearly one in three dollars invested in electricity generation is going to India and China. From the price of oil, to the advancement of new energy technologies, to the prospects for a successor to Kyoto in Copenhagen 2009, China and India now represent a major weight in the balance.

4. The convergence of energy security and climate change: No longer does energy security simply mean security of supply; it now encompasses security in the political, socio-economic, development, infrastructure, and even terrorism senses, as well as the recent imperative of sustainable development and climate change. This is what we call the “energy of geopolitics.” We have passed the tipping point of public awareness of these challenges and come to the realization that the failure to confront them could seriously limit growth (before, we feared that addressing climate change and energy security would limit economic growth). This new awareness has catalyzed a transformation in the markets for energy, accelerating innovation in new end-use technologies, conservation, alternative energies, and clean-burning fossil fuels. Already, the convergence of concerns about climate change and energy security has led to record venture investment in clean and new technologies.



Source: The JAStanislaw Group LLC

5. The end of the era of “easy oil”: The days of “easy oil” are over. As recently as 2002, the cost to extract one barrel of oil averaged around \$10, and in 2002 the marginal barrel cost upwards of \$20. But by 2008, the marginal barrel costs upwards of \$50, and more in some locations. With a significant proportion of the Earth’s remaining fossil fuels in difficult-to-extract form (e.g., the oil sands of Canada and the Orinoco belt) or in difficult-to-reach places (the deep Gulf of Mexico, Far Eastern Siberia or below the Arctic), the floor for marginal production costs will stay permanently high. Meanwhile, major producing states have planned their future budgets assuming oil will remain above \$60, thus adding another powerful force that will keep prices high.

There are many and broad-ranging consequences of these new forces.

Oil prices, for one, are likely to be higher and more volatile, since state dominance of energy resources could distort the normal functioning of the market—be it due to cartels, management inefficiencies resulting in lower production or delays in building new capacity, or the channeling of cash flows that otherwise would have been invested in new production to serve political ends. Meanwhile, nations will be compelled to make energy security and climate change major foreign policy priorities; already, these issues are dominating the agenda of the European Union, while both China and the US are gearing their diplomatic machinery to address energy concerns. And, of course, for energy consuming countries, resource nationalism is combining with high energy prices and climate change concerns to drive massive investments in clean energy, alternative sources, and energy efficiency.

On the flipside, climate change and energy security, combined with the policies of the consuming countries, are driving producing countries to seek markets on a secure long-term basis to ensure future revenues. Surprisingly to some, many producing countries are also driving investment into alternative energies.

Don’t Look Back: Why the 1970s Were Different

The latest spike in the price of oil to over \$120 a barrel led many analysts to invoke comparisons to the oil crises of the 1970s. But this is not the 1970s.

Of course, there are vivid reminders: Energy costs are skyrocketing and consumers are eyeing prices at the pump with trepidation; fears abounded then, as they do now, that the world was running out of oil. Today’s resource nationalism echoes the fears of nationalizations of the Seventies. The security of energy supplies is high on the political agenda.

But the differences between now and the Seventies are more pronounced than the similarities. Three in particular are critical:

1. Today’s relentless demand represents a secular shift: Within four years of the second oil crisis in the late 1970s, global energy demand had fallen 20 percent and the price of oil had plummeted (from \$95 in inflation-adjusted dollars in 1980 to \$27 by 1986). Today, despite persistently high oil prices, demand continues to rise, due primarily to the rapid growth of China, India, and the Middle East. The International Energy Agency (IEA) predicts that the world’s primary energy needs will increase 50 percent by 2030.

2. Clean and alternative technologies have now matured and will do so further: In the Seventies, new and renewable energy technologies were in the wilderness, confined

2008: Like the 1970s All Over Again ... And Then Some?	
1970s	2008
High oil/energy prices	High oil/energy prices
Resource nationalization	Rampant resource <i>nationalism</i>
Fears of running out of oil	Peak oil threatens
Energy security a prime focus	Energy security on the rise, becoming more and more the issue
Demand began a decade-and-a-half long decline	Demand on the rise despite the high prices, resource nationalism, energy security concerns
New and renewables in the wilderness	Technologies are at a breakthrough point where costs are coming down such that economic breakeven is coming closer to reality. Technology enablers both on the demand and supply side could bring disruptive technologies into the marketplace.
	<p>Climate change concerns</p> <p>Local production has stronger support both technologically and politically because it is a security issue as well as a climate change issue.</p>

Source: The JAStanislaw Group, LLC

mostly to government-funded research centers. The most promising alternative source—nuclear—was crippled by the 1979 meltdown of Three Mile Island. Today, by contrast, big oil, venture capitalists, and governments are investing billions in clean energy, alternative sources, and energy efficiency. The resulting potential for bringing disruptive technologies into the marketplace is much higher.

3. There has been a sea change in global environmental awareness: The environmental concerns of the 1970s—clean air, acid rain—seem almost quaint compared to the civilizational challenge that climate change represents. In fact, the most severe perceived threat to the environment in the 1970s—nuclear power—actually mitigated in favor of fossil fuels.

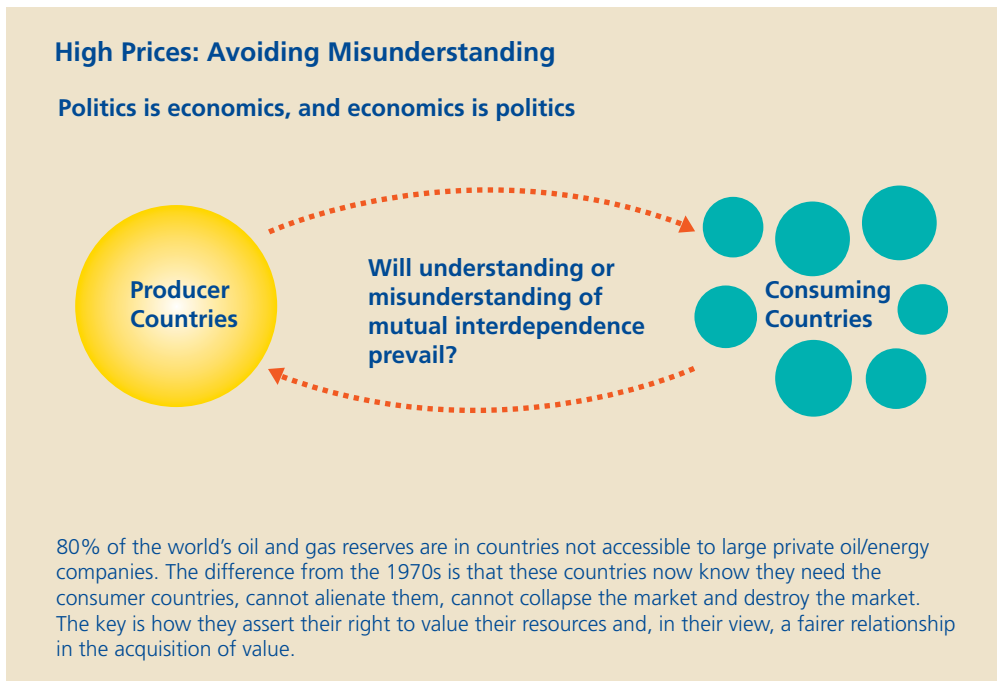
The comparison to the 1970s is useful in reminding us that, while there are lessons to be learned from our energy history, we are in mostly uncharted waters. All forecasts were wrong in the 1970s and, no doubt, they will be wrong again.

