



ENERGY SOVEREIGNTY AND SECURITY

**RESTORING CONFIDENCE
IN A COOPERATIVE INTERNATIONAL SYSTEM**

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EXECUTIVE SUMMARY

Energy security has re-surfaced as a headline issue in the policy councils of Europe and the Americas in a way not seen since the 1970s. On the one hand, some leaders believe that there is a new energy rivalry with ominous geopolitical overtones, and they look at Russia and China with suspicion in this regard. On the other hand, at a more commercial level, there has been rising uncertainty about oil supply and demand, because of political instability in the Persian Gulf and rampant consumption in the major industrial countries and emerging economies. Price volatility, long a feature of the oil market, reached levels not seen for some years, leading to fresh concerns about 'peak oil'.

Policy makers in government and business have been bombarded with facts and statistics – claims and counter-claims – about whether oil is running out; about choices between coal on the one hand or nuclear and renewable fuels on the other; about politics and geo-strategy; and about climate change. A psychology of insecurity has begun to overtake rational policy debate. The goal of this Policy Paper is to assist leaders in government, business, the media and at the community level who want to control and reverse this growing sense of insecurity.

The paper goes beyond a 'supply and demand' diagnosis. It widens the concept of 'energy security' to include the idea of confidence-building measures. It accepts that security must apply to all parties – to supplier and consumer countries, to private business providers and private consumers of energy, and to those concerned about the effects of energy consumption on the global environment.

There are two particularly prominent reference points for this paper. The first is resurgent 'energy nationalism' perceived by many in the United States and Europe as a threat and associated mostly with Russia and Venezuela on the supplier side, and with China and India on the consumer side. Such perceptions may not be justified, and may in fact be conflict-enhancing. This paper contends that it is better to see the new 'energy nationalism' as a normal exercise of sovereignty. Global businesses now recognize that 'energy sovereignty' resulting in firmer host-state control of energy resources and transport infrastructure (with better returns to the host-state) is a normal economic and political response to rising energy prices, and that it incorporates a number of positive trends. These global businesses are confident that today, unlike the times of the oil embargo of 1973 and the widespread

nationalizations of the 1960s, the more assertive supplier countries accept that their own economic security depends on a stable market in energy resources. It is time to understand the precise motivations of the new assertiveness and its limits.

The second reference point is the link between policy intervention by governments at the domestic level – another form of ‘energy sovereignty’ – and international confidence building. This relationship has many dimensions: choices about civil nuclear power; market signals for a shift to low-carbon fuels involving other renewables, such as solar power and bio-fuels; and control of carbon emissions. The analysis of domestic policy – especially government regulatory policy – is often overlooked as one of the most important sources of confidence building for energy at the international level. Understanding the domestic regulatory policies of India and China and the weakness of their energy efficiency regimes is essential to understanding their energy policy motivations.

Beyond the technical or economic aspects of regulatory policy, the most important aspects of domestic policy affecting the confidence of other states are: the absence of threat of interruption of supply; the absence of threat to boycott consumption; and contingency planning for severe disruptions in energy supply. Oil producers have since 1974 developed good working relations on supply issues with oil consumers, but there is limited confidence in these arrangements because of lack of knowledge about how the contingency policies of the big consumer countries (USA, China, India, EU, Japan) relate to each other and to domestic distribution within each country.

At a broader level still, it is now clear that the issue of a country’s energy security should be closely linked to its policies on climate change and the environment. The new sense of urgency and uncertainty that has emerged in the global debate about climate change has been affecting confidence about energy supply and consumption.

Recommendations

Leaders in government, business, the media and the community should pursue the following measures:

1. Respond to growing global fears about access to resources by rebuilding confidence in a set of global rules and cooperative approaches that reconcile competing stakeholder interests,

especially on fair access to energy supply and to energy transport infrastructure.

2. Create a truly international energy organization. It should include new members (China and India as major energy importers; and major energy-producing countries, such as Saudi Arabia and other leading OPEC members). The new organization should take into account the vital interests of the key stakeholders (private sector, governments and civil society). Its mandate should be much broader than that of the current International Energy Agency (IEA) and it must provide binding rules for access and supply, and better regimes for emergency response.
3. Focus on two principal goals:
 - ❑ to bring the best national resilience and contingency practices to the international level;
 - ❑ to promote stable, transparent and efficiency-driven domestic regulatory systems in major consumer countries.

States, working closely with the private sector, should:

4. Individually legislate for more accessible non-carbon or low-carbon options in the energy mix at the same time as making a quantum leap in international efforts to spread relevant technologies, including nuclear power options. These policies should address global warming and other environmental issues, and promote technology sharing in order to accelerate the pace of transition.
5. Undertake urgently a global audit of the energy resource base, understanding that it must include dynamic factors, especially the potential role of market signals for a more rapid shift to renewable energy, both non-nuclear and nuclear.
6. Promote fuel substitution, physical interconnections between existing energy transportation networks, and work toward a truly global energy market.

