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Attracting Investment for the Growth of Nuclear Power

Session IV. Round Table Discussion. Transcript

Rita Mirwald

It's my pleasure to welcome you to our roundtable discussion on attracting investment for the growth of nuclear power.

My name is Rita Mirwald, I am with Cameco Corporation but I'm here today in my capacity as a member of the Global Strategies Group, one of the Working Groups of the WNA. And our Group is the sponsor of this segment. We thought it was a timely topic that deserved focus within the Symposium.

We have heard earlier today some exciting discussion about the prospects for nuclear power. Anne Lauvergeon earlier today mentioned that we need some more exciting and creative financing approaches when it comes to nuclear new-build. So we're hoping that maybe some of our conversation today will meet this challenge. Certainly all this talk of new-build and growth does lead to the question of who's going to pay, and that really is the theme of our session this afternoon.

I'm sure our distinguished speakers here will try and address that question. I would like to note that the inclusion of three experts from the investment community is a bit of an innovation for the WNA. And on behalf of the WNA, I would particularly like to extend our warm welcome to them, as we do to all the speakers today. Their presence here underscores the key role of the financial community in the further development of nuclear power.

The first person who will speak is Rauno Mokka, the Executive VP of TVO in Finland.

The next speaker will be Richard Mayson, the Director of the Energy Unit for BNFL here in the UK.

The third speaker from industry will be Richard Myers, Senior Director of Business & Environmental Policy at the Nuclear Energy Institute in Washington DC - NEI as more commonly known.

Our fourth speaker will be William Oulton. He is the strategic adviser to the FTSE group for socially responsible investment.

Our fifth speaker will be William Vereker, the Managing Director, Lehman Brothers Europe in the UK.

And finally, Roger Ewart-Smith, Managing Director for Rothschilds in the UK. He is currently leading their energy team. During the past five years has had a focus on the nuclear sector, and has been an adviser to BNFL in relation to its restructuring, and is currently leading the team advising on the sale of Westinghouse.

Rauno Mokka

Ladies and gentlemen, it's my pleasure to comment briefly on the case of Finland, or on how it was possible to make this investment. But first, I'd like to say something about our company, so that you can understand better our situation. We are a privately-owned generating company, and we sell electricity to our shareholders at cost, and we are about 600 people today. We are operating two 840 megawatt units supplied by Westinghouse Atom. They have been in operation for over 25 years, and we have modernised them two or three times. The net power is now higher than in the beginning.

And what we are also doing in Olkiluoto is to build the next unit to cut the rate to consumers, and the start of the commercial operations should be 2009. We also operate a coal condensing power unit at Meri-Pori near Olkiluoto. And we have two important subsidiaries: Posiva, which is responsible for the final disposal of spent fuel in Finland; and TVO Nuclear Services, which specialises in know-how consulting.

And these are the main arguments we utilised when we discussed with our parliament, and received approval in principle in 2002 -- May 2002. And these facts are still valid today, and maybe they have become a little stronger due to the oil crisis and very high coal price prices, and of course the uranium price is also different today. When we made the original decision we were not calculating on all this, but it is relevant to our investment.

But why nuclear? In part nuclear covers the upswing in demand and replaces other power plants. Finnish demand will increase by more than 2% annually and we have coal units still more than 50 years old in operation. And it also contributes to the fulfilment of our Kyoto commitment, and, what is very important, it secures stable and electricity prices. In Finland, our owners are many industrial, pulp, paper, metal industries, so they prefer stable prices. And of course, from a national point of view, it is important is to reduce the dependency on electricity imports. Today we are importing about 3,000 megawatts of electricity from Russia, Sweden and Norway.

And maybe one of the basic factors is our successful operational history. The average capacity factor of the two Olkiluoto units during recent years has been over 95%. And you can see that this keeps the generation costs low.

As far as public opinion is concerned, one of the main things is certainly risk management, especially of spent fuel, and the Finnish parliament took a decision in principle in May 2001. They decided that the spent fuel should be disposed of directly and that the repository will be at Olkiluoto. We began excavation work last summer, and we have now run it down to about 600 meters, and all is going according to the plans.

Here we can see the attitude of the Finnish people. We have asked the same question over 20 years. In the beginning people were favourably disposed towards nuclear power but then came Chernobyl, and support for nuclear power dropped to 20%. But step by step it has increased since then, and today the number of people with a positive opinion is about 46%, while 25% are against, and 30% have not taken a position.

