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# ST. PETERSBURG PLAN OF ACTION: GLOBAL ENERGY SECURITY

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IEA evaluation of  
G8 countries' and the  
European Commission's  
progress on the 7 key  
action areas

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## Context

This brief document provides the IEA's assessment of the progress in G8 member countries and the European Commission in meeting the Global Energy Security Principles agreed to at the St. Petersburg G8 summit in 2006. At the Hokkaido Toyako G8 summit in 2008 IEA provided its first assessment of the progress in G8 member countries and the European Commission. Following the commitment of updating policy, IEA has reviewed the progress of G8 member countries and the European Commission since last year. This report is based largely on IEA's comprehensive analysis provided last year and updated information from self-assessment reports by each country and the European Commission, with additional information and analysis from IEA and other sources. The report serves as a synopsis and overview of country progress on what the IEA sees as the key energy security aspects of the seven principles. Part 1 provides the IEA's key messages for energy security. These messages remain the same as reported last year. Part 2 gives our overview assessment of where we see progress towards adhering to the St. Petersburg Global Energy Security Principles and where we see challenges still remaining for governments. Finally, Part 3 gives brief country-by-country evaluations based on updated information according to the seven principles. For more detailed descriptions of country progress, see each country's national self-assessment.

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## Part 1: The IEA's key messages on energy security

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### Investment

- Processes for siting energy infrastructure should continue to be streamlined and made more transparent.
- Governments should continue work to improve the quality, timeliness and frequency of energy data with a view to providing more transparent and comprehensive access to energy data.
- Efforts to diversify energy sources should continue, particularly in the transport sector.
- Securing critical infrastructure will require vigilant oversight of existing infrastructure, detailed and dynamic analysis of network flows and close collaboration with all actors in the energy sector.
- Governments should ensure that expanding access to energy is a priority in all international energy projects with developing countries

### Market development

- Well-functioning energy markets require free market prices and data transparency, independent regulators, effective non-discriminatory operations of networks and good physical and market integration across borders; more can be done by individual G8 countries to ensure these things are in place.
- Governments should resist the urge to reduce strategic oil stock levels as a tool to reduce domestic energy prices.

### Good governance and regulation

- Good governance of national energy companies is critical.
- All countries should continue to engage in global energy dialogue.
- Governments should refrain from limiting international investments in their energy sectors where possible.
- Governments should limit undue interference in the consolidation and/or restructuring of the energy sector, and should not support the development of national energy champions.
- Governments should work more closely to accelerate development of renewables and alternative energy options, including carbon capture and storage (CCS).
- Ensuring a skilled energy workforce should remain a government priority.

### Climate change and energy efficiency

- Addressing climate change requires a basket of different policies and measures across all sectors.
- Governments should continue to raise significantly the profile of energy efficiency across all sectors of the economy through policies and measures, including standards, taxes, incentives



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and other efforts. Among other things, governments should implement the IEA's concrete recommendations on energy efficiency as quickly as possible.

- A market signal that places a value on greenhouse gas emissions throughout the economy should be implemented in all countries as quickly as possible, with a view to developing a system that can be harmonised and integrated.
- Expansion of R&D for clean energy technologies should be strengthened.
- Government support for the development of renewable and alternative energy should keep a view to deployment in developing countries.



## Part 2: Summary findings

### Page | 6 Recent progress and improvements

The IEA is generally pleased with the steps taken in recent years to enhance security, particularly in a few key areas: improving gas and electricity market functioning, promoting gas and electricity market physical integration, working to improve and shorten the infrastructure siting process and maintaining sufficient oil stocks. We see real progress in electricity market functioning in many G8 countries, though gas market functioning is improving more slowly. With respect to fuel mix, government policies are generally enhancing diversity through measures aimed at renewables and other alternative sources (including carbon capture and storage). All countries are aware of the importance of solidarity for energy security, not only for oil but for gas and electricity. IEA welcomes the acceleration by governments of the deployment of renewables with ambitious targets and the development of large scale CCS demonstration plants, including increased financial support. Energy security may also be enhanced by a renaissance in nuclear power. All countries are stepping up attention and policies to address climate change, though the level of ambition, the quality of policies and the amount and type of financial support varies widely. Energy efficiency – usually the cheapest and easiest option – is taking primacy in most government policies, a move we wholeheartedly support.

### Remaining challenges

One of the areas that the IEA has been asked to address – both in this assessment and in other tasks – is energy efficiency. Here we can be clear: governments are still not taking full advantage of the many cost effective opportunities to significantly reduce energy consumption and carbon dioxide emissions through their energy efficiency policies. Considerable progress has been made in strengthening standards and other measures, particularly in the lighting and appliances sectors. However, much work remains to capture the full benefit of the efficiency potential. Work is required in the transportation and building sectors among others. Also across the board action is needed that ensures full implementation of all relevant energy efficiency policies. Particular attention is needed on institutional issues such as compliance and enforcement. We urge G8 countries to continue to make progress to implement our 25 recommendations on energy efficiency as quickly as possible. Under separate cover, IEA is also submitting a progress report on the implementation of energy efficiency policies. That report provides comprehensive and detailed analysis and recommends several actions.

As mentioned, we are pleased to see that governments are generally pressing forward with the reform of gas and electricity markets. With independent, well-resourced regulators in place and a proper framework that levels the playing field for all participants, competition can develop. This competition brings new players to the sector to build new infrastructure and enhance economic efficiency. To foster this competition, governments must set up good rules and regulations, but resist temptations to unduly protect or promote particular national organizations. In addition, markets need economies of scale to develop – the progress on integrating physical infrastructure is encouraging, but more should be done, particularly as this is the best means of reducing the



dominance of large incumbents. Increasing physical and market integration will require co-operation among countries; it will also require early and deep engagement with local communities. Finally, for sustainable competitive energy markets to develop, we urge governments to continue working towards creating a value for carbon dioxide emissions that permeates through and among economies. Such a value for emissions will also help spur innovation in renewables and alternative energy technologies including carbon capture and storage (CCS). While the private sector must have the right incentives to invest in energy innovation and clean technologies, governments will, at the same time, need to continue to play an active role in bringing these technologies to market. In addition, as they respond to the economic crisis and ensuing economic downturn, governments are encouraged to include enhanced measures for development and deployment of clean energy and energy efficiency in their economic stimulus packages. Investing public funds in energy R&D will bring long-term public benefits, and governments should further increase this funding, ensuring that it leverages private funding and does not unnecessarily attempt to pick technology winners. Governments are already working to increase this funding; we urge them to be even more courageous in their energy R&D budgets including demonstration projects. As new technologies emerge, governments must be proactive in ensuring that the right legal and policy framework is in place for them to be adopted in the market place. This will require continued international collaboration.