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INTRODUCTION

Energy security means different things to different people. At its most basic, it means being able to get the energy products or inputs one needs for home use, business, or national services and infrastructure, including hospitals, schools, police and the armed forces. This is normally a question of relying on the market and having the resources (in cash or in kind) to pay the market price. But the market does not always deliver at an affordable price to all. There are energy 'haves' and energy 'have-nots'. Energy welfare involves domestic policies for poorer communities and international assistance packages for poorer countries.

Beyond this basic level of promoting open markets and some degree of equity, energy security policy has mostly been about dealing with severe price shocks or severe supply shocks (from politically motivated embargos or natural disaster). The International Energy Agency (IEA) was set up in 1974 to coordinate efforts to overcome such shocks. Renewed national petroleum reserve policies have been one outcome of that effort. Yet the last decade has seen growing doubt about the adequacy of domestic and international frameworks to monitor and respond to energy security dilemmas and threats.

The rapid growth of global energy consumption, under-investment in production, refining and distribution capacities, terrorism and a resurgence of 'energy nationalism' are endangering a fragile international balance of forces and putting strong pressure – mostly psychological – on international energy markets. The situation is aggravated by the variety of approaches to energy security.

The concept is variously positioned somewhere between geo-politics and market economics.¹ Indeed, modes of thinking and policy response to problems in various bureaucracies are 'critically different'.² Prospects for coherent energy policy in the near future have been severely reduced by a shift in bureaucratic power in leading countries on energy issues. Decision-making on energy security in major powers has slipped dangerously from the hands of economic policy makers to the

¹ The authors would like to acknowledge Nick Mabey, Chief Executive of the London-based E3G, as the source for the observations in this paragraph. He was speaking at a round-table organized by the EastWest Institute and the European Madariaga Foundation in Brussels on 27 September 2006.

² Mabey also offered this important observation. It is central to understanding the policy bottlenecks and other institutional impediments to sensible policy on energy security.

hands of national security strategists. Environmentalists have lost the strong influence they were beginning to have.

One of the central divides in approaching energy security is between energy-exporting and energy-importing states. The former consider security of demand as a key priority, while the latter concentrate on security of supply. This tension has become more acute in recent years as some energy-producing states have more robustly asserted the view that their energy reserves are a constituent element of their own national security. For these states, there has been stronger interest than for decades in seeking full control over the three major elements of the 'energy chain' – production, transit, and processing and distribution. This trend to 'energy nationalism' – more appropriately termed 'energy sovereignty' – is impeding unrestricted access to energy resources and has negatively affected perceptions of global development, peace and prosperity.

It is clear that previous attempts to tackle energy security challenges and to propose mutually beneficial solutions have not been fully successful. The IEA has both limited membership and limited scope. It does not represent key energy producers or new economic giants, such as China and India. The G8 (initially Group of Six) also owes its origins in 1974 in large part to the 1973 oil embargo and subsequent economic recession in the developed world. Yet, as of 2006, the G8 is still trying to address broadly similar energy security dilemmas. A number of countries are proposing to use the World Trade Organization (WTO) to develop a new 'energy architecture' based on a 'free trade' principle, but this proposal is opposed by a number of energy producing and developing states. There are also doubts that the WTO mechanism – devised for defining access to markets – may not be able to address the issues of energy security that proponents of the new WTO moves on energy are seeking.

This EWI Policy Paper is based on the results of a year of consultations with specialists as outlined in the Acknowledgements section after the conclusion.³ Each of the following six sections of the paper addresses the subject of one of the six main recommendations collated in the Executive Summary.

³ These consultations were led beginning in 2005 by Vasil Hudak, Daniel Bautista, Danila Bochkarev and EWI's CEO, John Edwin Mroz. One of the authors of this paper, Greg Austin, joined the process in August 2006.

RESTORE CONFIDENCE IN GLOBAL ENERGY MARKETS

There is growing misunderstanding of strategic trends in the energy policy of key hydrocarbon exporters. This is based on failure to recognize the emergence of greater political competition at a systemic level. There are two different modernization and 'mineral-wealth' management models that are now more visibly competing with one another.⁴ On the one hand, the 'Western model' of modernization aims at removing 'political barriers that limit access to raw materials, to oil and gas resources and to attractive new markets...[and] foreign direct investments are seen as the best tool to denationalize oil and gas'. On the other hand, a number of emerging economies have 'formulated their own set of references for globalization': they want to participate in 'the international economy, but on the condition that the state's long-term political, strategic, and economic national interests are served'.⁵ Contrary to standard IMF expectations, some of these countries have managed to combine the efficiency of private management with state control of energy assets.

