The Challenges of Energy Security: A UK Perspective

Introduction: outlining the energy challenge

- Toyota-san and Ladies and Gentlemen, thank you very much indeed for your kind introduction and for inviting me to the institute this afternoon. I really am very pleased indeed to address a lot of very distinguished and expert people on these important issues. My career has brought me into contact with your institute several times, particularly when I was as you said Toyoda-san president of the British Institute of Energy Economics. I have always been very impressed by your skilful analysis and contribution to policy development in a very complex world.

- This afternoon ladies and gentlemen I want to share with you some thoughts about the challenges we face today on energy security and how in this dangerous world government and business can help navigate towards a stable supply of energy. This is a subject close to my heart and one that I have been engaged with since the 1980s when I indeed served as you reminded us as Britain's Secretary of State for Energy under the premiership of Margaret Thatcher.

- Ladies and gentlemen, the energy challenge facing the world is simply this: how to balance meeting the increased global demand for affordable and secure energy, while at the same time tackling the enormous challenge of climate change. This is the task of the energy transition which we all have to achieve in all our nations

right across the globe. Maintaining a sufficient supply of reliable, affordable and sustainable energy is essential for global growth and development. With world energy consumption expected to double in the first 50 years of this century; and most of that growth will be outside the OECD countries, in fact all of that growth, with access to resources becoming ever more difficult; and climate change challenges increasingly urgent, the energy task we face is complex and multi-faceted.

- Japan is of course a net importer of fossil fuels and the United Kingdom, my country, is becoming more reliant on oil, gas and coal from overseas so we share the pressures being exerted on world energy markets by the rapid growth of China and other emerging economies, who are hungry for energy, abundant energy, and if possible affordable energy. The importance of these countries will grow – as both consumers and producers of conventional fuels and new technologies as well. So engagement with them is essential.

- At the same time, access to existing and untapped resources is becoming much more difficult. And much of the world’s energy infrastructure lies in severe environments such as the Arctic and the ice, which is maybe melting, and even where physical access is easier – such as in Iraq’s huge and fully-proven oil reserves, some of the world’s largest – there are political and security risks which then add heavily to the challenges, and the costs.

- So in my view this new energy landscape requires a different, more agile diplomacy than in the past, to guarantee both our energy security and our wider safety. Energy issues are clearly both the drivers of, and driven by, geopolitics. It is therefore right that energy policy is a high priority for our Foreign and Commonwealth Office in London where I currently serve. We recognise that the UK needs to work bilaterally and multilaterally to address the opportunities and challenges that the international environment poses. The present mid-east political turmoil presents an acutely vivid picture of the dangers to our conventional energy patterns. Like Europe, Japan draws substantial oil supplies from that region. We must do we can to ensure that legitimate aspirations for democracy and freedom are balanced with orderly political evolution in the countries and societies of the middle east region and to allow the peoples of the Arab world to work out their future in a context of stability.

- The key consideration around energy security is of course the threat of climate change. We have to recognise the dangerous impact of conventional fuels on the climate pattern and to look to a future of cleaner, more sustainable energy technologies. Although of course not all conventional fuels have the same effect or have the same load or charge of carbon dioxide emissions. The British Prime Minister, David Cameron, has promised that our coalition government in which I serve will be the greenest British government ever. I believe that our ambitions for energy security and greater climate security do march together. If we lose sight of either of these goals we will sacrifice both.

A shared vision for energy security

- The UK believes that security of supply and security of demand are of equal importance. As the world's third largest consumer of oil your country, Japan, would no doubt share this view. We want to secure prices that are both predictable and affordable. We all remember oil prices reaching $147 a barrel in the summer of 2008, that's only two and a half years ago, and then crashing to less than $40 six months later. This kind of volatility creates uncertainty, affects the economy, undermines investment. It is possible, and this is only an assessment, but it is possible that we are again entering a volatile period as Middle East instability reacts on crude oil prices. As we emerge from global recession, high oil prices bring with them the risk of double dip return to recession. The UK is working with partners, such as Japan, through the G20, the International Energy Forum, the International Energy Agency and other international organisations to promote transparency and stability in global energy markets. And in addition we are determined to remove drivers of excess demand, such as fossil fuel subsidies, which of course inflate demand enormously, are very costly, and distort oil markets.