## Part 3: Country evaluations

### I. Increasing transparency, predictability and stability of global energy markets

**Competition in energy markets:** Overall competition in energy markets is improving in G8 countries. With respect to the oil market, historically OPEC has provided the marginal supply to the market. While in the recent past this has been constrained by limited spare capacity, the situation has changed since mid-2008 as declining oil demand has led to lower OPEC production and subsequently a more comfortable margin of spare capacity. Investment in refining capacity has been significant, but has been geared towards meeting new environmental regulations, rather than expanding the flexibility of product supply. Looking forward, however, we see extensive investments in upgrading refining capacity and new refining, particularly in Asia and the Middle East. Investment is taking place in upgrading capacity in OECD countries, though this is against the backdrop of stagnant product demand and competition from biofuels. However, rapidly growing demand for diesel over the medium term is expected to continue to provide an ongoing challenge for the refining industry, and further investment is needed. Improved downstream flexibility can result in lower and more targeted oil demand. Downstream oil supply is largely competitive across G8 countries. In electricity and gas, large incumbents dominate in **Canada, France, Germany, Italy, Japan, Russia** and parts of the **United States**, but governments are undertaking efforts to reduce their position. **Germany** has been tackling market liberalisation and dismantled inherent barriers for new entrants to the gas market as a part of the efforts. A new, independent regulator and new gas transport rules bring significant improvements. Particularly in **Italy**, lack of competition in the gas sector hinders effective competition in the electricity sector, though the government is working to address this through actions by the Electricity Market Operator. Since the Italian market opened in 2004, the government, operator and regulator have continued to introduce new products and improvements to smooth market functioning and enhance competition. Competition in **Italy's** gas market is constrained by the strength of the incumbent, but rules are being developed to enhance competition here as well. A provision to establish a gas exchange is included in a bill that is scheduled to be approved within July 2009. Gas market liberalisation began in **France** in 2002, but has also been limited somewhat by the strength of the incumbents and poor market design. Domestic customers in **France** have been able to choose their gas and electricity suppliers since July 2007. **Russia's** electricity sector has been undergoing a large-scale privatisation process. While the State still controls certain strategic assets like nuclear plants, hydro plants, some transmission and distribution lines, most electricity and heat generators were privatized. Some of them were bought by foreign investors. The electricity wholesale market is expected to be liberalised by 2011, while household prices will continue to be regulated until 2015-2017. In **Japan**, the government continues to improve the competitive framework for gas and electricity markets, such as by formulating guidelines for proper gas and electricity trade – nonetheless, competition within and between regions in gas and electricity is more limited than it could be.

**Independence of gas and electricity networks:** In Europe, progress is being made to develop a system for seamless trade between regions and a level playing field for network operations. The **United Kingdom** has an independent gas and power transmission operator. And the network is becoming more interconnected with continental Europe. However, more work needs to be done

particularly with respect to the large incumbents in **France** and **Germany** that have a strong role in network operations. As anchors in continental Europe, more effective unbundling of network operations will be key. **Russia's** electricity transmission grid was unbundled into a separate company. The country's gas transmission system is fully owned and controlled by Gazprom. Although some steps have been taken to provide reliable and transparent third-party access up to now, these have been limited and more needs to be done. In **Italy**, very good progress has been made in the electricity market, with full ownership unbundling of the network and network operator; little competition has developed in the gas market in part due to the strength of the incumbent and the lack of independent network operations. In the **United States**, seamless transmission across states and regions has long been a priority; the Eastern corridor is well integrated, but progress remains to be seen on the West Coast and in the Midwest. **Canada** is well-integrated with the **United States** with good cross-border coordination and internal barriers have been reduced as well. In **Japan**, regions are weakly interconnected, but competition is growing with the development of more independent system operations.

**Data transparency and free flow of information:** Data transparency and free flow of information have been elevated in importance in G8 countries, although transparency has been quite good historically in most countries, particularly the **United States** (e.g. the Energy Information Administration and its *Annual Energy Outlook*). The Federal Energy Regulatory Commission (FERC) also provides significant data transparency on market transactions. Data on **Canada's** energy markets and industry are also made readily transparent through Natural Resources **Canada** and other government sources. The government also issues annual reviews and long-term forecasts on oil and natural gas. **Canada's** National Energy Board is obliged to provide public information on market performance and outlook (e.g. *Canada's Energy Future: Reference Case and Scenarios to 2030*). In **Japan**, the government has undertaken over the last few years to revise substantially how energy statistics are organised. The data are now posted on the government's website. Furthermore, long-term information is made available through the government's *Long-Term Energy Supply/Demand Forecasts* released in early 2008. Exchanges are developing in Europe (e.g. in **France** and **Germany**), which can help develop the framework for transparency, but more needs to be done to push transactions to these trading platforms. Gas Infrastructure Europe (GIE) has reported aggregated data on gas stock levels since 2007; its coverage has been improving over the past three years, in particular for **German** gas storage. **Germany** has recently enhanced access to its market data, requiring that gas data be made available to the public by the system operator. Similarly, new rules are in place for its electricity market. The Federal Network Agency is required to publish an annual report on the outcome of its monitoring activities in gas and electricity markets. Market and energy industry data are made readily available in the **United Kingdom** on the government's website and through its recently published *Energy White Paper* and *Energy Markets Outlook*. Market data are also readily available through National Grid, which operates the country's electricity and gas networks. **Italy** provides data on different energy supply and demand sources through its public National Statistical System (Sistan). It is currently planning to improve oil price accuracy through expanded price surveys. In **France**, operators of the gas and electricity networks provide public data on their websites. In **Russia**, the regulatory authorities including the Anti-Monopoly Service, will need to strengthen their oversight of the network to ensure adequate investments are made by independent gas producers and oil companies to meet growing domestic and foreign natural gas demand in the most cost-effective and competitive way. There are positive developments in its electricity market, where the planned reforms in the electricity market would enhance market transparency. All IEA members and Russia are supportive of the Joint Oil Data Initiative, which is working to bring standardisation and transparency to oil data. So far only the **United States** and **Japan** provide weekly oil data; other countries are encouraged to do so. As regards data on natural



gas trade, all countries are also encouraged to make a special effort to provide a detailed breakdown of imports and exports by country of ultimate origin and destination. Although progress has been made over the last 5 years in terms of data quality and transparency, there are still a few issues regarding quality and timeliness. One of the main issues relates to the quality of the trade data on natural gas, due either to technical difficulties in getting the proper data or to confidentiality issues (such as in Germany). An effort should be made by all countries to solve this problem since it is essential for assessing the degree of dependence and interdependence among countries.

**Greater international dialogue:** All G8 countries participate in the International Energy Forum (IEF), which seeks to broaden dialogue between energy producing and consuming countries, an important process in ensuring energy market and supply stability. All countries except **Canada** and the **United States** have served on the Executive Board of the IEF at one point in time. In other arenas, **Russia** is engaging in dialogue with the other G8 countries all of which are members of the IEA, and has a growing roster of activities with the IEA itself. **Canada** and the **United States** have a longstanding and stable relationship, through such frameworks as the North American Energy Working Group and the North American Free Trade Agreement. **Japan** is fostering greater energy dialogue in the Asia-Pacific region through its leadership in Asia-Pacific Economic Cooperation (APEC) discussions as well as the Asia-Pacific Partnership (APP) on Clean Development and Climate (in which the **United States** and **Canada** are also members). The International Partnership for Energy Efficiency Cooperation (IPEEC) was launched during the G8 Energy Ministerial in Rome in May 2009. All G8 countries are founding members of IPEEC. It will enable countries to share best practices in promoting improvement in energy efficiency, including by bringing advanced technologies to market. It will also help countries develop the end-use data needed to monitor progress toward their individual energy efficiency goals. The **United States** announced in April 2009 the Energy and Climate Partnership of the Americas (ECPA), a new partnership with Latin American countries.