Rita Mirwald

I'd like now to call on the second of our three industry speakers, Richard Mayson, to provide a UK perspective on the nuclear industry in this country. Richard.

Dr Richard Mayson

Thank you very much. Let me give a quick personal view on the UK perspective. I guess from a technical risk point of view, new nuclear build should be relatively straightforward. The design would undoubtedly be of a standard international design, which we are already seeing evidence of being built to time and cost on a worldwide basis. We've had 50 years of good operational experience of designs evolving towards where we are today, and I think we can be pretty confident that whatever vendor finishes up building in the UK, they will be prepared to negotiate for timescales and performance guarantees. And such reactors would be located on or adjacent to existing nuclear sites which are well understood, in both environmental and geological terms, and generally have locally supportive communities.

So, from a technical perspective it should be relatively straightforward. So what's the big issue? Well, clearly the big issue is around the policy framework, and I will just cite three main areas that are pertinent. The first of these, of course, is the waste issue, and investors will need confidence in the long-term waste treatment and storage regime, and for that we will need an adequate waste policy. We've seen good examples in places like Finland and Sweden, and good steps forward in the US and other places, that have demonstrated that waste policies can be developed.

Indeed, I think that this has been acknowledged this year by Lord Flowers who was the first person, nearly 30 years ago in 1976, to flag up the waste issue as something that needed to be addressed before a major new nuclear programme. He has now effectively retracted his objection to new nuclear, noting that underground storage has been demonstrated beyond reasonable doubt in other

countries as an acceptable waste solution. So there are technical solutions out there on waste, but it does require clarity on the policy framework to give the requisite confidence to investors.

The second issue, I think, is investors, who need clarity on and confidence in the regulatory approvals, timescales and costs. Here I don't believe we're talking about a radical change in the process that the safety regulator uses, nor do we need a radical change in the process of the environment regulator, nor the security regulator. Nor even a radical change in the planning process. But what we do need is the development of some sort of clear strategy that involves all those regulatory bodies, that would allow the effective and efficient delivery of regulatory processes, to provide that the necessary confidence to investors.

Those upfront costs are pretty massive, probably running into £100 million plus, and it's therefore a major challenge to get investors to come forward for those early stages of deployment. Solutions can be found in different ways. In America, and I'm sure we'll hear about the NuStart initiative, it is essentially a joint development between government and industry to solve the problem of the regulatory approvals. And in Finland and in France it has basically been achieved, as I understand it, through very good co-ordination between industry and other parties, in both cases championed by a major utility. So, the second issue is clarity on regulatory approvals.

The third issue, of course, is the markets. Investors do need confidence on the long-term revenues. I'm sure that our financial commentators will comment more adequately than I can. But suffice it to say that we need confidence in long-term revenues, and if we continue to be in the position we are in at the moment, with electricity prices being so high, then that confidence should be relatively easily achieved. So I don't believe that any sort of subsidy will be needed, but we do need to see some sort of long-term framework.

So those, I think, are the three key political issues. I think the provision of a political framework is the key aspect in attracting investors in a UK environment. Thank you very much.

Rita Mirwald

Thank you very much. Thirdly, the last speaker from industry, Richard Myers of the NEI, will give us a US perspective. And Richard, I was just recently reading that site selection is moving along relatively rapidly. So this is going to be probably a good news story.

Dr Richard Myers

We think it is a good news story. Let me just offer a half dozen or so observations about nuclear plant financing in the United States, not necessarily in order of importance. We have allowed a myth, I think, to grow up that financing new nuclear plant construction in America is a uniquely difficult undertaking, burdened by nearly insurmountable risks. My sincere apologies to any in the audience, or indeed on the panel, who hold this view but we do believe it is a mistaken proposition.

My first point then is that **we can, and we will, finance new nuclear build in America.** Under the right conditions, and with appropriate stimulus for investment and protection for that investment, new nuclear plant financing is feasible and possible and, in fact, a highly attractive proposition. Thanks to the energy legislation enacted into law last month in the United States, the right investment conditions now largely exist. More on the energy legislation in a moment.