Unconventional gas

- Let me just say a word about the gas markets as well as the oil markets, and in particular the phenomenon of "unconventional"

gas. In our view gas has a very important role in the transition to a low carbon energy mix. There is great potential in “unconventional” gas sources, especially shale gas. For example, in the United States unconventional gas has transformed the domestic energy market, with the US becoming self-sufficient in gas. And therefore increased supply in global markets as a result of the decline in American demand has lowered spot market prices and taken them away from oil prices in spot markets which is a new and very important phenomenon. Other nations, including China and Saudi Arabia, are believed to have vast, commercially recoverable reserves of unconventional gas. And we may also have some in Europe as well on quite a large scale although it may take time to develop.

- If the US experience is repeated elsewhere, unconventional gas has the potential to end import dependency for many countries and many regions. This transformation in relationships between producer and consumer countries could have a profound effect on the world energy scene and on our international relations.

Renewable energy

- Now let me turn from that to renewable energy, which is I know of great interest to the institute. Domestic policy also plays a vital role in encouraging sustainable future energy supplies. The British Government recognises that for a secure energy future it must provide the right environment for investment in infrastructure and in new technologies. Only with continued investment can we

maintain access to, and distribution of, fuel supplies during the transition to a low-carbon energy base and beyond. In the UK we have an ambitious programme to upgrade, refurbish and replace most of our power station plants, and to achieve step-by-step a major energy transition.

- Indeed, the UK has a target of securing 15% of all its energy needs – that's for electricity, heat and transport – from renewable sources by 2020, that's nine years from now. The UK already has the world's largest capacity of off-shore wind generation. But we cannot rely on wind technology alone. All effective forms of renewable energy will play their part. Intermittency of energy will have to be met by backup capacity and ideally by new storage technologies of which I have had a fascinating chance to observe in a visit only yesterday to the major developments by Sanyo outside Osaka.

- I understand that Japan is at an early stage of implementing feed-in-tariffs, and there are proposals to extend tariffs to wind and other energy products, in addition to solar photo-voltaics. I believe that feed-in-tariffs can be an effective tool to encourage the necessary investment to make renewable energy supplies commercially viable. In fact last year my country, the UK, introduced a feed-in-tariff to encourage investment in renewable energy up to 5MW and we are currently reviewing this scheme to ensure that the government support is being used effectively.

Smart grids

- Let me turn to another aspect of the energy revolution, namely transmission and smart grids. Diversified supplies of energy pose a new challenge to maintaining reliable supply. The development of smart grids and transmission systems is arguably as important as developments in power generation itself. And again, this is an area where the UK and Japan are each exploring important new ideas. In the UK we have established a £500 million fund for smart grids trials, are supporting eight pilot projects for electric vehicle infrastructure, and aim to install smart meters in every household in the UK by 2020.

- I am impressed by the smart communities initiatives that the Ministry for Economy, Trade and Industry, that's METI, supported by NEDO, has begun within Japan and overseas. I believe that our two countries can share findings and expertise, and collaborate on projects jointly. Indeed on Monday I had the pleasure to attend a UK-Japanese seminar on smart grids hosted by the British Consulate General in Osaka. That's yesterday. Participants in this event included policy makers, academics, business representatives from both countries, and I expect that seminar to lead to further expert-level cooperation in the coming months.

- The UK is also working to ensure that investment in renewable energy and smart grids is encouraged throughout the whole European Union, which is our immediate neighbourhood. We support initiatives such as the North Sea Grid, an integrated offshore energy grid which links wind farms and other renewable energy right across the whole North Sea. And we hope that a European Super Grid, which would pool power supplies from

diverse energy sources, will one day become a reality. We do want to see a really competitive energy policy in Europe and obviously competition only works where the energy supplies can be transmitted swiftly from one market to another without impediment.

Nuclear power

- The UK also believes, and let me now turn to the other great low-carbon power of the future, the UK believes that nuclear power has a central role to play in low carbon energy mixes because it can provide a steady baseload without the risks of intermittency that come with other sources as I have indicated. Nuclear power is the obvious longer-term route both to meeting emissions reductions targets and securing the reliable, low-cost and abundant electricity that our own societies - and the developing world – and the smaller economies, and the poorer areas of those economies, will certainly demand.

- The British Government's commitment to nuclear power can be seen in a new generation of ten nuclear power stations, which we plan and which will involve replacement of many of our much older nuclear power stations. It will be a challenge to ensure that they produce electricity competitively, safely and above all in a way that is commercially viable.

- We are obviously not alone in taking up the nuclear challenge. The International Atomic Energy Authority, who I visited in Vienna recently, is now following the construction of 60 new reactors worldwide. It would not be an exaggeration to say that a nuclear

"renaissance" is underway. And we want to be part of that renaissance in order to contribute to our own energy security and climate change targets.