**Independent regulation:** Sound, independent energy market regulation is in place in **Canada** (the National Energy Board, NEB), **Italy** (the Regulatory Authority for Electricity and Gas, AEEG), the **United Kingdom** (Office of the Gas and Electricity Markets, Ofgem) and the **United States** (the Federal Energy Regulatory Commission, FERC, and state regulators). **Germany** set up the *Bundesnetzagentur* in 2005, which has also brought independent regulation to electricity and natural gas markets. In **France**, the powers of the Commission for the Regulation of Energy (CRE) have been enhanced, but the government still has the mandate to approve electricity and gas transportation tariffs, proposed by the CRE. While **Italy's** regulator is independent, the government does have authority to adopt certain provisions if the AEEG does not respond in a timely manner. The IEA is supportive of efforts underway to develop a European-wide regulator. The EU's recently adopted Third Package, which will create the Agency for the Cooperation of Energy Regulators, ACER, is one step in that direction. ACER will be a regulatory agency at the EU level to complement and coordinate the work of regulators. **Japan's** gas and electricity market regulator has been made more independent in recent years, but is still not fully independent from the government. In the area of energy commodity futures trading, **Japan** strengthened its monitoring capability and cooperation with the **United States** and the **United Kingdom** to enhance the transparency of trading. There has been widespread acknowledgement among governments of IEA and non-IEA member countries that greater visibility on financial flows within commodity markets is an essential complement to greater physical market transparency if price formation mechanisms are to be better understood. **Russia's** regulator is functionally independent from the government, but lacks the resources – both financial and in terms of expertise of personnel and access to information – given that it is faced with huge and powerful monopolies. However, information access and expertise are gradually being improved



through the regulations requiring transparency to monopoly entities and collaborations with foreign regulators.

**Emergency response measures:** The **six G8 countries** that are members of the IEA and net oil importers are all in compliance with their oil stock obligation, requiring each country to hold 90 days of net oil imports. Table 1 shows both days of forward demand (an estimate of how long in-country oil stocks would cover demand in the first quarter of 2009) and days of net oil imports (an estimate of how long stocks that are eligible under IEA rules would cover net imports in the first quarter of 2009; as net exporters, this number is not relevant for **Canada** or **Russia**). As oil exporting countries outside of OPEC, supply from **Russia** and **Canada** help to stabilise the world oil market. The **United States** has plans to further expand stocks held in its Strategic Petroleum Reserve (SPR) in order to maintain the public stock's total days of cover in light of growing net imports. Work to enhance competition, reserve margins and investment in the refining sector would also improve the ability to respond to oil emergencies. In addition, holding more stocks in the form of refined product would be beneficial, and we are pleased to see these are priorities in the **United States** and **Japan** in particular. Continued diplomatic efforts are helping ensure security of oil transport through strategic chokepoints in global sea routes, such as the Straits of Malacca, the Strait of Hormuz and the Turkish Straits.

**Table 1:** Oil stocks (as of the end of December 2008)

|                            | Stock level<br>(million barrels) <sup>1</sup> |          |        | Forward demand<br>cover (days) <sup>2</sup> | Net import<br>cover (days) <sup>3</sup> |
|----------------------------|---|----------|--------|---|---|
|                            | Total   | Industry | Public |   |   |
| Canada                     | 194.1   | 194.1    |        | 80.1  |   |
| France                     | 179.2   | 78.8     | 100.4  | 90.2  | 99                                      |
| Germany                    | 277.4   | 94.9     | 182.5  | 108.4                                       | 114                                     |
| Italy                      | 127.9   | 127.9    |        | 81.8  | 111                                     |
| Japan                      | 629.6   | 301.7    | 327.8  | 134.5                                       | 154                                     |
| Russia <sup>4</sup>        |   |          |        |   |   |
| United Kingdom             | 98.8  | 98.8     |        | 57.5  | 2246                                    |
| United States <sup>5</sup> | 1759.3  | 1055.4   | 703.8  | 91  | 134                                     |

Notes:

1. Total stocks on national territory, excluding major consumer (utility) stocks and including pipeline and entrepôt stocks where known.
2. Total stocks divided by the estimated forward quarter's average daily demand.
3. Based on IEA methodology using the IEA emergency reserve calculation.
4. Total stocks in Russia are 263.3 million barrels according to non-assessed JODI data. This estimate includes crude oil, motor gasoline, gasoil and residual fuel oil only. The IEA estimates Russia's total (weighted) forward product demand for January-March 2009 at 2 700.6 thousand barrels per day (kb/d).
5. Includes U.S. territories

Source: IEA

as infrastructure needs, energy-supply diversification, external energy relations and energy efficiency. In the EU member states, the existing instruments to deal with gas emergency situations are currently under review in order to strengthen and optimise them, taking into account the lessons learned from the January 2009 gas crisis. Greater harmonisation of security of supply standards, enhanced cooperation at a regional level and greater transparency are also needed. The **United**



**Kingdom** has developed such plans for natural gas and electricity under its Fuel Security Code, and for oil under its National Emergency Plan for Fuel. Under its Petroleum Stockpiling Law and Petroleum Supply and Demand Optimization Law, the **Japanese** government is authorised to gather more energy information under emergency conditions. **Japan** has put in place plans to prevent and manage LNG and oil emergencies. The government also has special authority under electricity supply emergencies. In **Italy**, an emergency procedure for residential electricity is in place (PESSE) and demand restraint programmes have been established for natural gas. Many emergency guidelines are in place in the **United States**, covering oil, natural gas and electricity, and the Department of Energy is working on technology to improve emergency tools. Such plans have also been developed for **France**. **Germany** is well prepared in terms of both total stocks and demand restraint measures. As a net exporter **Canada** has no IEA stockholding obligation. Due to its federal structure, most emergency preparedness instruments are on the province level; federal instruments are only implemented in a declared state of emergency.

**Good governance of public revenues and action to reduce corruption: Japan** recently strengthened in 2006 its rules in the electricity sector to reduce corruption. **Italy**, along with **Canada** (an energy exporter), has committed to endorsing the Extractive Industries Transparency Initiative. **Canada** is also a signatory of the OECD Guidelines for Multinational Enterprises, which provides a framework of standards for responsible business conduct. In the **United States**, the Federal Energy Regulatory Commission and the Commodity Futures Trading Commission have enhanced efforts to combat corruption in energy markets. Other countries, including the **United Kingdom**, maintain strong anti-corruption policies in the energy sector, both through general anti-corruption regulations and enforcement and through energy-sector specific regulation. **Russia** has received a declining rating by Transparency International, but the fund established for windfall oil and gas revenues has been managed very well.

### *IEA summary: recommended action items*

High energy prices, along with the twin challenges of concentrated energy supplies and climate change have put energy security at the top of **all G8 countries'** policy agendas. Efforts to move away from traditional fossil fuels to more diversity and sustainability have accelerated. We are pleased that **all G8 countries** have sufficient oil stocks on hand. We urge all countries to avoid the political pressure to reduce oil taxes or release oil stocks levels or intake to artificially lower prices temporarily – as this will undermine long-term energy security and provide only a tiny amount (if any) of short-term relief. Over the longer term, the IEA urges action in a few priority areas. Enhancing competition in gas and electricity is key. **Germany** and **France** should continue their ongoing work to anchor the continental European gas and electricity markets through greater independence and transparency, along with enhanced interconnections across borders. **Italy** should continue to focus on improving the functioning of its gas market in particular, as this will enhance operation of its electricity market. While progress has been made to open up the gas network in **Russia**, the regulatory authorities including the Anti-Monopoly Service, will need to strengthen their oversight of the network to ensure adequate investments are made by independent gas producers and oil companies to meet growing domestic and foreign natural gas demand in the most cost-effective and competitive way. In **Japan**, greater focus on independent regulation and market integration will enhance domestic security. In **Russia**, enhanced attention to openness and anti-corruption will aid market competition and global energy supply. The **United States** is encouraged to go ahead with plans to expand the SPR. **Canada**, while not obliged to hold emergency reserves, should consider the benefits these would have on its supply security. Both countries should continue



their efforts to integrate electricity markets and remove any remaining obstacles to transmission across domestic and international borders. Up to date energy efficiency indicators are a prerequisite for designing and monitoring any sound energy efficiency policy. Countries should allocate the proper resources to collect, process and release all the annual statistical data needed to build these indicators.