Thus, several energy-producing countries still see their energy resources and infrastructure as one of the key pillars of statehood and, in many cases, as a means of rising to a position of global strategic significance. By successfully applying a new set of socio-economic principles, now labeled the 'Beijing consensus',⁶ some of these countries feel that they have proven the viability of a development model other than the IMF-advocated 'Washington consensus'.

Current trends differ significantly from the Arab oil boycott of the mid-1970s. Now, energy exporters do not seek to exercise pure political pressure on the West. They tighten control over their energy resources in order to get a bigger part of the 'energy cake'.

In these circumstances, political leaders in consumer countries should see the national development perspective of suppliers for what it is and avoid the temptation of over-politicizing (over-interpreting) what they see. In fact, there is a case for responding to the new assertiveness of producer countries by going the other way: to depoliticize and re-define energy security concepts in order to stabilize energy markets, secure

⁴ Coby van der Linde, 'Energy in a changing world': inaugural lecture as a professor of Geopolitics and Energy Management at the University of Groningen; Clingendael Energy Papers, No. 11, CIEP 03/2005, pp. 10 - 11.

⁵ Ibid.

⁶ See Joshua Cooper Ramo, *The Beijing Consensus*, Foreign Policy Centre, London, 2004.

stable and reliable energy supplies and develop new more efficient and environment-friendly technologies, thus restoring confidence in an international energy system. In particular, political leaders in consumer countries need to accept that a national security policy emphasizing coercive military power cannot deliver energy security. Leaders in business and global civil society should prevent politicians from going down the 'blind alley' of threat scenarios and coercive response when addressing energy security.⁷

Only one strategy delivers sustainable energy security: that of common and comprehensive economic security. The time is now right for a new effort by states to restore confidence in an international cooperative energy system. The most powerful states, represented by G8 members plus China, India, Brazil and key producer states – while working closely with the private sector and civil society – should take the lead to develop mutually beneficial international energy strategies, to deepen integration between energy producing and consuming states and to rebuild confidence in international energy markets on basis of the cooperative approaches.

TRANSFORM INTERNATIONAL ENERGY ORGANIZATIONS

The international energy framework includes a number of organizations and special agencies both at global and regional levels. In addition to the IEA, these include the International Atomic Energy Agency (IAEA), Organization of Petroleum Exporting Countries (OPEC), the Energy Charter Treaty (ECT), the International Energy Forum (IEF), and the Gas Exporting Countries Forum (GECF). Meetings of energy ministers or officials within regional organizations, like the European Union (EU) and Asia Pacific Economic Cooperation (APEC), are also important multilateral energy institutions. None of these organizations has a truly universal mission, a set of binding rules or a mission that can bridge the existing divide between energy producing and energy consuming countries.

The IEA, created as mentioned above in response to the oil crisis of 1973-74, is currently facing a totally different global order, even if the security dilemmas around energy remain largely unchanged since then. The Agency, like other energy organizations, has only limited instruments while addressing new challenges and threats.

⁷ Comment by Michael Lynch, Strategic Energy & Economic Research Inc.

In its attempt to address these, the IEA and more 'specialized' energy agencies have tried to broaden their mandates. The IEA scope of action includes energy security, economic development and environmental protection. While experts still disagree about the level of effectiveness of the IEA, its emergency preparedness and oil market observation programs as well as the level of cooperation amongst member states are recognized as useful mechanisms for the maintenance of stability of energy supplies.

However, despite its attempts to establish close contacts with major global energy consumers and producers and to address climate change, market reform and technology issues, the IEA still remains the 'closed elite club' of rich developed countries, excluding important emerging players with rapidly growing energy needs, such as Brazil, China and India and traditional key world energy producers such as Saudi Arabia and Russia. Indeed, most of the energy resources are located outside the 'IEA area' as well as more than half of the world's energy consumption. The IEA also has not been wholly successful in improving relations between energy-producing and energy-consuming countries. Neither has it become, despite some significant achievements in this area, a truly international forum on energy security, technology sharing and major environmental challenges.

The IEA faces serious difficulties in promoting its official goals:

- ❑ Free and open trade in energy is still far from being achieved;
- ❑ The Agency is hardly able to stabilize the global oil market; constantly rising oil prices continue to undermine economic development in a number of poor countries, especially in Africa and South Asia;
- ❑ The Agency does not address the growing 'ideological' divide between energy-producing and energy-consuming countries;
- ❑ IEA statistics are still based on external sources, often contradicting each other;
- ❑ Technology sharing operates effectively only between the member countries.

Other supranational structures dealing with energy security are no better prepared to respond to new challenges. For example, the IAEA has been bedevilled by Iran's efforts to fully develop nuclear enrichment technologies that would position it for a rapid transition to building nuclear weapons if it chose to go down that path. There is no agreed mechanism that can now provide a satisfactory international supervision

framework for the Iranian nuclear program that takes into account both the issue of weapons proliferation and Iran's right to develop civil nuclear power.