My second point, **new nuclear plant financing is really fundamentally a risk-management exercise.** For the last five years or so in America, we've worked to peel apart systematically the risks and business issues that exist at each stage of project development, and have identified tools and techniques to manage those risks. We're fortunate in America, as Richard just said, to have a licensing process in which we receive all of our regulatory approvals before construction begins, before we place significant investment capital at risk.

New nuclear plant designs are approved or certified in advance. Sites are similarly approved before major capital investment begins, and we receive a single licence to build and operate the plant. That licence includes measurable, quantitative criteria that, if met, will allow the plant to load fuel and start up when construction is complete. The threshold for intervention and delay after the construction and operating licence is issued is set very high, and is intended to preclude frivolous intervention, unwarranted delays and other costly mischief.

Which goes to my third point, and that's **the need to protect the private sector investment.** Although the licensing process we have is designed to preclude mischief and delay, no one can guarantee zero risk of delays during construction, or more damaging, delays in commercial operation of a completed plant. We believe such delays are extremely low probability events, but if they occur they have very high consequences. To manage this risk we've worked with our government to fashion a form of insurance, under which the federal government will cover debt service for the first few plants if commercial operation is delayed. This coverage is capped at \$500 million for the first two reactors, and \$250 million for the next four. This insurance for delays beyond the private sector's control is included in the energy legislation enacted into law last month.

Does this insurance cover all of the costs and foregone revenues and earnings associated with the delay in commercial operation? No, it does not. But it does provide debt investors with assurance that their investment is secure, and to the extent we have other costs left uncovered, we can develop ways to hedge those risks too, for example, through a pooled, self-insurance approach. As you know, the US industry already has a well-established, mutual insurance entity that provides property insurance.

My fourth point - **the new US energy legislation provides very substantial investment stimulus** for investment in new nuclear plants, which will offset the higher first-time costs of the first units, ensure that their electricity is competitive, enhance the financial returns available to both debt and equity investors, and make financing easier. Legislation provides a federal guarantee of debt financing up to 80% of total project cost. This will allow companies to structure projects

with a more aggressive, highly leveraged capital structure that is typical of conventional regulated utility financing, obtain debt at preferential rates, and reduce total project costs by several hundred million dollars. The legislation also includes a production tax credit of \$18 per MWh, subject to certain limitations, available for plants that start construction before 2021. This incentive represents \$5 billion to \$6 billion of economic benefit that will serve as a powerful inducement for potential investors.

Fifth point - **flexibility**. We are fortunate, at least in the United States, in having enormous flexibility in how we structure and finance new nuclear projects, and in how we manage the risks associated with financing. About one half of the States are still operating under traditional cost-of-service regulation. In those States companies can build new nuclear plants as rate-based projects, using a relatively conservative 50/50 capital structure with approval from State regulators to recover costs through electric rates. This regulatory arrangement provides substantial protection: investors know that all costs prudently incurred will be recovered through rates; and companies will likely receive some recovery of costs during construction.

But we also have unregulated generating companies that will build and finance new nuclear plants as merchant projects, using the loan guarantee protections in the Energy Policy Act of 2005 to support the debt financing. So I expect to see a spectrum of financing arrangements - regulated projects, merchant projects, varying degrees of leverage, non-recourse to the project sponsor, full recourse to the project sponsor, projects built by single companies, projects built by consortia in order to share risk, and other arrangements that we haven't even thought of yet.

Point number six - **new nuclear plants are really not uniquely large capital projects**. In fact, by energy industry standards even the \$2.5 billion nuclear project is not particularly daunting. The Hibernia oil platform offshore at Newfoundland was a \$6 billion project. LNG projects, including liquefaction facilities, tankers, and regas facilities, cost significantly more than new nuclear build. The petroleum industry typically manages the risks associated with these projects through shared ownership of production facilities, and nuclear generating companies in the US may find themselves in the same position, at least during the plant construction phase.

Seventh point, and this really keys off of the TVO experience. We believe **consumers will play a key role in financing**, particularly the large industrial users and electric distribution utilities. New plant financing in the US will require long-term off-take arrangements for the electricity, and in America today we see 20-year power purchase agreements (PPAs) that support the financing of new coal-fired projects. And I expect we will see similar PPAs supporting the credit worthiness of new nuclear plant construction in America.