## II. Improving the investment climate in the energy sector

**Facilitating investment in supply and demand infrastructure and measures:** Much-needed investment is occurring in **Italy**, where significant electricity generation capacity is being constructed and planned. Grid investment, both for the gas and electricity sectors, is also expected. Given recent challenges in the country, this new investment is very welcomed. The Government policy is to increase security of supply by means of intergovernmental agreements to facilitate new gas interconnections. Under its recent Energy Policy Act, the **United States** has developed and enhanced many incentives for investments in energy infrastructure – in particular, streamlining the siting and permitting process. The Energy Policy Act works to facilitate the process of obtaining approval for LNG facilities by giving the Federal Energy Regulatory Commission (FERC) sole siting authority. The Energy Policy Act also increased incentives for new infrastructure, such as by removing limitations on investment, establishing last-resort federal siting authority for certain transmission lines and generally clarifying regulatory authority for siting of new projects. The United States Congress is now considering steps to encourage large supra-regional transmission planning with complementary reforms on procedures for selecting sites for transmission infrastructure. Under new regulations entering into force from June 2007, **Germany** has taken steps to ease the process of connecting new supply to the grid. It is also drafting a law to counteract delays in planning and authorisation procedures for new infrastructure – which will hopefully help address the poor north-south interconnections in **Germany**. Through the establishment of the Major Projects Management Office in 2007, **Canada** has streamlined infrastructure siting and permitting for major projects, while still ensuring the necessary transparency and regulatory oversight. The **United Kingdom** facilitates investment through its support of competitive markets, as well as through a transparent and stable regulatory framework. The Planning Act 2008 improves transparency within the planning system for potential energy infrastructure projects, with the aim of reducing delays. There has been significant investment in the LNG sector in the **United Kingdom** recently with several new LNG terminals. They are expected to help enhance the security of gas supply. However, worrisome delays have been witnessed in the creation of storage facilities, which will be increasingly needed as domestic production declines. In **Japan**, public interest privilege and investment incentives have been provided to companies that build pipelines in areas where a pipeline network does not exist and/or where it would interconnect existing pipeline systems. The government is also providing long-term low-interest funding through fiscal investments and loans (e.g. the Energy Reform Tax Credit Programme). In addition, it provides incentives for private **Japanese** companies to invest in upstream hydrocarbon exploration and production (E&P) through its **Japan** Oil, Gas and Metals Corporation (JOGMEC). Under its Long-Term Programme on Investment (PPI), **France** forecasts future energy demand and identifies necessary investment needs for the security of the electricity and heat sectors. The updated electricity and heat PPIs for the period until 2020 include ambitious targets requiring massive development of renewable energy. Under a similar programme for gas, the Long-Term Indicative Investment Planning programme (PIP), supply of gas for the coming decade and new transport and storage requirements are evaluated to ensure security. Investment in **Russia's** upstream oil and gas sector has improved slightly this year, but more must be done to ensure long-term supply. Given the decline at major existing fields and the need to open up greenfield regions,



much more investment will be needed to ensure long-term supply. Tax reduction which started in 2009 may help stimulate some new investment, but much more is needed, especially in the context of the economic crisis and the credit problems faced by many Russian oil companies.

**Development of competitive power markets:** As discussed, sound, competitive markets in energy already exist in the **United Kingdom**. Nevertheless, the government continues to work to enhance regulation of monopoly transmission of electricity and to enhance non-discriminatory access to network grids. To improve network regulation, **Germany** has been aggressively targeting network grid fees, lowering the costs of participating in electricity markets, along with improving overall grid regulation. **Canada** and the **United States** both support fair and competitive energy markets. In the **United States**, this is underpinned by FERC's network open access and real-time information rules. Both countries are working to remove obstacles to transmission between regions within each country and co-operatively on cross-border issues. Decisions to fully implement reform are, however, made largely at the state level in some cases. Similarly, market liberalisation is progressing in **Japan**; the market in electricity began in 2000 and by 2005, 63% of retail sales had been liberalised. Liberalisation of the power markets in **Italy** and **France** continue to press forward and the governments continue to take measures to overcome remaining challenges. As discussed, **Russia** is well-advanced in its efforts to liberalise the electricity sector, including through ownership unbundling of transmission networks.

**Removing barriers to cross-national investments in the energy sector and market integration:** Extended transmission capacity in electricity and gas between the **United Kingdom** and the continent further enhances the **UK** markets, as do the country's LNG import terminals. The regulator and government are working to further integrate the gas market with continental Europe, and are in the process of developing electricity connections. **Canada** and the **United States** work together with Mexico on energy issues through the North American Energy Working Group, where collaboration is pursued, particularly addressing barriers to the expansion of clean energy supply. **Canada** also issued guidelines in 2007 clarifying rules for evaluating investments by foreign state-owned enterprises. A Canadian government panel issued recommendations in 2008 to reduce barriers to foreign investment including uranium mining

**All G8 countries** are signatories to the 1991 Energy Charter political declaration; all bar the **United States** and **Canada** are parties to the 1994 Energy Charter Treaty, whose aim is to strengthen the rule of law on energy issues, by creating a level playing field of rules to be observed by all participating governments, thereby mitigating risks associated with energy-related investment and trade (**Russia** has accepted provisional application of the Treaty, but has not yet ratified it). The terms governing mutual investment along the energy value chain between **Russia** and other G8 countries members remain unclear; barriers to cross-border investment remain and some new limitations are either in place or under discussion. **Japan** continues to work to enhance its energy import source and route diversity, such as through the Sakhalin-2 project to bring crude oil and natural gas to the southern tip of Sakhalin Island in **Russia**. The project's oil operations commenced in 2008; its gas operations began this year. **Italy** is investing in power interconnections with Albania, Croatia, Sicily and Sardinia. In the gas sector, **Italy** is planning upgrades along its South-North and North-East backbones, and in the Po Valley. Many new LNG terminals are planned but only one new terminal is planned to start operating in 2009. In the context of the Pentalateral Forum, **Germany** is working to better integrate its market with those of **France**, Belgium, the Netherlands and Luxembourg. Additional regional initiatives, such as with Denmark, are also bringing greater market integration.

**Adequately maintaining and developing the energy labour force:** Government efforts to identify and address shortages of key energy skills in the **United Kingdom** have evolved into a new Oil and

Gas Academy (OPITO), driven by the private sector. After a review of energy and resource labour needs in 2007, the government of **Japan** is supporting the efforts of academia and industry that are aimed at promoting international energy resource development. In 2006, the government started an effort aimed at training 20 000 nuclear workers, and has various efforts to cultivate talent in the nuclear sector aimed at primary, secondary and higher education. And in the 3rd Asian Ministerial Energy Roundtable held in April, 2009, Japan proposed to provide training for 2 000 people of Middle-East producing countries on human resource capacity building in the area of energy, including energy efficiency and renewable energy in three years. The **United States** has many programmes to develop the energy and technical workforce, such as through the Department of Energy, the Department of Labor, the National Science Foundation and the Nuclear Regulatory Commission. **Italy** and **France** do not have any government programmes specifically focused on developing the energy labour force.