This white paper aims to explain the forces shaping relations among states, and between states and the private sector, as they vie for the world’s energy resources.

The first section begins by looking at the rise of resource nationalism and then examines the fast-emerging market might of China and India. The second section considers the consequences of these new forces, coupled with the convergence of concerns around climate change and energy security. The final section assesses how key actors in the global energy game—producer states, consumer states, and the private sector—need to adapt to the emerging landscape.

Resource Nationalism: Producers Take the Lead

Resource nationalism refers to state control or dominance of energy resources, and the resultant potential to use this power for political purposes. As energy markets are increasingly led by producers rather than consumers, fears have arisen that resource nationalism will be misused. In fact, with oil passing \$120 per barrel, producer nations everywhere—from Russia to Venezuela to Algeria to Libya to Bolivia to Ecuador to Nigeria to Kazakhstan—are rethinking their arrangements with oil companies and other partners, seeking to maximize their share of today's high oil prices.



Source: The JAStanislaw Group LLC

For many, Russia stands out in this new energy paradigm. Why? Russia possesses one-third of the world's natural gas, is the second-largest oil exporter after Saudi Arabia, and will be the source of the vast majority of natural gas needed by Europe in 2030. Russia, once the ultimate state-controlled economy under the former communist system, went through a chaotic and relatively "uncontrolled" reworking of its oil industry in the 1990s. This was followed by a new era of economic nationalism as Moscow sought to regain control. For Russia, politics is economics and economics is politics.

Prior to 2000, about 90 percent of Russia's oil production was in private hands. Today, state-controlled companies manage more than 80 percent of oil and gas production, upon which the whole economy is heavily dependent. Two-thirds of Russia's federal budget derives from its fossil fuels; Gazprom alone employs 500,000 people. The other side of the equation is that for Russia, Europe is its only major market. Low prices in Russia mean that Gazprom, Russia's state-controlled national company, makes virtually no profit on domestic sales—about 65 percent

of its production. Its profits, therefore, must come from the approximately 35 percent of its gas sold internationally—mainly to the European Union and to countries on the eastern edge of Europe. These are the only major markets for Russian gas in the next 10–15 years. Russia needs Europe.

So, it is not surprising that for Russia the logic of resource nationalism, economics, and domestic politics often intertwine. But direct control over its natural resources also affords Russia formidable power on the international political stage.

Russia is an energy superpower that uses its vast resources as the basis of economic development and as an instrument for carrying out domestic and foreign policy.

Russia, therefore, is an energy superpower that uses its vast resources as the basis of economic development and as an instrument for carrying out domestic and foreign policy. Russian foreign policy is now largely based on the leverage and financial earnings provided by its energy supplies and its dominance of energy transport in Eurasia—but so, too, is its own economic well-being. Russia's economy relies upon oil and gas for 65 percent of its foreign exchange earnings.

Four Play: Producers Respond to Consumers' Fears of Climate Change and Energy Security

Russia's strategy in response to its economic realities, its physical and economic dependence on the broader European market, and its fears of what climate change and energy security mean has four strands, which have unfolded concurrently:

- First, wrest control of domestic energy resources;
- second, create diversity of transit routes to Europe;
- third, use transit routes to secure energy supplies from Central Asia and the Caspian; and
- fourth, seek a secure downstream distribution in European retail markets.

The first stage of this strategy has been well-documented. While Russia occasionally has simply bought assets outright—the \$13 billion purchase of Sibneft being the most prominent example—it also has relied on legal coercion to wrest away assets from the private sector: the Yukos empire, hit by a \$33 billion tax bill, remains the epitome of this approach. Other tools, such as environmental and license citations of foreign companies, have resulted in majority interests for Gazprom in fields including Sakhalin and Kovykta. The results have been well-publicized: Shell ceded control of Sakhalin II to Gazprom, thus giving the latter its first major stake in a liquefied natural gas project. Gazprom also bought TNK-BP's majority stake in Kovykta. In March 2008, TNK-BP was put on notice for alleged environmental violations.

Notwithstanding these travails, Russia's untapped oil and gas potential remains too big for many of the international oil majors to ignore.

Full Stream Ahead

This intermingling of politics and economics is also evident in the Kremlin's pursuit of its second goal—diversity of energy transit routes. Gazprom has employed several tactics to lay the groundwork for this. To begin, it has negotiated hard with its direct neighbors—Ukraine, Georgia, and Belarus—by repeatedly threatening to cut off gas supplies since 2005 due to

non-payment and refusal to agree to pay market prices. On a couple of occasions, it has followed through on its threats. Gazprom and others argue that these actions are considered normal business practices elsewhere—charging market prices, non-delivery for non-payment, and diversion of gas supply. This is not the issue. The real issue is fear surrounding the perceived use of an economic instrument—natural gas—as a political tool. Thus, it has sown uncertainty about the dependability of pipelines that run through transit countries.

In parallel, Moscow has worked hard to promote a series of new pipelines to European markets that Gazprom will control—principally, Nord Stream and South Stream. These vie with other proposed routes—Nabucco, White Stream, Amber—that the US and some EU member countries are promoting through their chosen international companies. The companies and countries promoting the different projects each argue that the others' projects are not competitive. The reality will be that, if all environmental and regulatory permits are attained, the companies that can finance the pipelines will succeed. Whether each project makes money, only the market will determine. Gazprom has forged pivotal European partnerships—BASF/Wintershall and Gasunie for Nord Stream and ENI for South Stream—in efforts to enhance the chances for success in building the pipelines. This partnership success has attracted political challenges from the US and some EU countries.

There are certainly many ways to interpret Russia's actions. On one level, Gazprom and Moscow are acting aggressively to secure markets for energy resources—a straightforward motivation that is common to both private and public actors in energy markets. Russia fears the EU's commitment to reduce consumption and promote alternatives, and therefore is aiming to create an integrated market it can control before others (like Algeria) get there first.

However, by seemingly using the market and might of the Russian state, Russia is casting a pall over the broader European energy market. It is not yet seen to be pursuing a cooperative strategy of mutual energy interdependence, and its intermingling of politics and economics shakes the confidence of its European neighbors. Its actions are misinterpreted and misunderstood. In Russia's eyes, the fact that Gazprom has a state monopoly on natural gas exports granted by law—and that a new Russian law under debate in the Duma states that foreign companies can have only a minority interest in oil and natural gas projects—exacerbates foreign frustrations.

The challenge for both producer and consumer is to recognize the realities of current mutual interdependence and forge a framework to make understanding work.