The G8 provides only a formal framework and 'incitement' for action, while the IEF based in Saudi Arabia, which gathers ministers of energy producing and consuming countries (both industrialized and developing) in a global dialogue on energy, still does not have a firm structure or a clear mission statement.

OPEC is simply a cartel of oil exporting states, and the GECF is (unsuccessfully) trying to follow a similar path. However, GECF members are still not able to conduct a coordinated policy on major regional gas markets. The ECT has potential to become a dispute-resolution forum for transit and investment issues. However, it should bring new important players such as the US and China inside its framework and create a set of internationally respected binding rules and an efficient arbitration system. The European Union (EU) has a successful record of addressing energy and environment challenges on a regional level. However, the EU still faces difficulties in elaborating single energy policy combining interests of its 27 members.

Therefore, there is an urgent need to expand the collective energy security system globally, including through binding mechanisms. There is a need to adapt existing rules and make new ones that are appropriate for the new 'energy game'. This process should be mutually beneficial, taking into account the interests of key players (consumers, producers and transit countries). The process should not be hijacked by leading global players (either on the producer or consumer side) and must represent the interests of developing countries.

RECONCILE THE MARKET WITH NEW POLITICAL REALITIES

There is a general consensus regarding global energy security – it should be rooted squarely in the domain of the market, in the law of supply and demand, with respect for key precautionary principles (such as environmental protection and climate change). There is global acceptance of the need for appropriate contingency measures for those inevitable moments when markets do not respond quickly enough to demand signals.

Two new elements need to be promoted as part of this global consensus. First, as mentioned above, national security policy

emphasizing coercive military measures and military power cannot deliver energy security. Second, market forces cannot be held fully responsible for the global energy system. Energy markets are far from conforming to accepted criteria of openness and transparency normal for most developed economies. If neither military force nor market power can deliver energy security, what can?

One of the priorities should be the promotion of the best national resilience and contingency practices at the international level. Historically, most developed countries, primarily energy importers, have advanced contingency and resilience plans. At the same time, most of the developing countries lack the most simple crisis prevention/crisis management mechanisms for energy security. However, even where contingency plans exist at the national level, they offer no guarantee of energy security at the local or sub-national level. Often, it is unclear who (or which formal framework) is responsible for the contingency and resilience plans on the local level.

Establishment of an international mechanism promoting information sharing and the best practices in the area of contingency and resilience should be a major political priority. Best national⁸ and international practices should be studied and promoted globally. The IEA emergency response system could serve as a foundation for global resilience and contingency standards. For instance, it provides:

- ❑ For maintenance of oil reserves and a plan for their coordinated use;
- ❑ For demand restraint, fuel switching and surge in oil production;
- ❑ A mechanism for industry advice and operational assistance (Industry Advisory Board and Industry Supply Advisory Group);
- ❑ A system for re-allocation of available supplies, if necessary.⁹

However, the IEA itself recognizes the limitation of its crisis response policy and has observed that an 'effective IEA emergency response will depend increasingly on co-ordination with non-IEA countries', especially in the Asia-Pacific region. Thus, in order to stabilize regional energy markets, East Asia needs a new strategic petroleum reserve similar to the reserves maintained by the IEA member-states. According to one

⁸ For example, the United States Downstream Oil Emergency Response Plan.

⁹ The overview of the IEA Emergency response system is available at <http://www.iea.org/Textbase/about/ome.htm>. For more details, also see <http://www.iea.org/Textbase/work/2003/asean/JACOBY.PDF>.

observer, a 'new, self-financing reserve can stabilize global oil-prices, cement a new US-Russia energy security partnership, and encourage the Asia-Pacific region to diversify oil imports'.¹⁰

Another goal, and one that recognises the role of market forces, should be to reconcile the application of the existing WTO framework with emerging economic and political realities of the energy sector. On the one hand, a number of WTO members are trying to re-define the global energy security architecture, proposing to apply the 'free trade in services' provision of WTO to the energy sector. On the other hand, several developing countries oppose open access to energy markets since they consider the energy sector an inherent part of their national sovereignty. This divide may be considered one of the key cleavages of the 21st century and should be addressed within proposed confidence building measures.

At the same time as addressing international regimes, states concerned about energy security must do more to build confidence about, and secure the foundations for, stable, transparent and efficiency-driven regulatory regimes at the domestic level. International confidence in the domestic regimes in major energy consumers like China and India is very important. This has long been recognized by China and the United States, which have been cooperating for more than a decade to improve China's domestic regulatory regime for energy pricing and distribution.¹¹ In India's case, the Policy Paper, *Integrated Energy Policy*, released in August 2006 by the Indian Planning Commission, concluded that 'promoting transparent and competitive markets for all forms of energy supplies/services is the first policy initiative that the government must take as part of its integrated energy policy'. It went on to say that 'such competitive markets provide the best means to extract efficiency gains from the sector'.¹²

SIGNAL FOR OUR LOW-CARBON FUTURE

Energy security for a state or a community depends as much on domestic regimes for supply, distribution and consumption as on international factors. There is a strong link between policy intervention by governments at the domestic level – another form of 'energy

¹⁰ David Goldwyn, "The United States, Europe, and Russia: Toward a Global Energy Security Policy", EastWest Institute Policy Brief, August 2002, Vol. 1, n° 5, p. 2 .