### *IEA summary: recommended action items*

Ensuring energy security will require continued and stable investment in all parts of the energy supply chain, including exploration and production of hydrocarbons, development of renewables, construction of LNG import terminals and import pipelines, and maintenance and expansion of transmission and distribution grids for gas and electricity. We are pleased to see countries working to address NIMBY (“not in my backyard”) issues, by developing streamlined and transparent siting and permitting processes for critical energy infrastructure. In particular, developing new power lines is a complex process; initiatives to create collaborative and clear processes are welcomed. Investment in upstream hydrocarbon development is also important, thus we welcome the moves by **Canada** to create transparent processes to review investments by foreign state-owned firms. In general, limits on foreign ownership of energy assets hinders investment and should be avoided – the IEA does not see the current trend toward creation of national champions as helpful to investment as they crowd out other options and deters market integration. Many G8 countries are creating rules that detail the limits on foreign investment. We urge these rules to be clear and transparent – and limited to truly strategic assets. Long-term energy security depends upon a skilled workforce; we urge countries to continue to support human resource development and, in **Italy** and **France** in particular, develop new programmes where support is lacking. We urge **Germany** and **France** to continue efforts to integrate their markets with continental Europe, as expanding the market is the easiest way to enhance collective security and develop competition. As discussed in the first section, better market data is key to market functioning. We are pleased to see all G8 countries focusing on developing better and more transparent data as this will enhance energy markets’ ability to manage risk.

## III. Enhancing energy efficiency and energy saving

**Development of integrated efficiency policy:** All G8 countries are placing priority on developing integrated and comprehensive energy efficiency policies. A notable recent development is in **Russia**, which announced a target to reduce energy intensity (energy use per unit of GDP) by 40% by 2020. A Presidential decree on “Certain Measures for Improving the Energy and Ecological Efficiency of the Russian Economy” in June 2008 outlined ambitious measures for achieving this goal. To support this decree, a draft federal law on Energy Saving and Energy Efficiency Increase is before the Duma.

**Strengthened policies in the building sector:** We are pleased to see countries working to strengthen building codes. **Germany’s** energy efficiency standards for buildings are already strong and are



currently being raised by 30%. Some G8 countries are setting targets for zero and low energy buildings and are strengthening building codes. The **United Kingdom** has set standards for zero carbon buildings to be met in less than 10 years, both in the residential and commercial sectors. **Japan** has set mandatory requirements for smaller buildings and for some single family houses built by larger companies. Most G8 countries have stimulus packages that include significant support for energy efficiency in buildings. **Russia** has a USD 8 billion program for improving its building stock, including energy efficiency improvements that run until 2012. **Germany** has increased the *Kreditanstalt für Wiederaufbau* (Bank for reconstruction- KfW) funding for highly efficient buildings. The US stimulus package includes more than USD 10 billion in tax credits to make homes more energy efficient in 2009 and 2010, and to implement energy efficiency in the public sector. **Japan's** Budget Law 2007 (Articles 351 and 352) includes funding of EUR 15 million for two years to underwrite a provision allowing a tax deduction for the implementation of projects to enhance the energy efficiency of buildings. All G8 countries have at least voluntary energy certification systems or plans to implement building energy certificates. The **United Kingdom, Germany** and **France** already have mandatory certification schemes in place, reflecting, in part, requirements under the EC Energy Performance of Buildings Directive (2002/91/EC). In the **United Kingdom**, the Planning and Energy Act 2008 gives powers to local authorities to set planning policy and develop requirements on the use of renewable and low-carbon energy sources and energy efficiency in buildings.

**Enhanced energy efficiency data collection:** Detailed, timely and reliable statistics are the basis for any sound energy policy on energy efficiency. A special effort should then be made by all countries to improve the timeliness, coverage and quality of their data. This is true for all sectors and in particular for buildings. **Germany, Italy, Japan, the United Kingdom** and the **United States**, now collect data on the energy performance of existing buildings. In **France, Germany, Italy, Japan, the United Kingdom, Canada** and the **United States**, there is a growing tradition of strong energy efficiency policy evaluation systems: both countries now have requirements for ex ante evaluation of energy efficiency policies and legal and institutional infrastructure for ensuring compliance with energy efficiency requirements. **Japan** recently reinforced the regulation of efficiency management and enhanced coverage of entities which have reporting obligations. These countries are also building robust ex post evaluation procedures. In **Russia**, the lack of reliable demand side data hinders the ability to properly develop or analyse the energy efficiency indicators necessary for sound policy formulation. Russia is in the process of enhancing international cooperation on energy efficiency issues including improvement of related data collection, – an area where it is important to consolidate progress. More high-level political backing would help co-ordinate and bolster these efforts.

**Enhanced uptake of more energy-efficient appliances:** Most developed countries and many emerging economies have established standards and labelling programmes that cover traditional major residential appliances, such as refrigerators and freezers, dishwashers, air conditioners and clothes washers, among others. One challenge has been in maintaining the stringency of policy measures and expanding their scope. The **United States**, which had not met its own expectations in this area in recent years, has now set strict timetables for updating standards and adopted streamlined consultative processes in order to catch up with its backlog. Similarly **EU** countries **France, Germany, Italy** and the **United Kingdom** are now improving the coverage and stringency of their appliance efficiency regulations by introducing mandatory energy performance requirements for a wide range of appliance and equipment types under the auspices of the Eco-Design of Energy Using-Products Directive (2005/32/EC). In the case of standby power, the European Union has adopted a horizontal standard wherein the “off mode” for all appliance types is not permitted to exceed one Watt from January 2010. **Canada** has also made progress in reducing levels of standby

power and in January 2009, Natural Resources **Canada's** (NRCan) Office of Energy Efficiency (OEE) proposed to amend **Canada's** Energy Efficiency Regulations to designate certain products that use standby power as “energy-using products” and to establish minimum energy performance standards for them. In **Japan**, the standby power consumption of ordinary appliances has been reduced to one Watt or less for ordinary appliances and equipment in accordance with a voluntary target set with industry. A recently enacted **US** law also requires the US Department of Energy to set standards that cover standby power. Work is underway aiming at developing standards and the introduction of energy efficiency labelling in **Russia**.

**Moving to best practice in lighting:** Countries have taken steps to phase out inefficient incandescent lighting. The European Union, covering **France**, the **United Kingdom**, **Germany** and **Italy**, has passed a regulation which progressively phases out all the most common types of incandescent lamps between 2009 and 2012. **Japan** has set a target in principle to replace incandescent light bulbs with fluorescent light bulbs or other energy efficient light bulbs by 2012. In the **United States**, the Energy Independence and Security Act of December 2007 requires traditional incandescent light bulbs to be phased-out between 2012 and 2014, depending on bulb type. A similar set of provisions has been adopted in **Canada**, under its Energy Efficiency Act, that will phase out the majority of incandescent lamp types by 2012. **Canada** is also working to harmonize standards with the Energy Star Program in the **United States**. Many economies are also adopting a range of other policies that will bring about energy savings through more efficient lighting in commercial buildings and outdoor illumination applications.

**Improving transport sector efficiency:** Countries are targeting measures for tyres and developing and strengthening fuel efficiency standards. The European Commission, covering **France**, **Germany**, **Italy** and the **United Kingdom**, proposed in May 2008 a legislative framework that includes fitting tyre pressure monitoring systems and setting maximum tyre rolling resistance limits for tyres on passenger cars and light commercial vehicles. The **United States** recently strengthened fuel economy standards for light-duty vehicles and established procedures for rating tyre rolling resistance and disseminating these ratings to consumers by the end of 2009. **Japan** remains the top country in the world for setting fuel efficiency standards for heavy-duty vehicles. **Canada** and the **European Union** have voluntary agreements on fuel economy standards with vehicle manufacturers.