No Mas Colonial Oil

But Russia is hardly alone in its resource nationalism: Venezuela—which controls 56 percent of reserves in Latin America and the Caribbean, and whose heavy oil riches in the Orinoco river basin could one day exceed even Saudi reserves—is leading resource nationalism in Latin America. Caracas is not only taking control of assets but, if private oil majors currently operating do not comply with its newly imposed rules, Venezuela will nationalize their projects and seek to do new business mainly with other state corporations. Chavez has called this his revenge on “colonial oil production schemes.”

Resource nationalism is a legitimate right for sovereign nations—what matters is how it is applied. Might, market, and geographic territorial integrity will continue to carry the day.

Although this approach could be folly, especially given the rarefied technology needed to harvest heavy oil, PdVsa is finding ready partners in China, India, and elsewhere. Chavez also is focusing on integrating Latin American markets in cooperation with other national oil companies. Ecuador, meanwhile, has tightened the state's grip on oil reserves by renegotiating contracts with the private sector, and is looking exclusively to other state-owned partners to build refineries and develop new fields. Renegotiating contracts is now a preferred way for resource-rich countries; it is happening in Algeria, Libya, and Nigeria, to name a few.

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Asia Risen: The New Players in the Energy Game

It is not only producers who are tilting the playing field. The rising consumer nations of China and India are using their market might to do so as well.

Four aspects of Asia's rise are critical to the geopolitics of energy:

- The sheer scale of future demand;
- the long-term nature of the demand as billions of people “climb the energy ladder”;
- the limited timeframe for action; and
- the potential for the acute politicization of energy, especially with supply growth taking place in an unstable swathe of the Middle East to Central Asia.

From 1900-2005, the bulk of carbon emissions came from the US and Europe. Yet, in the coming two decades *alone*, China—already the world's largest emitter—will approach the cumulative historic emissions of Europe and the US.

In the 20th century, very simply, the global internationally traded oil landscape was dominated by supplies concentrated in the Middle East, and demand focused in the US and Europe. Over the past decade, a quiet but critical shift took place. On the supply side, the center of gravity has shifted north, with the revitalization of Russia's oil industry, the intense development of Caspian energy, and the development of Canada's oil sands—the Saudi Caspian Siberian Canadian corridor. On the demand side, China and India are the major stories; their booming populations and economies will have a tremendous impact on the global energy picture, as well as international relations, in the 21st century as demand for energy doubles over the next 25 years and as they compete for the 70 percent of their energy that will need to be imported.

High-Octane Growth for the Long Haul

The scale of Chinese and Indian demand is mind-boggling. By 2010, China will overtake the US as the world's largest energy consumer. To give a sense of the pace of this growth, all you need to know is that in 2005, the US was using 35 percent more energy than China. In the past two years, 70 percent of the growth in demand for oil, and 80 percent in demand growth for coal, came from China and India.

The environmental impact of this growth, and the compression of Chinese development into a few short decades, is also striking. From 1900-2005, the bulk of carbon emissions came from the US and Europe. Yet, in the coming two decades *alone*, China—already the world's largest emitter—will approach the cumulative historic emissions of Europe and the US. In 2015, Chinese emissions will exceed those of the US by over 30 percent; India will be the world's third largest emitter.

Equally striking is the vast potential for growth in these rising Asian markets. Vehicle sales are illustrative: In 2006, Chinese car sales overtook Japan; in 2015 they will overtake the US. Today, just 20 in every 1,000 Chinese own a car; by 2030, this number will reach 140. Yet, by way of comparison, there are 860 cars in the US per 1,000 residents. Meanwhile, in India, 420 million people do not yet have access to electricity.

In some respects, China is ahead of the efficiency curve—its average automobile fuel efficiency is now 20 percent higher than that of the US. But in many crucial ways it is not. Its development today is locking in patterns of energy consumption that will dictate demand for decades to come. Take, for example, its building boom. Today, 50 percent of all construction *in the world* is taking place in China. Meanwhile, between them, China and India are building one new coal-fired power plant *every week*. Given that the average operational life of such a plant is 60 years, the effects of this will be with us for the long haul. Our energy legacy and fate are thus being built in China and India today.

From the consuming side, it is China and India—along with the US—that will play the most significant role in determining the new rules of the global energy game.

One of the crucial questions that will impact both the growth of alternative energy technology and the environment is how quickly China can adapt energy-saving technologies. If, for instance, China could apply EU standards for consumer staples like refrigerators and air conditioners, it would save the equivalent production from Three Gorges Dam by 2020. More importantly, both China and India will have to strive to build carbon-free power plants, be they nuclear, renewable, or coal-fired with carbon capture and storage (CCS).

Can You Spare a Barrel?

As a result of their intense need for energy, China and India have been roaming the world building alliances, primarily with national oil companies. Both countries are making an intense push into biofuels, securing croplands in Africa and Brazil. They are planning or constructing pipelines from Russia, Central Asia, and Iran, and forming joint ventures to explore oil fields around the world.

Where the energy of geopolitics is playing out in the most politicized of ways is Central Asia. The treasure sought by all the players is the oil and natural gas beneath the Caspian, which in its majority is controlled by Turkmenistan, Azerbaijan, and Kazakhstan, together with Iran and Russia.

Kazakhstan alone has immense potential. It is four times the size of France and by 2015 it will be producing three million barrels a day—more than Kuwait's current production. Its total oil reserves are estimated to be over 40 billion barrels. Like Turkmenistan, it also has immense natural gas reserves.

Astana (the capital of Kazakhstan), too, is turning to resource nationalism: In February 2008, President Nursultan Nazarbayev announced that Kazakhstan will abandon production sharing agreements, favored by international oil companies. "In the oil and gas sector it is necessary to strengthen the position of government through national involvement in energy initiatives," he said in his state of the union address.

Two months earlier, Astana had sealed an agreement with Russia and Turkmenistan to build a major new pipeline to Russia. In return, Moscow agreed to a 50 percent increase in the price it pays the two Central Asian nations for their natural gas.

Of course, other major players have emerged in the global energy landscape. The quiet energy superpower is Canada, with its 174 billion barrels of Albertan oil sands, making it second only to Saudi Arabia in reserves. It ranks among the top five in gas, coal, oil, and uranium reserves, and is the top exporter of all these commodities—as well as of electricity—to the US. Canada's market power comes from its diversity of ownership and liberalized market structure—despite having only one major market. This may be a lesson for other resource-rich countries. Brazil, meanwhile, has a world-leading biofuels industry and significant offshore fossil fuel reserves and production.

But from the consuming side, it is China and India—along with the US—that will play the most significant role in determining the new rules of the global energy game.