¹¹ See Angelica Austin, *Energy and Power in China*, Foreign Policy Centre, London, 2005.

¹² Planning Commission of India, *Integrated Energy Policy*, New Delhi, 2005, p. 71.

sovereignty' – and international energy security. This link has many dimensions: choices about civil nuclear power; policy price signals for transition to low-carbon fuels involving other renewables, such as solar power and bio-fuels; and control of carbon emissions.

Clear 'price signaling' from governments on use of renewables within a transparent regulatory system is an essential ingredient in energy security. It allows more secure, more efficient, and sustainable energy use, without serious destabilization of the national energy market or national economy.

A clear and dramatic price signal on renewables would:

- ❑ Put pressure on oil and gas producers to be more politically responsible;
- ❑ Create more national energy options as opposed to import options;
- ❑ Promote more householder options as opposed to grid-based or pipeline/transmission line options, thus making householders more confident about energy security and less prone to support risky geostrategic options based on the need to secure oil (or gas);
- ❑ Reduce the debt burden on developing countries seriously affected by oil price rises;
- ❑ Through promoting biomass energy sources, promote rural development, a major problem in almost all countries of the world, including wealthier ones.

There will be less 'energy insecurity' and anxiety if the public and the markets can see a clear policy that lays out the price signals for a rapid move to a more diverse energy portfolio, one that includes a much bigger slice of renewables use than most policy analysts are willing to consider. (In this case, a rapid time frame means the next ten years, not 30).

This is most important to combat rising public alarm about climate change. There is a popular perception that global warming may be quickening and that there will be serious economic and ecosystem losses as a result. Many people believe that the leading emitters (USA, EU, China and India) are not acting as rapidly as they must to reduce emissions and prevent catastrophic change.

Regardless of one's view on climate change, price signaling for a low-carbon future is also important for other reasons mentioned above: use of renewable energy sources exploited close to the place of consumption is *prima facie* more sustainable and more secure, and therefore more conducive to confidence in energy security, than reliance on fuels that are transported across long distances from politically unstable countries. Even if security of transportation or source of fuels were not an issue, the use of imported energy already imposes a serious economic penalty on some countries. For example, oil-importing developing countries suffer enormously from even modest variations in the price of oil. In 2004, the International Energy Agency estimated that a \$10 increase per barrel in the price of crude oil could reduce the Gross Domestic Product (GDP) of the poorest sub-Saharan African economies by three per cent per year. In addition, there are potential economic gains for energy importing states from the stimulation of more energy production at home.

Nuclear power is an exception among the renewable energy sources. It is clearly not as low-risk and security-enhancing as others. It imposes huge additional risks in terms of security of the production process and the storage of waste. There is serious disagreement among environmental economists about the competitiveness on a per unit basis of nuclear power when compared with some other renewable sources. There is political contest about the long-term safety of nuclear power stations and the handling of nuclear waste.

Regardless of any inherent attractiveness of renewable sources for environmental reasons, development of the low-carbon options for states are already economically attractive if a medium- to long-term perspective is taken. Projected rates of growth in consumption of 'traditional' fossil-based sources of energy cannot be sustained without a sharp increase in prices.

Thus, there are three important policy judgments that need to be made by all states with respect to possible domestic regulation:

- ❑ Does the state need to promote substitution of fossil-based fuels?
- ❑ If so, how quickly must a state make the change?
- ❑ What technologies are most viable (politically, economically, socially) to facilitate change?

On the first point, there is a prevailing global consensus that states should actively substitute fossil-based fuels. This is reflected in the UN Framework Convention on Climate Change (UNFCCC), among other places. But, according to many states, this Convention and its Kyoto Protocol do not bind together key 'greenhouse emitters', such as the United States, China, India, the European Union and Russia, in a course of action that will mitigate climate change. It has merely set states on the path of action that might, one day, position the key emitters to reduce the pace of climate change. Thus, on the second point, there is no strong consensus on how rapidly states must move, or even can move through market regulation, to mitigate climate change. On the third point, there is even greater uncertainty and dispute about the technologies that would not only be viable in terms of impact on climate change but also accessible (widely disseminated and well-priced) to those most in need.

The lack of consensus at the global level on climate change and a low-carbon future is one of the major sources of energy insecurity, even though experts may disagree about the influence on energy markets of such anxieties and uncertainties.