In **France**, **Germany**, **Italy** and the **United Kingdom**, recently approved **European Union** regulatory caps on CO<sub>2</sub> emissions from new passenger cars at 130 g/km will apply from 2015 onwards. This requirement will be phased in so that in 2012, 65% of each manufacturer's newly registered cars must comply on average with the limit value. **France**, **Germany**, **Italy**, **Japan** and the **United Kingdom** have implemented vehicle scrapping schemes to increase the rate of vehicle-stock turnover. For example, in February 2009 **Italy** enacted a law that provides financial assistance for the replacement of passenger cars and goods vehicles with new reduced-pollution vehicles. The **United Kingdom** will provide financial support for consumers buying electric vehicles or plug-in hybrid cars. Similarly, in the **United States**, funding for public procurement includes high-efficiency vehicles and tax credits for plug-in hybrid vehicles.

### **IEA summary: recommended action items**

Responding to G8 requests, the IEA presented a total of 25 recommended energy efficiency policies to G8 summits in 2006, 2007 and 2008. At the 2008 G8 Summit in Hokkaido, leaders reaffirmed the critical role improved energy efficiency can play in addressing energy security, environmental and economic objectives and committed to maximising implementation of the 25 IEA energy efficiency



recommendations. If fully implemented, IEA/G8 recommendations could save around 8.2 GtCO<sub>2</sub>/year by 2030 – equivalent to twice the European Union's yearly emissions. Progress in implementing the IEA recommendations varies across countries and between recommendations; no country has fully implemented all of the IEA recommendations, though some countries have established a range of pertinent measures. However, in most instances, these measures could be updated or further strengthened, the scope of their application broadened and compliance better monitored and enforced. In the buildings sector, G8 countries should establish stronger energy efficiency requirements for buildings strengthen support for passive energy houses and zero energy buildings, and increase efforts to promote energy-efficient windows. In the appliance sector, policies should be established to address the growing energy demand of entertainment systems and home digital networks. For transport, G8 countries should ensure implementation of planned policies and establish fuel-efficiency standards for heavy-duty vehicles (with the exception of **Japan**, which has them already). It has become clear that many countries require technical assistance with energy efficiency implementation. This need for capacity building applies to IEA members as well as emerging and developing countries. An initiative to assist countries with their implementation of energy efficiency policy is urgently needed if the pressing energy, environmental and economic development goals are to be achieved.

## IV. Diversifying energy mix

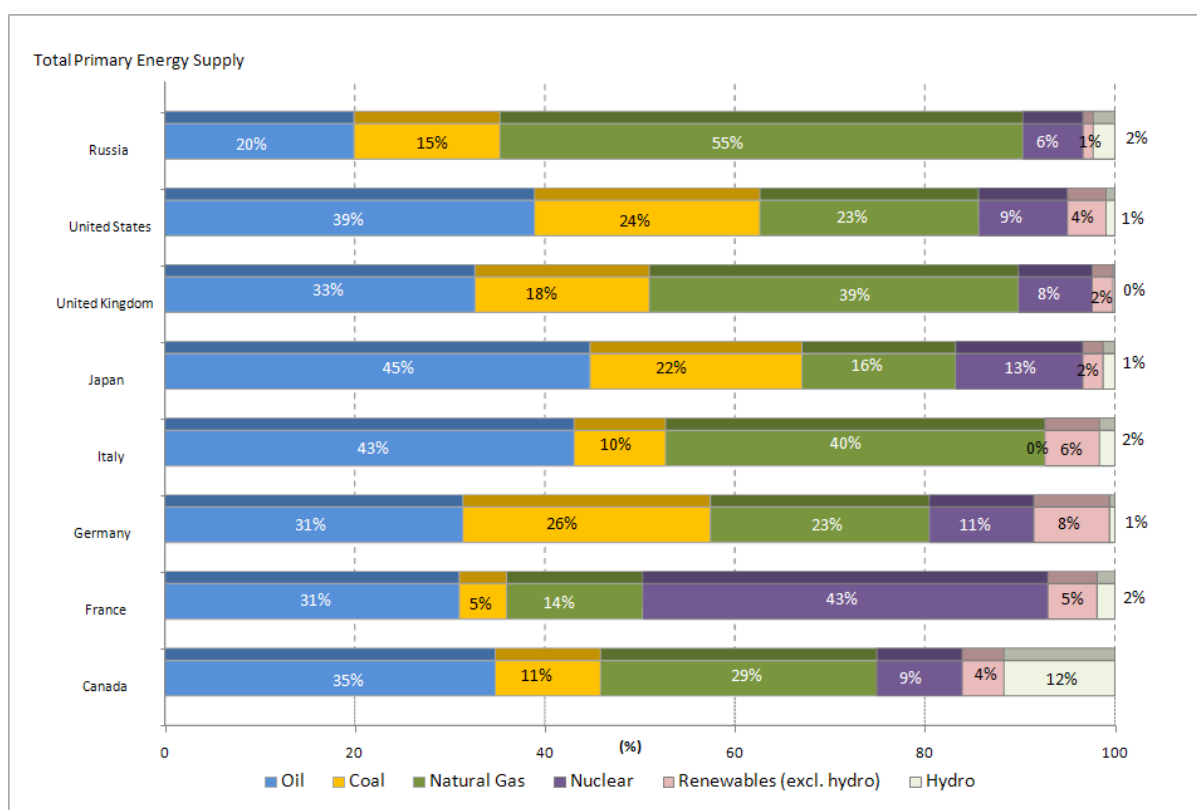
**Diversifying energy supply:** As shown in Figure 1, supply of energy in G8 countries is relatively diverse, though oil continues to supply the lion's share in all countries. Nevertheless, this share has been decreasing in all countries. One major concern amongst G8 energy importing countries is their sources of supply. For example, in **Japan**, almost 90% of its supply of oil comes from OPEC countries. We are pleased to see it continue to be a top priority for **Japan** to expand sources of oil, including by import country and route, and of natural gas, including by import country, route and type (pipeline gas or LNG).

**Developing domestic renewable resources:** The IEA is pleased to see the importance being placed on rapid deployment of renewables. A new legislative package in the European Union requires a sharp increase of renewables. It sets a 20 % target for the overall share of energy from renewable sources and a 10 % target for energy from renewable sources in transport by 2020. **Germany** has made impressive progress towards its 2010 national renewable energy targets (electricity, transport fuels and primary energy supply) and even surpassed many of them several years in advance, which should be a source of envy internationally. **Germany** is also moving confidently towards achieving its 2020 binding target of 18% of final energy consumption from renewables. **France** has adopted policies and measures, especially in the last three years, which are showing effect in stimulating the use of renewables in the electricity and heat sectors towards meeting its ambitious target of 23% of final energy consumption coming from renewables by 2020. The Renewables Obligation is the primary mechanism for deploying renewables in the **United Kingdom**, and has led to a doubling of generation since its introduction in 2002. The **United Kingdom** is actively working with regulators to help reduce barriers to renewable generators, including grid access for offshore generation. Some difficulties were encountered and adjustments to the scheme are under way. With respect to biofuels, the **United Kingdom** has put in place a renewable transport fuel obligation that rises from 2.5% in 2008/09 to 5% in 2010/11. In the **United States**, individual US states have introduced targets, mainly for renewable electricity, and have underpinned these with policies that have been quite effective in fostering the spread of some renewables, including solar photovoltaics and wind, while federal renewable energy targets are currently being debated. As did other countries, the United States included enhanced R&D funding and tax credits for renewables in its economic