What It Means

The reverberations of resource nationalism and the rise of Asia are being felt everywhere and in many ways. This section focuses on three of the most important effects:

1. How the convergence of energy security and climate change, coupled with high prices, is leading to new energy frontiers. (This theme is covered fully in the earlier white paper in this series, *Climate Change & Energy Security: The Future is Now.*)
2. The impact on international relations
3. The prospects for a successor treaty to the Kyoto Protocol

Energy Frontiers: New and Rediscovered Technologies

No matter how fast the progress on alternatives, the world will be primarily reliant on fossil fuels for at least two generations—the bridge to tomorrow's new energy future depends on this. In his landmark 2006 report, Sir Nicholas Stern forecast that fossil fuels would account for at least 50 percent of world energy supply in 2050.

While the future price of oil is difficult to predict, the fact that it has now remained above \$50 for three years points to an enduring shift in the price playing field.

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This is in part due, of course, to the rise in demand as China's and India's consumers climb the energy ladder. It also reflects the end of easy oil and the high cost of production for the Alberta and Orinoco oil sands, as well as for reaching reserves beneath Siberia, the deep Gulf of Mexico, and the Arctic. The gap between supply and demand, meanwhile, has narrowed drastically, driving prices higher. In 1985, OPEC had 10 million barrels of spare capacity; today it has just 2.5 million. Insurgency in Iraq, unrest in Nigeria, and other geopolitical anxieties play a role as well—as does commodity price speculation.

But resource nationalism is a major part of the explanation. State control of production almost inevitably leads to ills that raise export prices. Production in Venezuela and Mexico has been falling in recent years, despite extensive reserves. Rather than invest in renewal of capacity, the great bulk of cash flows from some state-run firms are diverted to fund everything from social welfare programs and government operating budgets, to arms purchases and foreign aid. The politicization of management, meanwhile, can profoundly undermine a company: PdVSA has had five different heads in less than a decade, and a strike in 2002 led to the firing of 20,000 employees. Six years later, production has yet to recover to 2002 levels.

Meanwhile, the fears around Moscow's perceived goal of dominating the Eurasian pipeline network and talks of a gas OPEC drive the psychology of price.

Rise and Shine: Efficiency and Alternatives to the Rescue

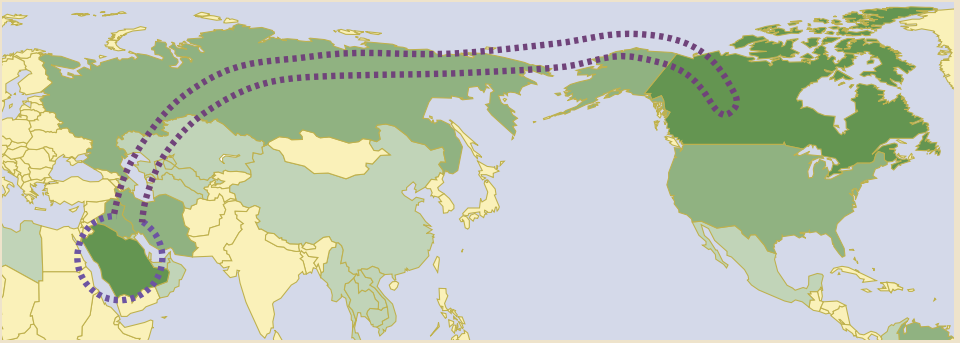
Demand is our biggest source of potential supply—as efficiency, moderation, and changes in technologies drive down consumption. In the 1970s, the largest oil field in the US was discovered beneath Detroit, when increased fuel efficiencies in the automobile fleet reduced emissions and energy consumption without harming automotive quality. This led, in five years, to the equivalent savings of 2 to 3 million barrels per day of oil. Today, with demand as the single

Technology the Driver— Even for Resource Rich Countries

Future of OPEC countries is clean technology and new alternatives

Develop SCSC corridor as a corridor for mutual understanding.

Tie markets with supply and vice versa.



Technology is the key to transformation for both producing and consuming countries

- Local becomes global
- Workable mutual interdependence
- Makes for better partners
- Consumers import less
- Producers export higher value

Helps reshape the SCSC corridor from a group of commodity providers (forced to face commodity prices) to a corridor where the commodities are transformed into higher value products, either directly or indirectly by how technology will use them. So producers of high-value energy/products can make price rather than be forced to take price.

Source: The JASTanislav Group LLC

biggest driving force in energy markets, one of the key questions that must be answered—and answered quickly—is: How can the demand curve be adjusted downward so that society uses less oil and gas while it is developing new energy solutions, and while new economic growth models are being developed?

Meanwhile, governments are turning to alternatives as an answer not only to energy security, but also to climate change. “Renewables are energy security,” said Andris Piebalgs, the EU energy commissioner in March 2008. “You cannot separate the two goals: energy and climate change.”

As alternatives emerge, we are entering the oil end game. But, the game has a ways to run—the reality is two generations of talent and technology will be needed to wean the global economy from oil, gas, and coal. One way or another, though, new demand patterns and alternative and renewable sources eventually will come to reign. In practice, a “license to operate” will go to those who develop the next generation of clean applications—including oil, coal, and gas. The paramount challenge we face is how to arrive there safely without turmoil in international affairs and in the energy markets.

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The EU has been a world leader on this front. In January 2008, the EU announced its goal of having 20 percent of the Union’s energy drawn from renewables by 2020, while reducing greenhouse gases to 20 percent below 2005 levels. It also set a goal of a 20 percent increase in energy efficiency and of getting 10 percent of its vehicle fuels from biofuels, although the biofuels goal is now subject to review.

A complete analysis of alternative energy technologies, efforts to improve energy efficiency, and the “greening” of business can be found in an earlier white paper in this series published in 2007, *Climate Changes Everything: The Dawn of the Green Economy*.

Four trends especially are worth highlighting here:

1. Energy Efficiency: The drive for greater efficiency is perhaps the single greatest characteristic of today’s global enlightenment on issues of climate change and energy security. It is, in essence, a grass-roots movement in which every individual feels empowered to make a difference—by tracking their carbon footprints, using fluorescent light bulbs, “buying green,” and in a hundred other ways. Cities are revamping their building codes and beefing up their public-transport systems. The private sector, meanwhile, is rethinking what it means to operate in a green economy—utilities, for instance, are learning to profit by *saving* energy for consumers rather than *selling* it to them.

2. Renewable Energy Technologies: The rising tide of alternative sources of energy—combined with new demand patterns and new demand efficiencies—will mitigate the eventual, gradual drop-off in hydrocarbon production that should begin in the next quarter-century. This will create a bridge to the new, cleaner energy era ahead and will create a wave of new jobs—a new industrial revolution. In 2007, so-called “clean-tech” companies saw

record venture capital investment levels of \$2.2 billion—nearly 50 percent more than in 2006. Wind will make the largest gains, followed by solar and biomass.

The drive for greater efficiency is perhaps the single greatest characteristic of today's global enlightenment on issues of climate change and energy security.