The global consensus on the need to shift to a post-carbon future leads to an inescapable conclusion. States must deliver 'price signals' that will drive the pace of change to renewables. There is, however, no single formula for such price signals. They will be dependent on a different and difficult calculation of domestic economics and politics for each state. Even apparently uniform targets, such as the EU-agreed target of 12 per cent of renewable energy in the total energy mix by 2010, conceal a large number of differences among states, not least the natural endowment of each member state with renewable sources of energy, such as hydro-power.

One of the possible frameworks for redressing the insecurity arising from this lack of consensus could be the UNFCCC and a firmer application of an extended and reformed Kyoto Protocol to the Convention. This Protocol is currently being renegotiated, but there has been little attention given so far to international frameworks for supporting price signaling that promotes transition to renewables.

The importance of domestic regulation also applies to efforts in conservation of energy and the application of technologies for more efficient use of fossil fuels. Giving a global dimension to energy

efficiency and conservation represents in itself a potential new 'source' of energy. The EU has a plan in place to reduce its energy use by 20 per cent by 2020. The United States has a similar plan. Increasing energy efficiency in Russia would make millions of barrels of oil available for global consumers. China and India have enormous potential for savings in energy efficiency that can be delivered through more effective regulatory regimes.

The analysis of domestic policy – especially government regulatory policy – is often overlooked as one of the most important sources of confidence building for energy at the international level. Understanding the domestic regulatory policies of India and China and the weakness of their energy efficiency regimes is essential to understanding their energy policy motivations. Overcoming those weaknesses is an important part of confidence building for global energy security.

PRODUCE AN AUDIT OF GLOBAL ENERGY RESOURCES

Some of the lack of confidence in the stability of the global energy market is caused by the lack of agreement on the amount of energy reserves available worldwide. The 'certain knowledge'¹³ that hydrocarbon fuels will run out (the 'Peak oil' concept)¹⁴ destabilizes international energy markets and leads to serious political tensions.

Furthermore, the general public and most of the political and business elite are confused by the different systems used to assess the energy value and measure the quantity of hydrocarbon and non-hydrocarbon energy reserves. In fact, energy measured in barrels, tons, and cubic meters confuses non-specialists and sometimes gives a wrong impression of the energy resources available. Moreover, the emergence of 'non-hydrocarbon' sources of energy as well as alternative hydrocarbons (heavy oil, coal-to-liquids, etc.) further complicates the picture.

Global resource assessment is often very confusing. A good example is the oil reserves categorization. The US Society of Petroleum Engineers (SPE) and the US Securities and Exchange Commission (SEC) provide

¹³ This depends of course on the prevailing scientific view that oil and gas are produced through the transformation of carbon deposits over thousands of years.

¹⁴ 'Peak Oil' also known as 'Hubbert's peak', refers to the peak of the entire planet's oil production. After the Peak, according to the Hubbert Peak Theory, the rate of oil production on earth will enter a terminal decline. There have been several attempts to apply the same theory to gas and other hydrocarbon fuels.

standard oil reserves classification. The former takes into account only geological data, while the latter's classification system is also based on strict financial accountancy principles. The SEC estimates are known as the most conservative in the world: only proven reserves with probability of commercial drilling over 90 per cent can be taken into account and entered in the companies' financial documents. However, these estimates do not show the real situation with oil and other hydrocarbon reserves and there is a need for dramatic modernization of reserve disclosure. Daniel Yergin of Cambridge Energy Research Associates (CERA) claims that the current SEC classification rules 'simply have not kept up with the globalization of the industry', while the 'differences among the fiscal regimes in several countries make it harder, not easier, to compare domestic and international reserves'.¹⁵

At the same time, the industry has made significant technological progress, especially in deep-water exploration and production. For example, Dr. Yergin outlines that 'non-traditional liquids' (such as oil sands and heavy oil) may 'account for as much as 45 percent of oil production capacity in North America by 2010'. The SEC system neither takes into account the tremendous development of the North American LNG market, nor the recent progress in information and geological technologies. Thus, 'scarcity also can be ruled out as a threat to supply security; scarcity is a fear, not a reality'.¹⁶

The evident endpoint for exhaustion of fossil fuel reserves has highlighted the need discussed above to audit the major hydrocarbon energy sources. But the issue of auditing energy reserves does not stop with fossil fuels. The assessment of fossil fuel reserves depends on a dynamic model incorporating a time element, investment decisions, market pressures and technological advance. Also, the international community needs to devise a way of auditing available (or prospective) non-fossil fuels, such as nuclear, solar, biomass and hydropower.

It has been all too easy for the nuclear industry to say that it holds the main solution to global energy needs when fossil fuel supply looks more costly. On the one hand, the World Nuclear Association claims that nuclear energy is at present 'the only viable proven technology that can meet rising energy demand without producing the greenhouse gases that threaten the future of our planet'. On the other hand, Greenpeace

¹⁵ Daniel Yergin, 'How Much Oil is Really Down There?', *The Wall Street Journal*, April 27, 2006.