stimulus package. In **Canada**, the ecoENERGY Renewable Initiative provides incentives to produce heat and power from renewable resources. It has also put in place a renewables obligation for biofuels in the transport sector, which has also been done in the **United States**, the European Union (**France, Germany, Italy**, and the **United Kingdom**) and **Japan**. In **Japan**, the key means of promoting renewables is the renewable portfolio law, which called for about 4.4 billion kWh of electricity supply to come from renewables excluding large hydro and most conventional flash-type geothermal in 2006, climbing steadily through 2014 to 16 billion kWh. **Japan** is also supporting renewables through significant R&D funding. A consortium of the government and private sector has promoted the use of advanced **Japanese** renewable energy technology by other countries since October 2008. **Russia** has set renewables targets for electricity generation, as well as developed subsidy schemes for small-scale renewables. Six G8 countries, i.e. **Germany, France, Italy, Japan, the United Kingdom** and the **United States** are signatory countries to the recently founded International Renewable Energy Agency (IRENA), which currently counts 136 member countries. The Agency is expected to begin operations in 2010 and is expected to facilitate and accelerate the development and deployment of renewables, in particular in developing countries.

Figure 1: Fuel Mix (2007)



Notes: Shares have been calculated excluding electricity and heat trade. Data for **Russia** are preliminary.

Source: IEA.

**Developing domestic cleaner coal resources (including CCS):** The **United Kingdom** has launched a competition to support a coal plant with CCS on a commercial scale and is one of the first countries in the world with a long-term regulatory regime for CCS. In 2009, it also initiated public consultations on financial support for further large CCS demonstration projects. The UK government is investing in new technologies, including CCS, through a number of mechanisms, including the newly created Energy Technologies Institute. It has also mandated that CCS be installed on a proportion of all new

coal fired power plants (300 MW Minimum). **Canada** has made the development of CCS a government priority, devoting substantial and still increasing financial resources to a full-scale commercial demonstration project, as well as to R&D and the development of a sound institutional framework. The **United States** also enhanced funding for CCS technologies. **Japan** has prioritised CCS as a key technology under its Cool Earth Innovative Technology Programme, and promotes large-scale demonstration projects. In **France**, a pilot project for CCS, including transport, began in 2009. The first CCS pilot plant in **Italy** will start in 2010. The European Union's economic recovery plan includes 1 billion € for CCS demonstration projects, in addition to the 300 million ETS allowances available for CCS funding and new renewables. International cooperation on CCS has also progressed. In 2009, **Canada, France, Germany, Italy, Japan, the United Kingdom** and the **United States** became foundation members of the Global Carbon Capture and Storage Institute, GCCSI, headquartered in Australia.

**Reducing natural gas flaring:** All offshore gas flaring is tightly controlled in the **United Kingdom** and, since the beginning of 2008, is also included in the EU Emissions Trading Scheme. The government also supports the World Bank-led Global Gas Flaring Reduction partnership. **Russia** is developing plans to reduce flaring of associated gas, which will include fees and increasing ecological penalties from 1 January 2011.

**Developing nuclear resources:** **Canada** has expanded its support of nuclear power, including operations and R&D, particularly through support of Atomic Energy of **Canada** Limited. Nuclear power is a key component of the country's long-term energy strategy, and receives much government attention. To further promote nuclear safety, the government's inspection system was reviewed and the government is educating local communities about the improved inspection system. Safety inspection system was reviewed in **Japan** and a new system was put in force in 2009. Spurred by the Energy Policy Act of 2005, some new nuclear projects are under licensing review in the **United States**. **France** is building a nuclear power plant (European pressurised water reactor, EPR) in Flamanville. The construction of the 2<sup>nd</sup> EPR in Penly is projected to start in 2012. In addition, **Italy** recently initiated efforts to commence construction of new nuclear power plants within the next few years.

**Addressing long-term nuclear waste disposal:** In 2007, **Canada** accepted the Nuclear Waste Management Organization's recommended approach of adaptive phased management for managing nuclear fuel waste over the long term. The organization is taking steps to select a waste management facility. A procedure has been started in **Italy** to site a surface repository for final disposal of low and medium level waste and for temporary storage of high level waste. **Japan's** Specified Radioactive Waste Final Disposal Act was enacted in 2000 and sets out a process for selecting disposal areas and other processes. Following recommendations of the Advisory Committee for the Ministry of Economy, Trade and Industry, the Japanese government is holding nation-wide symposia on geological disposal to communicate better with the general public.

**Developing other alternative resources:** In order to promote innovation and low-carbon technologies, public funding is increasing steadily in the **United Kingdom**. In **Canada**, innovative technologies are supported by the ecoENERGY Technology Initiative, which has identified eight priority areas for investment in sustainable energy.

### IEA summary: recommended action items

The surest way to ensure energy security is through diversity and development of alternative sources. G8 countries continue to work to reduce their reliance on imported and domestic fossil



fuels – and efforts in this area should continue – and are raising the diversity of fuel source generally. Diversity of import source and route is also key, so the development of new routes, such as through construction of new LNG terminals and pipelines, is also very welcome. More importantly, development of domestic resources is key, and we are pleased to see the efforts being paid to develop renewables. We are pleased to see that European countries, including **France, Germany, Italy** and the **United Kingdom** are working on ambitious targets for renewable energy. They **also** continue to work to develop a continental market for renewables, in order to lower the overall cost and accelerate the pace of development, as well as link it with that of the developing continental power market. In **Japan**, renewables remain a small piece of the country's energy fuel mix. While the large investments in R&D that the country is making are welcome, more aggressive targets should also be considered. We are pleased to see states in the **United States** developing regional renewables markets, but development of a federal system should be the ultimate goal. International efforts aimed at reducing gas flaring have succeeded in reducing wasted gas and excess emissions, but more work remains, particularly in **Russia**. Nuclear will need to be part of the long-term energy mix internationally and regionally – countries that can adequately address the nuclear waste disposal challenge through a transparent and reliable system will be successful in further expanding nuclear capacity. The IEA is pleased to see that more attention is being paid to developing a framework for introducing CCS to new fossil power plants with increasing financial support from governments. Successful deployment of CCS will require careful international collaboration, technology funding and engagement with the private sector.

## V. Securing critical energy infrastructure

**Inventory of security priorities:** The **United Kingdom** keeps the major areas of energy infrastructure under constant review to determine what elements are critical for energy delivery. Where key sites are identified, security requirements with industry are put in place. The government's strategy gives high priority to reducing the vulnerability of critical national infrastructure to international terrorism. **Canada** has developed a National Strategy for Critical Infrastructure Protection, which lays out a partnership programme for information sharing and protection between the public and private sector. In addition, **Canada** and the **United States** are working collaboratively on security vulnerability assessments of critical cross-border energy infrastructure. **Japan's** inventory of security priorities focuses primarily on nuclear facilities. As such, it is establishing Nuclear Emergency Operations Facilities. **Russia's** legislation has been amended to implement measures to tackle acts of terrorism against energy infrastructure. In accordance with these amendments, key infrastructure has been authorised to acquire necessary protection equipment. Further security measures are under consideration.

**Ensuring security of transportation routes:** To ensure such security, information sharing with other countries is a high priority for the **United Kingdom**. Given the source of most of **Japan's** oil imports, the security of the Strait of Malacca is of vital importance for the country. In this context, piracy is a crucial problem for Japan as well as other countries. Japan has deployed Self-defence Force vessels, joining international partners conducting naval operations in the Gulf of Aden.