One final point, **industry must accept its share of the risks**. The nuclear industry does not, and I believe, cannot expect to be protected against all risks, all events, at all times. There are business risks which should and must remain a private sector responsibility. We cannot expect to be protected against poor construction management, delays in construction and commercial operation that are within our control, scheduled slippage due to late equipment delivery and the

like. Fortunately we have established tools and techniques, like liquidated damages provisions, to hedge these risks. We also, as Richard said, have construction experience with advanced reactors in the Far East and elsewhere that provides a high level of assurance that industry can build to schedule and to cost.

To conclude, we've worked closely with energy industry specialists in the financial community in the US over the last several years, and will continue to do so. Their counsel helped shape the investment stimulus and investment protection in America's new energy legislation. We know investment capital is available to support the next round of nuclear plant financing in the United States. We even see the large private equity funds now taking positions in the nuclear energy business for the first time. I do not wish to mislead you. Financing the next nuclear plants in America, particularly the first movers, will not be a simple undertaking. These deals will have many moving parts. They will be highly structured but the deals can be done, and rest assured the potential rewards all round are large enough that the deals will be done. Thank you.

Rita Mirwald

Thank you very much Richard, and moving our perspective now to the other side of the fence, to the financial community who are interested in nuclear, looking at it from the outside and looking at it as a potential investment. And to start the first of our three speakers, from this group I'd like to ask William Oulton, FTSE4Good, to kick us off.

William Oulton

Good afternoon everybody, and thank you to the WNA for inviting me to come along and talk with you this afternoon. What I want to do is to touch on four things in the five minutes I have. First of all, I just want to give you some background as to where my perspective comes from because I'm strictly not in the financial camp and I'm not in the corporate camp. So I kind of sit on the fence and have in some ways a unique perspective between the two participants, and I'll explain why that is in a moment.

I'd also like to give you some reflections of some of the trends and debates that I'm seeing in the social responsible investment industry, and particularly relating to the screening practices of global SRI funds. Then I'd like to talk about some of the issues that more mainstream investors are facing. Institutional investors are also getting involved in the responsible investment debate, and I'll give you some reflections on where I see that developing over the next few years. And then finally, I'd like to just make some comments about how certainly publicly listed companies in this sector can do better in terms of engagement with their shareholder and investor managers, or stakeholders. So these are the areas that I'd like to cover.

Just to kick off and a bit of background. I am an advisor to FTSE, and so I'm independent of that company but for the last four years I've been heavily involved in the development of a global social responsible index (SRI) that they run called FTSE4Good. And one of the things that I always try to stress to people is that there is no FTSE for bad. FTSE4Good does not mean that there are only good

companies, or ethical companies, in the index. The good refers to the fact that all the revenue FTSE make is given to the global children's charity, UNICEF. So if you travel on a BA flight you'll see 'Change for Good' and you give your coins in. It's a similar principle. The index is really looking for companies that are perceived to manage the risks in terms of their environmental and social impacts wealth, and that's really what the index is there to do.

Now when this was created in 2001, there was a review to look at what negative screens, or what exclusions the majority of global SRI funds had. And two of those which will be of no surprise to many people here were the miners of uranium and owners and operators of nuclear power plants, and that was the basis for the original exclusions in that index. Now FTSE4Good has become one of the most high profile indices that FTSE runs. It gets more media coverage globally than the FTSE 100 today. So there's a huge appetite in the media for anything to do with responsible investment, corporate social responsibility and so on. And FTSE4Good has become very high profile, both in the corporate sector and the financial sector.

One of the things that we looked at was the issue of exclusions and negative screens. And the governing group that oversees the mechanics of this index was very uncomfortable at having sector exclusions. And the first exclusion that they wished to address was uranium mining and we've been working on that with the help of some of the companies involved in this sector and the WNA over the last 18 months or so. And the intention is to develop a set of corporate responsibility criteria for companies involved in that area which, if they meet those criteria, would be eligible for entry into the index. And next month there'll be a public consultation document, which I encourage you to look out for and comment on, which will say exactly what we will be looking for from companies in that sector regarding uranium mining.

What we also did early this year was to revisit the whole issue of sector exclusions, and to look at what sector exclusion should we start to look at over the next five years or so, in terms of removing them and replacing them with corporate responsibility criteria. And in this we had a response from around 250 investment consultants and corporates from all over the world, and one of the questions we asked was which sector exclusion to remove next. The results of that consultation were that over 75% of the responders said nuclear power should be the next area that we should remove. And we think this was certainly in line with the strong view that the next set of corporate responsibility criteria we should include in the process should be related to more explicit requirements on companies regarding climate change. So the two are undoubtedly linked.