3. Clean Coal: Clearly, the world never left the coal age. World electricity depends upon coal—41 percent of all electricity globally is provided by coal, but so is 29 percent of CO₂ emissions. Given its abundance, its wide distribution around the world, and its relative concentration in countries such as Australia and the Americas, coal has taken on a new head of steam in recent years—a trend set to continue, but challenged by the world of climate change. The promise of clean coal, through carbon capture and storage (CCS), has added to its allure. Coal represents 70 percent of Chinese energy consumption and China provides 40 percent of the world's coal; demand there will triple by 2025. The EU is equally intent on developing coal: "Coal is crucially important," EU Energy Commissioner Piebalgs recently said. "For security of supply, we need to have coal—otherwise gas overshoots all our limits of supply." There are, however, already signs of a "coal crisis", with prices having doubled in the past two years. Its future depends on technologies to reduce drastically the greenhouse gas emissions or to capture, store, or transform them into non-emitting uses.

4. A Nuclear Renaissance (But Not in America ... or Germany): Perhaps the biggest winner in the rethinking of energy is nuclear. Over 40 countries that had once eschewed nuclear are now reconsidering their plans, and a renaissance has arrived—but critically not in the US, Germany, and several other major EU countries. China's plans are the most ambitious: Today it has 11 active reactors, a number it hopes will increase tenfold by 2030. Russia is aiming to add over 40 new reactors to the 31 it has in operation. The EU, meanwhile, currently gets one-third of its electricity from nuclear power. Substantial public opposition to nuclear energy in some countries, however, will slow its growth, at a minimum, if not kill its development. Even once a regulatory regime is in place, it takes at least five years to plan and another five years to build an average nuclear plant.

International Relations

The rise of resource nationalism and the global search for energy resources is forcing countries to rethink their foreign policies and their alliances. Nowhere is this impact more evident than in the European Union, which has struggled to meet the twin demands of energy security and climate change, while contending with a resurgent Russia.

Over the past year, Moscow systematically pursued its pipeline plans by selectively seeking the support of individual EU member states—thus sowing discord within the Union. German and Dutch companies have taken the lead in working with Russia's Gazprom on Nord Stream, to the great displeasure of Poland and the Baltic states. Some companies supported by the US and some European countries hope to develop Nabucco through Caucasus and Turkey, as a non-Russian alternative to transport Caspian gas. It faces serious economic competition from the South Stream pipeline, which has the support of companies in Russia, Italy, Greece, Hungary, and Serbia.

The Convergence of Climate Change and Energy Security: Making Mutual Interdependence Work

For Consumers Climate Change (CC) and Energy Security (ES) Mean:

- Reduce use of imported energy
- Reduce use of energy
- Reduce use of hydrocarbons
- Increase use of alternative energy
- Increase use of local energy
- Improve efficiency of use
- Change processes and ways
- Change products to use less energy
- Change technology

Outcome:

- Smaller future markets
- More relative “independence”



For Producers CC and ES Mean:

- Shrinking markets in consuming countries
- Threats to market share
- Threats to income
- More competition for markets

Outcome:

- Need to capture/own end-use market
- Need to acquire assets in consuming countries to “guarantee” a market
- Need to lock in higher prices *NOW*
- Need to create dependency

Reality: Actions by both producers and consumers increase “relative independence” – but mutual interdependence is enhanced.

Source: The JAStanislaw Group LLC

EU Energy Commissioner Andris Piebalgs has sought to persuade EU member states to forge a common approach to securing energy supplies and transport routes. The EU has designated Nord Stream and South Stream as high-priority, crucial projects, given that European national production and gas reserves are in decline, and with the EU forecast to import 70 percent of its energy by 2030 (versus 50 percent today). If these diverse routes are not built, the global competition for LNG will become intense—with supplies unable to meet demand.

Individual member states and their companies will continue to pursue bilateral deals of their own—not only with Russia, but also with Algeria, which is the EU’s second-largest supplier of natural gas. Madrid recently approved the Medgaz pipeline project to bring Algerian gas to Spain, while Rome gave the go-ahead to the Galsi project. EU members, meanwhile, have signed LNG contracts with Qatar, Yemen, United Arab Emirates (UAE), Oman, Egypt, and others. In its quest for greater energy security, the EU is also hemmed in by two other factors: Its Kyoto commitments will make the Union ever more reliant on natural gas; and, while nuclear power could be a solution, it is still anathema for some EU members.

A new burst of activity came in March 2008 when Polish Prime Minister Donald Tusk proposed to fellow leaders that the EU establish an early warning system to alert fellow members about pending energy contracts, while using the EU’s new diplomatic service to “boost the EU’s position in dealings with large global energy players.”

Energizing the Diplomatic Corps—the Energy Cold War

Clear evidence that the potential for conflict between producers and consumers is already on the table comes in the form of such heightened diplomatic activity. In March 2008, US Secretary of State Condoleezza Rice said she will appoint a US Special Envoy for Eurasian Energy to deal with countries that use their oil and gas for political means. “It is a really important part of diplomacy,” she said. “In fact, I think I would go so far as to say that some of the politics of energy is warping diplomacy in certain parts of the world.” The envoy will pay special attention to Central Asia. Meanwhile, the US State Department on March 12, 2008, also appointed its first Coordinator for International Energy Affairs, a post mandated by the 2007 Energy Independence and Security Act. Thus, the US and EU increasingly will come to the defense of their strategic energy projects, such as Caspian pipelines—ironically, by some, considered the clearest proof of rising resource nationalism.

Halfway around the world, also in March 2008, China announced the creation of a National Energy Commission to promote energy security. The body is charged with drawing up industry plans, encouraging conservation, and promoting alternative energy. Similar steps have been taken by South Korea and Japan, among others.

So as producer and consumer countries refocus their diplomatic efforts on energy, the key question will be: Will they adopt a defensive pose, in which they seek to advance their national energy interests at any cost—an energy Cold War, or will they use their diplomatic capital to design a more peaceable international architecture built on mutual interdependence?

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Sowing the Seeds of Unrest

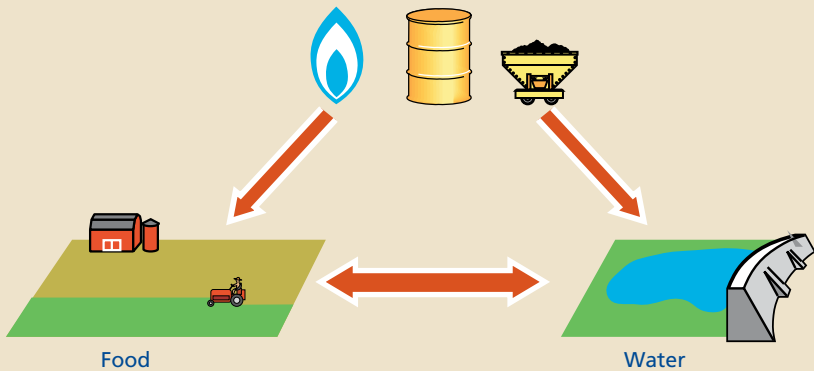
The scramble for energy, meanwhile, is destabilizing the developing world. For one, the headlong rush by the US and the EU into biofuels has been a significant factor in the soaring price of food, as croplands are switched to energy production. There is no question that higher oil prices raise the cost and price of fertilizers, and for fuels used for agriculture, thus sending food prices higher. Social unrest over the high cost of food has been on the rise in Africa, with recent outbreaks in Cameroon, Senegal, and Burkina Faso, as well as in Asia. In late March 2008, Egypt, one of the world’s leading rice exporters, imposed an export ban in order to keep local prices down and prevent protests. In April, UN Secretary-General Ban Ki-moon created a high-level task force that he will lead and that aims to address the challenge of food security and affordability.