¹⁶ Michael Lynch, 'Oil Supply Security 2004: Does the Song Remain the Same?', International Research Center For Energy and Economic Development (ICEED), Boulder, Colorado U.S.A., 2004.

argues that the 'only way that we can stop the worst effects of climate change is by ... making sure that the energy that we do need comes from clean, renewable sources. Theoretically, renewable energy has the potential to meet our energy needs many times over, but at present, we get less than one percent of our electricity from the wind, ocean and sun.' Henceforth, informed decision-making for energy security will have to be based on a comprehensive audit with completely transparent assumptions about the pace at which consumers globally can shift to non-fossil sources.

CREATE A TRULY GLOBAL ENERGY MARKET

The world energy market is highly fragmented. Even in North America and Europe, where there are dense networks of pipelines and electricity grids, most of the regional and national energy networks are not highly integrated. Thus, in case of major power outages in one place (e.g. California power crisis, or the Russia-Ukraine 'gas war') or interruption of supplies (Hurricane Katrina), it is difficult to replace the existing power generation capacity and bring additional fuel supplies on-line quickly. As Dr. Cyril Withershoven has observed, 'If something happens at a choke point, the whole chain will be disrupted and there won't be enough capacity somewhere else to cope with the blockage'.¹⁷

The lack of interconnectivity also undermines the competition principle as industrial and private customers depend on a small number of local suppliers. In the EU, lack of inter-connectors also weakens the principle of 'energy solidarity' among member states. Development of new transport networks is a prerequisite for global energy security and stability of major energy markets. Such new networks are important for energy-consuming nations as an instrument of diversification of primary energy away from a single or few dominant energy sources, countries or transit routes/corridors.

Unsurprisingly, the EU 'Green Paper on Sustainable, Competitive and Secure Energy' links interconnection of existing and new energy infrastructure with the successful development of a competitive 'single market' for energy within Europe:

Europe has not yet developed fully competitive internal energy markets...To achieve this aim, interconnections should be developed, effective legislative and regulatory frameworks must

¹⁷ Quoted by Michael T. Burr, 'The Geopolitical Risks of LNG', in *Public Utilities Fortnightly*, March 2005, p.30.

*be in place and be fully applied in practice, and Community competition rules need to be rigorously enforced.*¹⁸

The private sector also supports this agenda. Thus, the CEO of ENI, Paolo Scaroni, laid out a four-point agenda for avoiding a gas shortage – two directly relate to this issue: to accelerate the build-up of LNG facilities and gas storage; and to ‘connect’ distribution pathways between national markets.¹⁹

A breakthrough in new technologies, such as gas liquefaction, Combined Cycle Gas Turbine (CCGT), clean coal power generation, nuclear power, or battery storage of renewables-sourced electricity could be used to reinforce the inter-operability and ease consumers’ dependence on a small number of energy sources. In fact, transportation of liquefied gas no longer depends on pipeline network and allows more flexible ‘buyer-seller’ contracts. Moreover, liquid gas can compete with pipeline gas and even oil. The CCGT offers low cost and the least environmentally damaging form of fossil-fuelled power generation; it is 40 % more efficient than simple gas-fired turbines. Moreover, CCGT can use different types of gas and liquid fuels. In the long run, wind, solar, hydropower and bio-fuels as well as nuclear power can supplement traditional hydrocarbon supplies. This also helps to avoid ‘bad surprises’ such as power outages and interruption of supplies.

However, the linking of distribution and transportation networks will require significant financial commitments. It will also depend on harmonizing national legislation in several states and, in many cases, will be affected by domestic politics. Moreover, the pipeline projects generally have a long payback time (12-14 years), while fuel substitution also requires substantial investment in research and development. But, the investment engagements may create mutual consumer-producer dependence as both sides are interested in developing ‘energy-supply systems with minimal vulnerability to short- and long-term disruptions’.²⁰

Governments should work closely with the private sector to create a technological basis for a truly global energy market. There is a need for

¹⁸ http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_document_en.pdf.

¹⁹ For more details see <http://www.cera.com/aspx/cda/public1/news/articles/newsArticleDetails.aspx?CID=8207>.

²⁰ Dr. Andrey Konoplyanik, ‘Energy Charter: the Key to International Energy Security’, in *Petroleum Economist*, February 2006, pp. 19 - 20.

a government-based international drive for a global, depoliticised multi-fuel energy market. It is necessary to support convergence of the three big regional gas markets (European, North America, Asia) with a transparent and predictable price mechanism, limit speculative trends on the oil market and launch renewable energy financial instruments. The private and public sectors should work together and use the available technology to develop well-functioning regional electricity markets. Furthermore, the price of energy should be linked to the calorific value of each fuel in order to allow better price inter-operability.