### IEA summary: recommended action items

It is difficult for the IEA to adequately assess the effectiveness of G8 countries' efforts to secure vital energy infrastructure, as limited information has been provided to us. This is likely with some good reasons, given the sensitivity of the subject. However, as energy security of one country is closely



linked to that of others, we urge governments to create more openness. We also urge all governments to continue to maintain up-to-date inventories of existing infrastructure, to undergo rigorous sensitivity analysis to understand and identify critical points in network infrastructure, to develop emergency plans that take into account a variety of circumstances and to develop close collaboration with all actors in the energy sector.

## VI. Reducing energy poverty

**Progress towards funding the Millennium Development Goals:** While there is not a specific goal focused on energy, expanding access to energy can contribute to the achievement of all the Millennium Development Goals (MDGs). Flowing from the United Nations MDGs, the **United Kingdom** supports several initiatives, including the EU Energy Initiative for Poverty Eradication and Sustainable Development and the Global Village Energy Partnership. Europe and Africa will start an energy technology and policy dialogue in the context of the EU-Africa Energy Partnership. **Canada** also supports the MDGs, including through financial support that goes to the World Bank's Clean Energy for Development Investment Framework and the Inter-American Development Bank's Sustainable Energy and Climate Change Initiative. **Japan's** official development assistance (ODA) charter designates poverty reduction as a priority issue; **Japan** supports the MDGs through its ODA. The **United States'** Millennium Challenge is one of the government's key tools to aggressively support poverty reduction in developing countries.

**Other initiatives aimed at reducing energy poverty:** The **United Kingdom** provides funding to the World Bank Energy Sector Management Assistance Programme, the new Clean Energy Investment Framework, the Infrastructure Consortium for Africa and through bilateral programmes in Bangladesh and Sierra Leone. Through its Canadian International Development Agency, **Canada** supports developing countries, with support focusing more on enhancing the regulatory environment in which the power industry operates. Among industrialised countries, **Japan's** financial assistance to the energy sector in developing countries makes it the largest donor. The government also provides loans to the energy sector in developing countries. Further assistance will be provided through **Japan's** Cool Earth Partnership, launched in 2008. **Russia** has committed funds to both the Global Village Energy Partnership International (GVEP), focused on countries south of the Sahara Desert. The government has also signed an agreement to establish the International Sustainable Energy Development Centre (ISED).

### IEA summary: recommended action items

Limited information was provided by most governments on initiatives to expand access to electricity and clean cooking fuels, apart from funding levels to various programmes. We are pleased to see governments commit funds to general poverty eradication programmes and programmes that target energy poverty specifically. However, we see that more work can be done to facilitate the creation of sound energy policies, to enhance institutional and human resource capacities and to integrate energy sector development with energy poverty eradication. Efforts made to develop technologies to harness renewable and distributed energy in developed countries should continue to recognize the value of technology transfer to developing countries.

## VII. Addressing climate change and sustainable development

**Progress towards achieving Kyoto targets (if applicable):** **Canada, France, Germany, Italy, Japan, Russia** and the **United Kingdom** have put in place policies to achieve their Kyoto greenhouse gas



emissions targets, most with the help of market-based mechanisms. These policies include emissions trading schemes that cap emissions for certain sectors of their economy as well as access to flexibility mechanisms as defined under the Kyoto Protocol. Greenhouse gas emissions from **France**, **Russia** and the **United Kingdom** are all already below their 2008-2012 targets. **Canada** has put in place a framework to meet its target through financial support for clean energy R&D and energy efficiency. However, the target will be very difficult to achieve.

**Other policies to reduce carbon dioxide emissions:** The European Union's Emissions Trading Scheme, which covers **France**, **Germany**, **Italy** and the **United Kingdom** and has been in operation since 2005, is a key mechanism by which EU countries are achieving parts of their targets under Kyoto and the EU burdensharing agreement. This system exists alongside a range of other policies and strategies at the national level. In addition, the **United Kingdom's** Climate Change Act became law in November 2008. It made the **United Kingdom** the first country in the world to have a legally binding long-term framework to reduce greenhouse gas emissions and adapt to climate change. In **France**, a comprehensive public consultation and policy-making process known as "Grenelle de l'Environnement" has resulted in the development of an impressive environmental programme. This programme sets ambitious targets for GHG emissions reductions, renewables and energy efficiency. Its implementation will allow 21.8% reduction from 2005 levels by 2020. **Canada** is pursuing its climate change strategy through its Clean Air Agenda, currently under development, under which it has established emission-intensity targets for greenhouse gas emissions for 2010. The government has also set goals for reducing greenhouse gases by 20% from 2006 levels by 2020 and for producing 90% of Canada's electricity needs from non-carbon resources. Since January 2009, the President of the **United States** has reiterated his commitment to pursue aggressive action to reduce U.S. greenhouse gas emissions to 17 percent below 2005 levels by 2020. Voluntary agreements in **Japan** continue to reduce emissions in industrial sectors, and other measures are in place under the country's Kyoto Protocol Target Achievement Plan. The Action Plan for Achieving a Low-carbon Society was formulated in 2008 as the roadmap for moving toward a low-carbon society. In June 2009, the Prime Minister announced Japan's mid-term target of a 15 percent reduction from 2005 levels by 2020, including a 33 percent improvement in energy efficiency. In **Russia**, the government is working to establish a Government Commission on Climate Change, which will introduce economic and administrative incentives for mitigating negative environmental impacts. The government is also elaborating its Priority Action Plan for Elimination of Environmental Damage. The order approved in 2008 anticipates that the level of ecological impact will be significantly reduced by 2020, if all its elements are fully implemented.

**Policies to implement a market signal for greenhouse gas emissions:** Countries covered by the European Union's Emissions Trading Scheme, the **United Kingdom**, **France**, **Germany** and **Italy**, have a price signal that covers a significant part of their economies – industrial and energy installations. Additionally, the **United Kingdom** has a Climate Change Levy that taxes energy use to encourage energy efficiency. Despite the lack of a national mandatory carbon trading system, in the **United States**, a number of states have initiated regional cap-and-trade programs. A program involving states in the northeast began operating in 2009. Several bills currently before the US Congress would establish a nation-wide system. In October 2008 **Japan** began experimental introduction of an integrated domestic market of emissions trading. A voluntary carbon offset system is in place and the government has implemented a more expansive system that will cover small and medium-sized enterprises. In June 2009, the first domestic credit was issued.



### *IEA summary: recommended action items*

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Addressing climate change is a challenge for the entire globe, not only G8 countries. Nonetheless, it is imperative that G8 countries take the lead, setting an example by developing comprehensive and ambitious climate change policies and targets. The European Union Emissions Trading Scheme, which covers half of G8 countries (**France, Germany, Italy** and the **United Kingdom**), is a good starting point, as it provides a market signal for carbon dioxide across two large parts of the greenhouse-gas emitting economy. As the EU-ETS enters into Kyoto's first commitment period, we are pleased to see that governments and the European Commission have learned from earlier experience; particularly with respect to **Germany**, which had over-allocated emission rights to coal-fired power plants in the past. We are also pleased to see new initiatives to develop market signals for greenhouse gases in **Japan, Canada** and the **United States**. We urge these countries to implement meaningful systems quickly, and work together to create systems that may be linked over time, and for **Russia** to develop a system as well. In the shorter term, other policies will be needed, such as those covered earlier by enhancing energy efficiency and developing alternative and renewable resources. Governments must continue to urgently establish their own policies while developing comprehensive global and international ones as well. Stabilising anthropogenic greenhouse gas emissions will require bold leadership and strong political will.



INTERNATIONAL ENERGY AGENCY