So what we're going to do beginning next year is to start to work with the industry, and again, I'd invite any participants who are interested in that development to look at creating a set of criteria for the nuclear power industry, for the use in this index.

Now is this important, and why should it be of interest? Because FTSE are an independent organisation creating performance measurement benchmarks for the financial services sector globally, it will stimulate a debate within a range of SRI funds as to where they stand on the whole issue of both uranium and nuclear

power sector exclusion. This is already beginning to happen. There's a Scandinavian investment management called Storebrand that quietly removed its nuclear exclusion from its fund at the end of last year. In Australia, BT Financial Group and Glebe Asset Management was posed with the issue of now having significant holdings in Billiton, which through an acquisition are now involved in the uranium mining business. The fact it was a very good performing company meant that they had to have a debate about what they should do about that sector. And they came to the conclusion that they would now allow uranium mining into their SRI and ethical funds.

In the US, KLD, which is a well-respected research organisation, which provides research around corporate responsibility performance of companies, is also beginning to increase the indicators it measures around the nuclear industry. So it's reflecting some of the more 'best in class' approaches that their clients are asking of them.

And at the governance group that the FTSE have for FTSE4Good, there was a debate about what position should the index and FTSE take on this. And there was a long debate about the fact that there are parts of the industry, particularly in terms of decommissioning and clean-up, which responsible investment practices should, in fact, be encouraging and not screening out because they're involved in a nuclear sector. So there's a recognition that more thought needs to be put into this. We'll be tackling that next year.

In terms of mainstream investment perspective, I believe that there is a movement towards mainstream investments looking at risks and opportunities that are being provided by what are being termed 'extra financial factors', and these tend to be environmental, social and corporate governance related. Two years ago you saw very little investment institution, or 'sell side' as we call it, research on any of these issues coming into the market. Today there's a significant amount coming from institutions such as Morgan Stanley, Goldman Sachs, UBS and others. They're building teams to look at these issues, and they're beginning to put out regular focused research on how some of these factors effect their valuation and their perception valuation of some of these companies.

Lastly, just over a week ago, Goldman Sachs put out a 165-page report on the energy sector, looking at environmental, social and government's performance, and it is a weighty tome. But there's one glaring omission, it focused in terms of energy only on oil and gas sector. There is not one mention that I can find in that report of anything to do with nuclear. So there's a challenge for you to ensure that that message doesn't get lost, if you believe that nuclear is a key part of the energy sector.

And, finally, one area to touch on is that investor activism is still increasing. It's being pushed, certainly in the UK and other Northern European countries, by governmental and regulatory pressure. But also we've seen in North America big public institutional investors, such as CalPERS and Calstair, now looking at environmental impacts as key value drivers going forward. So their attention is being focused on some of these areas.

And one of the things that I think it is important to understand from the publicly listed corporate perspective in this sector is the drivers behind investor activism programmes. Some are driven by an ethical, socially responsible investment perspective. Others are driven much more by a risk and opportunity agenda, and so, if you're involved in an investor relations capacity, it's worth doing some work to understand this, and not to waste a lot of time and effort in providing information which might be wasted in the long-term. So I'll leave my comments there.

Rita Mirwald

Thank you William. I'd like to now call on William Vereker, Lehman Brothers, for his comments.

William Vereker

Good afternoon. Now, obviously, attracting investment for nuclear is critical because without investment there will be no new build. And I'd like to reinforce very much one of the comments that one of my co-panellists made, which is that it is a myth that there is no availability of financing for new nuclear build. There are no insurmountable prejudices or points of view within the financial community which would prevent financing taking place. But if there is one message I'd like to leave you all with today, financing and investment is an output of new nuclear build not an input. Starting the process of thinking through new nuclear cannot start with financing, it needs to start with a framework and structure and I am going to talk more about that now. And the financing is very much an output of that because there is enormous liquidity in the financial markets, and they are extremely sophisticated. Every type of financial instrument imaginable would be looked at as potentially applicable for financing of new nuclear.