CONCLUSION

The solutions to energy security dilemmas are best found in addressing the psychology of insecurity at a grand strategic level rather than by trying to decide which specific analysis best fits a particular energy sector. The *Shell Global Scenarios to 2025* (released January 2006) underlines the declining interest in energy cooperation in the context of rising nationalism: 'How states will cooperate, bilaterally or multilaterally, will affect how these sources of insecurity can develop'. The Shell report noted a 'loss of sense of common purpose' in approaching energy security.

It is time to promote a re-shaping of the definition of 'energy security' and 'energy sovereignty'. The concept of 'energy security' should include confidence-building measures. This paper concludes that 'energy security' is, first of all, trust in the global energy system, including energy markets and contingency/regulatory mechanisms. We strongly believe that this trust will in itself help to promote necessary technological and investment policies, stabilize energy markets, secure stable and reliable energy supplies and develop more efficient and environment-friendly technologies, thus restoring confidence in an international energy system.

The international community, including global businesses, should recognize that 'energy sovereignty' resulting in firmer control of energy resources and transport infrastructure is a normal, understandable economic and political phenomenon, incorporating a number of positive trends. A number of countries have developed their own modernization approach, which prioritizes their own country's long-term economic, political and social interests. In the energy sector this trend has resulted in a resurgence of the 'energy sovereignty' approach. Energy producers have a natural and legal right to consider energy resources part of their national sovereignty. However, all parties concerned need to

understand the importance of a new political reality, and to develop a set of mutually beneficial 'rules of the game'. Indeed, despite a worrisome level of state control in the energy sector of several producing countries, there is room for mutual cooperation focused on achieving positive outcomes for both consumers and producers.

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- **EWI Task Force: Energy Transport Networks and Security**, Brussels, November 29th, 2005.
- **Second Meeting of EWI Energy Expert Group**, Brussels, December 21st, 2005.
- **EWI Expert Meeting On Nuclear Energy & Security**, Wadhurst Park, London, March 6-7, 2006.
- **Joint EWI - ERINA Preparatory Meeting on Energy Security in Northeast Asia**, Japan Foundation Center for Global Partnership (CGP), New York, June 28th, 2006.
- **Expert Meeting: 'Energy Sovereignty? (Re)-Building Confidence in a Comprehensive International System'**, Brussels, September 6th, 2006.
- **Joint EWI – MEF Seminar on 'Energy & Dispute Management in the Barents Region'**, Brussels, September 26th, 2006.

- **Joint EWI – MEF Seminar on ‘Energy Security in the Asia-Pacific Region: Conflict Potential and Possible Solutions’**, Brussels, September 27th, 2006.
- **International Conference on ‘Global Resource Security: From Common Challenges to Cooperative Solutions’**, co-organized by EWI and Konrad Adenauer Stiftung in cooperation with the German Federal Foreign Office, Berlin, October 6th, 2006.

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GLOSSARY OF ACRONYMS

APEC	Asia Pacific Economic Cooperation
CCGT	Combined Cycle Gas Turbine
ECT	Energy Charter Treaty
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IEF	International Energy Forum
IMF	International Monetary Fund
G8	Group of Eight
GDP	Gross Domestic Product
GECF	Gas Exporting Countries Forum
GTL	Gas-to-liquids
LNG	Liquefied natural gas
OPEC	Organization of Petroleum Exporting Countries
SEC	(US) Securities and Exchange Commission
SPE	(US) Society of Petroleum Engineers
WTO	World Trade Organization
UNFCCC	UN Framework Convention on Climate Change

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The EWI family salutes and honors our Co-Founder Ira D. Wallach (1909-2007).

EWI's ENERGY SECURITY PROJECT

In cooperation with major international energy companies **EWI's G8 Plus China and India Energy Security and Cooperation Project** was launched in September 2005 with the aim of bringing together select representatives of the G8 governments and international experts to develop a long-term private sector-led vision for energy cooperation among the G8, China, and India; bring this vision to the attention of key G8 public officials; and establish a communication channel between them and leading oil and gas companies. With energy at the top of the G8's agenda and Russia's G8 presidency in 2006, EWI seized the opportunity to develop a strategic dialogue and new approaches for energy security for producers and consumers. Following the convening that marked the launch of the project, two task forces – one on international access to energy resources and the other on energy transport and security – were created.

In 2007, EWI will seek to expand the debate on redefining 'resource security' and 'resource sovereignty'. We want to widen the concept of 'resource security' by including confidence-building measures. EWI will convene a number of seminars and other meetings, and a signature annual conference to devise concrete new approaches to the problems. The meetings will involve public sector officials, business representatives, specialists and other interested parties. Findings and conclusions will be presented at the conferences, seminars and in publications.

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