An EU report released in March 2008 during the Union’s quarterly summit warned of “significant decreases in crop yields that are expected to hit Turkey, Iraq, Syria and Saudi Arabia and thus affect stability in a vitally strategic region for Europe.” The report highlights an imposing range of risks related to climate change and energy insecurity—including increased immigration, less secure water supplies, and diminishing food and fish stocks—and calls on the EU to incorporate the risks resulting from climate change into its defense policy.

The Challenge of Unintended Consequences: The Devil's Triangle

The Challenge:

Finding energy solutions that do not threaten food production or water supply through climate change or other means



Source: The JAStanislaw Group LLC

"Climate change is best viewed as a threat multiplier which exacerbates existing trends, tensions and instability," wrote the co-authors, Javier Solana and Benito Ferrero-Waldner, the Union's senior foreign policy officials. "The core challenge is that climate change threatens to overburden states and regions which are already fragile and conflict-prone. The risks include political and security risks that directly affect European interests."

The reports also note that the UN has predicted that there will be millions of environmental migrants by 2020, and warns that the pressure will not only come from beyond Europe's borders, but that climate change "is also likely to exacerbate internal migration with significant security consequences." The analysis warns of major changes to landmass leading to territorial disputes, political radicalization in poorer regions of the world, and the effects that sea-level rises and increases in the frequency and intensity of natural disasters would have on port cities and oil refineries.

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The Big Chill: Contesting the Arctic

Perhaps the starkest security risk for Europe—as well as for the US, Russia, Canada, and others—was placed into sharp focus on August 3, 2007. It was then that Russia's veteran Arctic explorer Artur Chilingarov (and vice-speaker of the Duma) descended in two 26-foot-long submersibles to 13,980 feet to the Arctic seabed and planted a titanium Russian flag. He was accompanied by, among others, the Russian oligarch Vladimir Gruzdev, a Swedish businessman,

Russia and the Two Energy Triangles: Mutual Interdependence or Mutual Conflict?

Addressing the West

Building an Asia Pacific Market

United States



Japan/USA



EU/Germany

WEST

EAST



China

The outcome: A new "Cold War" mentality of energy mutual deterrence, or Building Market?

The outcome: Building blocks or mounting tensions?

Cooperation or Competition or Conflict?

Source: The JASTanislaw Group LLC

and Arab sheikh—stoking even further the flames of the fears of resource nationalism. The Arctic shelf could hold a quarter of Earth's fossil fuel—400 billion barrels of oil, as well as gold, nickel and diamond deposits.

Moscow's bold move triggered a series of diplomatic and military responses. "This isn't the 15th century," said Canadian Foreign Minister Peter MacKay, "You can't go around the world and just plant flags." But just in case, Canada ordered new naval patrol vessels to "defend its sovereignty over the Arctic"; the US announced plans for two new polar ships; and Denmark sent a mission to determine how far Greenland opens the way to claims for Arctic sovereignty.

The EU, meanwhile, fears the potential for open conflict as Arctic ice melts at the rate of 28,000 square miles each year, easing access to fossil fuel deposits and opening new sea routes. It is now pushing to develop an Arctic policy and for the UN to discuss security risks arising from climate change. "A further dimension of competition for energy resources lies in potential conflict over resources in polar regions," the EU noted in March 2008. "There is an increasing need to address the growing debate over territorial claims and access to new trade routes by different countries which challenge Europe's ability to effectively secure its trade and resource interests."

The world has several other potential hotspots where countries are battling for maritime drilling rights, including, notably, in the south and east China Sea.

Sovereign Wealth Rules

Finally, the vast transfer of wealth in recent years from oil consumers to oil producers has reordered the state of international financial relations, and their impact on global politics.

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Sovereign wealth funds have ballooned and are expected to reach tens of trillions of dollars by 2015. At present, Abu Dhabi's totals \$1 trillion (and represents a staggering \$1 million per citizen); those of Saudi Arabia and Kuwait each approach \$300 billion; and Russia's is about \$175 billion, not to mention Singapore, China, Dubai, and Norway.

Their forays into Western equity markets have caused unease in Washington and Brussels, due to fears that the sovereign wealth funds will be used by states not only for financial gain, but for political advantage as well.

The Road from Kyoto to Copenhagen

With concern over climate change becoming a powerful force in the new great game over energy, the negotiations over a successor to the Kyoto Protocol are revealing a shift in the balance of power between the developed world and developing countries, led by China and India. And what transpires in Copenhagen in December 2009—where the UN hopes to finalize a new treaty that aims to have emissions peak within 15 years—will have a massive impact on global energy markets.

The Kyoto Protocol, signed in 1999, was framed almost exclusively in terms that met the interests of the developed world. Its principal goal was to mitigate carbon emissions, collectively reducing global emissions by 5.2 percent by 2010 (from 1990 levels). However, while Kyoto paved the way for carbon trading systems, it did not address the three issues of greatest concern to the developing world: Adaptation, technology, and finance.

These issues will be at the heart of the debate during the crucial negotiating period between December 2007's Bali conference and the 2009 summit in Copenhagen. China and India are leading efforts to focus negotiations away from collective global goals for emissions reductions, to per-capita carbon emissions (today, per-capita annual carbon emissions in India are 1 ton; in China, 2.6 tons; in Germany, 10 tons; and in the US, 19 tons). By doing so, they hope to throw the weight of responsibility for reducing emissions on the US, Europe, and other developed countries—whose collective historical emissions are vast, relative to those of the developing world.

But they also aim to ensure that the Copenhagen Protocol emphasizes what they call "the right to emit", and the need to move beyond mitigation to issues of adaptation, technology, and finance. Developing countries want mechanisms that will help them shape economies that are emissions-free, without harming their development and poverty-reduction goals. This would entail vast investments in technology, as well as of funding, in the developing world,

to seed alternative energy initiatives. It also would require establishing innovative financial tools that could leverage funds from carbon trading to fund adaptation projects. Developing countries, meanwhile, are aiming to include land use and prevention of deforestation in the calculus of Copenhagen. And they would also want the next treaty to account for precautionary, preventative action—such as building dikes—to fend off the consequences of climate change.

Copenhagen, whatever ultimately transpires on policy detail, means the push for renewable technologies will receive an enormous boost.



Source: The JAStanislaw Group LLC

Recommendations: The Road Ahead

The Private Sector Navigating This New Energy Landscape

The simple if unsettling fact, then, is this: the emerging energy producing superpowers along the SCSC corridor (except Canada) have energy industries dominated by state-owned or state-controlled companies, while the key companies in China and India have the benefit of the market and might in their international dealings. In all cases, these companies play most effectively within the global market-based rules. State dominance and market drivers are not counterparts anymore—this is the real paradigm shift.