But the test which all markets will apply is the balance of risk and reward. Is there a framework which is established and which creates the right balance of risk and return for the financing of these plants? And the challenge for the industry is to be able to construct a framework which can be put to the investment community, which allows that investment to take place.

There's no question that the financial community would agree that new nuclear investment is required. It has to come on to the agenda of every major economy because it is the obvious solution to issues around security of supply, around pricing stability, and it also addresses the carbon issues which most of the world's economies and governments are focused on. And so the case is incontrovertible and the markets would not disagree that it needs to happen.

I'd therefore like to try and put three points to you, all of which, I think, really get to the heart of this issue, and raise three suggestions as to how the industry needs to think about this.

The first one is to construct a risk management package around the investment which addresses the key issues. The key issue being construction. There needs to be an appropriate transfer of risk to the contractor which allows the key

construction risks of cost and time and technology to be taken by the party best suited to take it, which is the contractor, not the financial markets. Operating risks need to be addressed by proven operators, who are willing to stand behind the risks of operating these plants. An operator needs to be ready to take those risks. And the price risk needs to be largely taken through the provision of off-take contracts with the buyers, the ultimate end-users of the power. The financial community is broadly comfortable with energy markets but the framework, or nuclear power, will exist within a largely regulated industry. There is uncertainty. And the financial markets, or financial providers, have lost very, very significant amounts of money, certainly, in the UK and the US, through providing capital, and there being price instability which has resulted in them losing their money. That is not a nuclear issue, that is just a market issue and therefore off-take is required. So number one, a risk management framework needs to be built in place around the construction of nuclear which transfers risk to the pockets best able to take it.

Secondly, there needs to be a recognition that nuclear presents different challenges to the construction of ordinary plant. And those challenges really revolve around the reprocessing and decommissioning of these plants, firstly, and then secondly, around the initial permissions and regulations around building new plant. And those are both issues which don't sit easily with any evident and obvious pocket, and a framework needs to be provided within the context of the overall risk management framework which addresses those two issues. Now I'll come on to that in a second and suggest how it can be handled.

The third point I'd like to leave you with is one of leadership. The issue in my observation around nuclear is that it becomes too much of a temptation for it to become a talking shop. Everybody can agree that nuclear is required. Everybody can agree that technology's moved on. Everybody can agree it's a solution to facing increasing energy needs in the world's economies. But the bridge between talking and agreeing and doing and building is enormous, and that bridge can either be provided by the industry or by the industry working together in a consortium of those interest parties - the contractors, the off-takers, the operators - to put together solutions which can then be financed by the markets and address the risks I talked about. But that alone, in my view, is not enough.

Ultimately the leadership has to come from government, it has to come from ministers, and it has to come from the bureaucrats who are thinking about long-term energy supply in the nations' economies. If leadership does not come from government and there is no clear signal that investment is wanted in new nuclear build, then the default is going to continue to be building fossil plants. It's going to continue to build coal and gas plant because it's easier. And the industry, including the major utilities, will find them easier to build than new nuclear because of the issues around reprocessing and permitting and time, and so on.

And therefore, government needs to take a point of view about whether they want to see nuclear within their country, number one, and number two, they need to provide the support around the permitting and approvals process, to get these plants ready to a point where holes can be dug in the ground. And they also ultimately will need to stand behind the reprocessing risk. They need to stand

behind the solution as to how waste is disposed of, and who takes some other risks surrounding waste management.

And so, in conclusion, I put it to you that the way that the output, the framework, can be put to the market which will then finance these plant, is leadership. Leadership must be provided by a combination of government and the industry to address the risks which I've talked about, and when that is accomplished there will be a very wide range of financing which will be available for these plants. And the financial community will be ready to work with the industry to accomplish that. Thanks very much.

Rita Mirwald

Thank you very much, and moving now to our third speaker from the financial community, Roger Ewart-Smith from Rothschilds.

Roger Ewart-Smith

Thank you very much, and I'd like to thank the World Nuclear Association for giving me the opportunity to talk this afternoon.

As William said, I don't believe that there is any fundamental anti-nuclear prejudice in the financial markets. When you talk to people in the industry you sometimes get that sense and, in fact, we were introduced as a sort of them 'us and them'. It's not that. We -- the financial markets -- are nothing if not financially motivated, and when investors look at opportunities they are very interested in investing in nuclear if they believe it can demonstrate the right risk-return balance. And if it can demonstrate a better risk-return balance than other investments, they would be only too delighted to put their money there. And to the extent they're not putting their money there, that is either because the deal has been incorrectly presented or incorrectly structured, or more fundamentally, the risk-return balance simply is not able to satisfy investors.