- Going back a few years when I was Secretary of State for Energy, I sought to launch a nine-station nuclear reactor programme in the United Kingdom, in 1980 that was, and frankly that plan did not come to fruition, it was thwarted by international factors, including the collapse of oil and gas prices. So those with long memories will remember that oil and gas prices dramatically declined in the 1980s, undermining all previous assumptions. But by pricing in the true cost of carbon today, nuclear energy should be able to compete on a fair footing with oil and gas. Cap-and-trade schemes such as the European Emissions Trading System ought to be able to give private capital the confidence to invest in the nuclear and low carbon technologies of the future, although there are still many problems to overcome. I also should add that the UK is considering how it might most effectively carry out long-term management of its stocks of plutonium. Our Department of Energy and Climate Change, to which I referred, has recently launched a consultation on a potential new program for reusing the plutonium as MOX fuel, provided this option meets value for money and safety criteria.

- **CCS**

- Now I have one more area to turn to, indeed more than one, but this is a very important one, that is Carbon Capture and Storage,

the securing of the CO2 emitted from burning fossil fuels. Fossil fuels, whatever we do, are going to remain an important part of the global energy mix for the medium term. The development and deployment of Carbon Capture and Storage for both coal and gas will therefore be critical in reducing CO2 emissions from power stations and will probably do so by up to 90%. The individual elements of Carbon Capture and Storage technology are available to us. We know what to do. Transport, capture, reinjection, and underground storage are all immediately deployable. But to succeed we need to prove also their economic viability on a commercial scale to producers and consumers alike.

- We are very pleased to be working in this important area with Japan in such fora as the Carbon Capture Use and Storage Action Group of the Clean Energy Ministerial process, and the Carbon Sequestration Leadership Forum. This is where progress will be made.

Energy efficiency

- Perhaps overarching all these considerations of new sources, we have to look at more efficient ways of using energy. Like Japan, the UK recognises that in addition to new sources of energy we need to use energy much more efficiently. Energy efficiency needs to become a core part of domestic life; business and industry; as well as a central task for the power production and transmission industries. We believe that government has a vital role in ensuring a framework is in place to encourage energy

efficiency and the necessary investments into it at every stage of the energy chain.

- I know that developing better energy and energy-efficiency technologies has long been ingrained in the DNA of Japan. Your industrial sector remains the world's most efficient and most energy-efficient. We in the UK can learn a considerable amount from Japan in this regard. In return, I believe the UK has a comprehensive programme for energy efficiencies in buildings which could be helpful to Japan as you examine how to respond to increasing emissions from households. I hope a UK-Japan bilateral Energy Dialogue later in the year will help us tackle together the challenge of developing new energy frameworks and putting both our countries at the forefront of the great low carbon transition.

Conclusion: the opportunities in a low carbon energy transition

- My conclusions, ladies and gentlemen, are these. I finish by reflecting on the roles our countries can, indeed must, play in the move towards low carbon energy and the opportunities that lie ahead. The position Japan takes towards a low carbon economy has the power in itself to change markets and develop the breakthrough technologies that will be needed worldwide beyond 2020. Indeed, Japanese know-how – whether in wind power, storage, solar power, electric vehicles, nuclear reactors or other technologies – will be critical to our own UK low carbon transition. But we must make sure this transition is harmonious, which means that it must avoid inflicting hardship and it must be affordable, both

for hard-pressed households with heavy energy bills, and for industry struggling to compete in world markets.

- Ladies and gentlemen, the concept of a low-carbon energy framework is not a gimmick. It is a pillar of developing sustainable growth in mature economies at a time of unprecedented pressure on resources. Secure and affordable energy supplies are fundamental to our social and economic well-being and to our security infrastructure at home and overseas. How we – the UK and Japan, our two countries – respond to the coming energy challenges will determine our future prosperity.

- The United Kingdom believes that all of these developments in energy technologies bring significant opportunities for UK companies, including opportunities in terms of jobs and employment and profitability. And not only in exploration and production of oil and gas, but also in supply chains, downstream industries, and the research and development of low carbon technologies. Japan's world leading technological expertise means that you too have much to gain from these developments.

- Government needs to be helping industry to make the energy business easier and more transparent, including for long term investment. This means a clear framework for operating and investing. It also means actively engaging with the many countries – both producers and consumers – which are critical to sustained UK and global energy security. Japan is among the most important of these countries, and that is why it is such a pleasure for me to

share thoughts with you and to talk to you today. I believe we are in dangerous times and I believe we need to think calmly and clearly and above all work very closely together to meet the immediate challenges ahead.

- I thank you for listening to me.

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