Hence, the reality is these new players are defining new rules for the energy game, rules with which Western countries and some private energy majors are unfamiliar, while others from France, Netherlands, Norway, and Italy are not unfamiliar at all. State-supported companies compete with advantage. There is no question that many Organisation for Economic Cooperation and Development (OECD) nations also support their companies, but not often as overtly as the new companies along the SCSC corridor. This is not the world of state-to-state deals of the 1970s. It may in fact be a more challenging market structure than that which prevailed in the 1970s, requiring strategic and partnering innovations.

New forms of partnerships will need to be formed, as national oil companies seek out the technology and know-how of the private sector.

So the redefinition of the industrial landscape that producers are pursuing feels deeply uncomfortable to those in the West—but it is not unreasonable nor is it unnatural. It is a reality. New forms of partnerships will need to be formed, as national oil companies seek out the technology and know-how of the private sector, but on different terms than in the past. If foreign companies can be content with minority stakes in oil and gas ventures, then they will do well enough in this new state-dominated world. The alternative to a minority-owned field—a majority percent of no field at all—is far worse.

Rebuilding business models to account for the sea change in control of fossil fuel reserves will be one critical link in meeting future energy demand.

Meeting global supply needs requires technology, access, management, and investment—assets on which no single entity can claim a monopoly. Given these assets of the private companies, independent corporations have significant leverage in their dealings with state-controlled or state-dominated companies—something that the latter must come to realize. New forms of partnering will help in redefining and rethinking “win-win” goals of true partnerships:

- Share assets—in home country and in host country—a two-way track
- Share accountability and responsibility
- Share equality - balance of interests - threats and opportunities
- Create and use local resources – add value in country
- “Own” other parties’ interests outside their country or sector
- Keep the “corporate ego” at home

Meeting global supply needs requires technology, access, management, and investment—assets on which no single entity can claim a monopoly.

Equally important for independent oil companies is to emphasize those parts of their business where they do better than state-controlled companies—research and innovation. In doing this, they should refashion themselves as energy companies, not just oil or natural gas companies. This strength will be even more important as the oil industry becomes increasingly focused on the biology of creating clean fuels, and as carbon-free electrons become dominant in the massive transportation sector. (See an earlier white paper in this series, published in 2007, *Climate Changes Everything: The Dawn of the Green Economy*.)

But this also means new corporate partnering. Last year, BP agreed to spend half a billion dollars to create the Energy Biosciences Institute at UC Berkeley to study biofuels. Chevron, meanwhile, recently formed an alliance with a Silicon Valley startup to produce fuel from algae. Says Chevron CEO David O'Reilly about the future: "We'll be selling energy. We'll be providing energy services. But I'm confident it will be quite different than it is today."

Inevitably, given the political weight being thrown behind state oil companies, independent corporations will have to rely on the diplomatic and lobbying clout of their own governments. In the energy industry, it is abundantly clear that economics is politics, and politics is economics—an equation that will not be changing anytime soon.

One bright spot among non-state actors is the growing role of private equity investors and venture capitalists. Unhampered by their own geopolitical interests, they have the potential to promote a greater understanding of this relationship between producers and consumers and to help forge agreements built on the notion of mutual interdependence.

Energy States Rising

Resource nationalism and the shifting geography of energy should be put into perspective. While the EU, feeling threatened by Russia's increasing control of distribution networks, will focus on diversifying sources and routes of supply, Moscow and other energy producers are pursuing a mirror goal: diversifying their sources and routes to demand, and securing reliable long-term markets for their gas. This drive to diversify both supply and demand could enhance mutual interdependence. But misreading the intentions of producers can lead unnecessarily to polarization and confrontation. The challenge and the opportunity is to make mutual interdependence work. Today, fighting against nationalism in energy is less important than preventing a spiral of mistrust. Out of mistrust, misunderstanding, isolation, supply shortfalls, higher prices, and dampened economic growth—even conflict—might result.

No doubt, most energy producers see resource nationalism or rising Asian demand as a market reality. But they do recognize two dangers to their own economic interests of high energy prices: the constant one of risking a global economic slowdown, and the recurrent one of pushing consumers even faster down the path of energy efficiency and alternative sources.

Windfall or Wind Energy?

It is this latter trend that is creating bouts of demand insecurity among producer countries. One reaction to this could be the further cartelization of energy, as producers seek to keep prices high, thus pocketing windfall profits today for fear of losing them tomorrow. But, this would be ill-conceived.

However, with consumption soaring, all forms of energy will be needed and producers should gain confidence from knowing that the world will need oil for a long time to come, as it creates a bridge to a new energy future.

The future is technology—for oil, for natural gas, and for alternative energy. For producer countries, a technology lens provides a visionary and lucrative path that will secure their interests well beyond the point that their own reserves peak in a generation or two. This path emphasizes three priorities: diversification through innovation, mutual interdependence, and human resources.

Above all, producer states, like independent oil companies, must refashion themselves as producers of energy, not of fossil fuels.

Seven years ago, British Petroleum abbreviated its name to BP and announced that it stood for “*beyond petroleum*.” For a company with revenues mostly from fossil fuels, the move was audacious. But it served its purpose by pointing BP to the future. Today, the company is spending \$8 billion over five years for R&D in alternative and renewable fuels.

Energy producers would do well to undertake a similar exercise in reinvention. They should debate whether their future lies in being at the vanguard of the petroleum industry—or of the *energy* industry. Their relevance and enduring prosperity could lie in the balance.

Oil-producing nations are reaping enormous profits—the UAE alone has a trust fund said to exceed \$1 trillion. The future of OPEC countries will depend a great deal on how much of today’s windfall is invested in sustainable development. Above all, this means becoming world-beaters in cleaner oil, alternative energy, new end-use technologies, and even—paradoxically—energy conservation. The UAE, with the ambitious Masdar Initiative’s \$250 million Clean Technology Fund, seems to have understood this. Saudi Arabia, meanwhile, is building a new city based on research into clean energy.

Important for independent oil companies is to emphasize those parts of their business where they do better than state-controlled companies: research and innovation. In doing this, they should refashion themselves as energy companies, not just oil and gas companies.

Innovation Trumps Insecurity

As things stand now, producers—at least those in OPEC—have only one tool, oil production quotas, and more importantly the existing production capabilities. Even these can be undermined by a lack of discipline and the activities of smart traders on spot and forward markets. As alternatives become more cost-competitive and physically available, the power of producers to manage oil prices will weaken. So they need to become more than a one-trick pony. Specifically, they should consider two fundamental changes.