Before getting on to risk, I'd just like to say something about return. We all know that the characteristic of a new nuclear power plant is that it is extremely capital intensive, and has generally a long payback compared with other investments. This isn't unique as an earlier speaker pointed out. There are plenty of other infrastructure projects which have been funded, not all of them are great examples if you look at the Channel Tunnel, but there we go. But what that does mean is that the discount rate that you apply has a critical effect on the power price and you need to make the thing economic. And I know earlier today there were various graphs saying this is what we believe new nuclear can be built at. I don't know the details about them and I wouldn't question the figures, but all I would emphasise is the one critical assumption -- the discount rate. And without understanding that discount rate it's not really possible to take a view on whether the figure which comes out in terms of an all-in power price is or is not realistic. And in terms of what the right discount rate is, well I mean, I think we could talk about that for days but fundamentally it comes back to risk. And so that's what I'd like to focus on a bit more.

Prior speakers have already talked about the issues associated with planning and the issues associated with spent fuel. They are two areas, which investors will not take the risk on, and fundamentally, they need to be addressed from some other quarter, and that other quarter is going to have to be government led.

If you look at other risks associated with nuclear power plant - the costs of building it, the costs of operating it, the reliability of operation, I believe that the nuclear industry - whether it is the owner or whether it is a construction contractor - should be able to deliver on those risks. And frankly, if they can't deliver on those risks, then the nuclear industry shouldn't survive, and I'm sure it can and indeed it is doing so, and has done so in the past. So I don't see those as necessarily being a major impediment to getting investment for new projects.

Where I think there is a real difficulty is when you're actually looking at the price at which to sell the power coming out of a nuclear power station. Now I listened to some of the speeches earlier today, and one of the speakers made the observation that the days of a \$20 oil price are long gone. I don't necessarily disagree with that. I'm not someone who thinks we're going to be back at \$15 in two years' time, but I just question whether we can be absolutely certain that is the case.

If you go and look at what oil researchers are writing, well, firstly most of them are not sufficiently brave to forecast out after three years. So they'll go to 2008 and then they'll say 'Gosh, it's all a bit hard really'. And those who do go out beyond 2008 and have a long-term oil price, well, the highest we saw was \$40, the lowest we saw was \$25, and that's in the current environment. And that's a pretty big range, and I think the relative competitiveness of nuclear power versus other sources of energy is going to look pretty different at \$25 versus \$40. Clearly, there's a sort of logical step there which I haven't made which is linking oil prices to other fossil fuel prices, and you even have to ask how's that correlation going to work in future?

Another point I'd make is that if you'd asked those same analysts two years ago what the oil price would be today, you would've got a range of answers, but the average would have been at just over \$20. So I understand why a lot of people in this room may believe that there has been a seismic shift in energy markets, and fossil fuel prices are going to be expensive in the foreseeable future, and consequently nuclear looks very attractive based on fundamental economics.

But I'm not sure that that is a bankable proposition, and if you're the chief executive of a power company and you're asking yourself the question 'Am I going to build a new gas-fired plant or a new nuclear plant?', you may have a view that fossil fuel prices are going to stay high, and maybe you think that actually, on economics, nuclear looks better. But it's awfully tempting to say 'Well, if I invest in gas, at least I know that the costs of generation are going to match the electricity price in a competitive market'. So it is a far less risky alternative and for chief executives and that's often a pretty attractive avenue to take.

Similarly, if you're a lending officer in a bank, are you really going to be able to sit in front of your credit committee, look them in the eye, and say there is no

prospect that the average price of electricity is not going to be at a level where this new project is going to repay its debt? It's very difficult, particularly given the long lead period for construction, and hence before the thing even sells any power, and secondly, the long payback period on this type of large investment.

Now this may all seem like I'm a real bear and I hasten to add that I'm not a real bear on new nuclear. But I think there is a real issue in terms of the power price that new nuclear plant can achieve. Now one of the earlier speakers said that in the US he believed that we were going to see both new merchant plant, i.e. power plants which are selling into the market and getting a market price, and new nuclear stations being built in the regulated sector, i.e. where the economic arrangements allow them to pass through the costs of the plant to consumers. That may well be the case but all I'd say that, as a banker, I think you start with the regulated plant before you look at the merchant plant because life is going to be a whole lot easier.