First, producers should get ahead of the technology curve, and invest a portion of their windfall in cleaner fossil fuels and in renewables. With a small fraction of their current crude oil reserves, they can become leaders in cutting-edge energy industries by funding global research and start-ups pursuing new technologies. This way, as fossil fuels gradually give ground to alternatives in coming decades, producers can guide a smooth transition in the global energy mix. And by having a major stake in renewables, and thus in the future of energy, producers can more confidently enter into relationships of mutual interdependence with consumers—rather than ones of coercion.

Second, producers need to work in concert with consumers to cultivate a positive climate around their mutual interdependence. At present, producers and consumers are too often circling each other like wary boxers—with consumers worried about how much oil producers really can (and will) pump, and producers suspicious of how the shift to alternatives could impact demand. By working together, they can turn *insecurity* of supply and demand into *security* of supply and demand.

Arguably, OPEC was born to unite a weak and fragmented exporter group in the face of the market power then exercised by a relatively few large international companies, sourcing oil on behalf of a few very large importing blocs, mainly in the OECD. In the 21st century, the much greater spread of demand for oil imports, across emerging markets as well as in the OECD, is creating a truly competitive global market, reducing—and potentially even one day removing—the original drivers for OPEC.

Perhaps OPEC will no longer exist in a few years. No, it won't disappear. Instead, it will have re-imagined itself as the Organization of Energy Technology Exporting Countries.

Finally, producers have a unique opportunity to reinforce their competitive advantage by training the next generation of energy workers. The average age of workers in the energy industry is now 46-49—a full 10 years older than in most other industries—and the majority of the most skilled workers will have retired within the next decade. This will create an enormous knowledge gap. Those who fill it will be in a privileged position for the next two generations. Investment in new energy technologies is an answer.

At present, producers and consumers are too often circling each other like wary boxers—with consumers worried about how much oil producers really can (and will) pump, and producers suspicious of how the shift to alternatives could impact demand.

Energy Importing Nations: Making Interdependence Work

States that depend heavily on energy imports need to work on numerous fronts in order to stave off energy insecurity, while addressing climate change. Among the priorities should be to:

- **Emphasize mutual interdependence in international relations:** Resource nationalism can condition importing countries to interpret every action by producers as a form of economic aggression—but that certainly is not the case. Producer countries, seeing the rush to alternative sources, are often motivated by their own energy security concerns—except these center on *demand insecurity*. To address concerns on both sides, importing nations should insist on mutual interdependence, seeking deeper engagement and reciprocity with producers.

Making Mutual Interdependence Work: The Driving Forces and the Challenges

The infographic consists of nine icons arranged in a 3x3 grid, each with a corresponding title below it. The icons are: 1. A yellow barrel with four black arrows pointing upwards from its base. 2. A green tree with a brown trunk, growing inside a black wire cage. 3. A grey oil barrel with a small amount of brown liquid at the bottom. 4. A red curved arrow pointing right, with a dotted line following its path. 5. A globe with three curved arrows (blue, green, red) circling it. 6. A blue flame. 7. Two hands shaking in a firm grip. 8. A blue pipeline with a yellow train car on top. 9. Two circular arrows, one green and one orange, forming a circle.

The New Definition of Energy Security

The Convergence of Climate Change and Energy Security

The Oil End Game

The Shifting Energy Corridor

Global Competition and Resource Nationalism

The Rise of Natural Gas

Supply Needs Demand and Demand Needs Supply

Diversity of Supply Routes Enhances Competition

The Goal of Mutual Interdependence

The Strategic Challenges

Source: The JASTanislav Group LLC

- **Commit to major investments in the developing world:** Industrialized countries, through market mechanisms with the protection of intellectual property rights, can help lower-income countries leapfrog dirtier technologies—building this responsibility into the Copenhagen Protocol. Doing so not only addresses climate change, but also accomplishes three other critical goals: broadens the market for alternative energy and energy efficiency technologies; reduces the risk of unrest related to energy or food shortages in the developing world; and diminishes pressure on global demand for fossil fuels.
- **Price carbon correctly:** By setting mandates and putting a price on carbon emissions that includes all costs to the commons, governments can create a foundation for clean, renewable, and efficient technologies. Industry is clamoring for predictability and asking for carbon to be priced correctly in order to make long-term investment decisions. “We have to know the rules of the game,” says Jeroen van der Veer, CEO of Royal Dutch Shell.
- **Invest in innovation:** The U.S. Energy Department in the past year alone has invested over \$1 billion to spur research and growth in cellulosic biofuels, including nearly half-a-billion dollars to create cutting-edge Bioenergy Research Centers. Equally important, if not more so, are the investments of large oil companies, private equity, venture capital, and technology entrepreneurs spending even larger amounts globally. The goal is to make cellulosic biofuels cost competitive with gasoline by 2012, and to reduce American gasoline consumption by 20 percent within a decade. Yet such efforts need to be multiplied across the industrialized world, especially given that research budgets have shrunk in recent decades. (See an earlier white paper in this series, published in 2007, *Climate Changes Everything: The Dawn of the Green Economy*.)
- **Diversify supply routes:** The paradigm shift to natural gas is increasing competition for supply and increasing the need for alternative supply routes for natural gas—both pipeline routes and transit routes for LNG. Europe in particular will rely increasingly on Siberian gas. This will require multiple supply routes to Europe from Siberia, and also from other areas east and south of Europe—for both LNG and pipeline gas. One crucial element in understanding how these multiple supply routes will develop is the basic fact that LNG cannot and will not fill any gap in natural gas supply that results from decisions not to build new pipeline routes. The expected supply of LNG over the next decade will bring increased competition from North America and the Far East, in addition to that from Europe. More and diverse pipeline routes will enhance competition, allow more flexibility in imports from alternative locations, and strengthen mutual interdependence. More supply routes make mutual interdependence work.

The Way Forward: Mutual Trust and Interdependence

Ultimately, the goal for both producers and consumers of energy must be mutual interdependence. The challenge of change, created by the convergence of climate change and energy security, is upon all the global players in the great new game. The key is creating the framework for understanding that sets out the balance of interests that translate into mutual interdependence and trust.

About the Author



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Dr. Stanislaw was one of three founders of Cambridge Energy Research Associates in 1983 and served as managing director for all non-U.S. activity until 1997, when he was named president and chief executive officer. He is an adjunct professor in the Nicholas School of the Environment and Earth Sciences at Duke University, where he is a Member of the Board of Advisors for the Nicholas Institute for Environmental Policy Solutions. Dr. Stanislaw was a Research Fellow of Clare Hall and lecturer in Economics at Cambridge University, where he was also a member of the Energy Research Group in the University's Cavendish Laboratory. He was a senior economist at the Organization of Economic Cooperation and Development's International Energy Agency in Paris.

Dr. Stanislaw is co-author of *The Commanding Heights: The Battle for the World Economy*. Now in the second edition, the book has been translated into 13 languages and made into a six-hour documentary on PBS. He is also the author or co-author of numerous reports and published papers on the geopolitics and economics of future energy supply and demand, including *Energy in Flux: The 21st Century's Greatest Challenge*, and he will be featured in the upcoming public television documentary, *Oil ShockWave*.

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