A couple of other observations. Firstly, as a number of speakers, I'm sure, have said today, we're not just talking about economics, the economic attractiveness of new nuclear power plant. We're talking about all sorts of other benefits. A lot of those benefits are benefits for the good of a country as a whole. And consequently, as William earlier said, it is very much for governments to lead, and that leadership can take the form of various incentives, such have been introduced in the US. Or it can simply be getting rid of some of the risks by setting up an appropriate regulatory structure, and one very simple example is allowing new nuclear power stations to be built in a regulated fashion, i.e. where the power is sold at a regulated price rather than having to compete in a merchant market.

Our first speaker talked about Finland. That provides another interesting way to get round the fundamental revenue risk associated with new nuclear power plant. It's unclear that customers are particularly excited about the prospect of taking the risk on volatile fossil fuel prices over the long-term. And they can be convinced to enter into the long-term power purchase commitments, to take that risk away from the power project and put it in the hands of the customer who, as I say, may be quite grateful to have a fixed price.

And I think the final point is just to wait and see. While there may be uncertainty now about what the future holds in terms of fossil fuel prices and power prices, maybe that won't be quite so uncertain in a few years time. And perhaps more importantly, maybe there'll be a lot more certainty on the role that various carbon abatement measures have. I mean today we obviously have the emissions trading scheme in Europe, but that's only been going for six months, and clearly there's significant uncertainty about how that may be changed over time. And it's quite difficult on that basis for any investor to make a major investment until such time, when the rules of the game are rather clearer, and the price path for carbon has been better established.

Rita Mirwald

Thank you very much, Roger. That, of course, concludes our opening remarks from our panellists and now I would like to encourage some of you who've been

holding on to those questions as they've come through your mind to bring them forward now.

Kevin Alldred

Kevin Alldred from Alldred Associates LLC. A question for William Vereker. You said that leadership from governments is a requirement in order to see a viable financing environment for new nuclear power. But in the construction and amortisation period of a nuclear plant governments can change maybe ten or even a dozen times. Is that level of change and that level of uncertainty truly acceptable to the financial community? And if not, what sort of criteria would you establish in order to see stable leadership from governments, and expect it to remain stable over the period of the investment and its amortisation?

William Vereker

I think from the market's perspective that the key question is how the framework is set up in the first place. Everybody would accept that governments and policies change, and so on, but in the establishment of the framework in the first place, both the permitting and initial approval process, needs to be encouraged and facilitated by government. And that obviously is then over once the plant is built. And then secondly, a framework for the reprocessing of waste and the risks associated with that needs to be put into place. And once that is in place, there needs to be the necessary assurances that can't be changed. Or if it is changed, then the appropriate financial compensation is going to be available to the market.

Kevin Alldred

That was really the point. The German experience, I think, shows that there are no incontrovertible assurances that can be given over the lifetime of a nuclear power programme. So if you're saying you want to see an assurance of how this framework will be structured on both back-end management and on the perspective of nuclear power itself, how do you attain -- obtain that when governments can change, and could legislate, for example, political lifetime limits on the power units?

William Vereker

Well there will need to be contractual arrangements in place that will result in compensation if they are changed and there is financial loss which is incurred as a result of it. And that will be a requirement.

Rita Mirwald

I had a question. I think both of the last two speakers have commented on the need for political leadership and the government to set the framework, which I think most of us would agree with. And previously Richard Myers pointed out the US example where I think we see playing out in real time, the positive effect of just that. Richard, could I ask you? What are the reasons? What compelled the US government to move to construct this policy framework that is so

promising for new build? What lessons can be learned by other countries in going to school on that, and getting our respective governments to do the same?

Dr Richard Myers

I think a confluence of many factors and many influences. I think growing concerns about environmental requirements and the cost overhang on both new and existing fossil-fired generation as a result, not only of escalating environmental requirements on the conventional pollutants like sulphur dioxide and nitrogen oxide, but the prospect of some form of carbon control. So I think the environmental issues were a major imperative. There is also the volatility that we're seeing, particularly in natural gas markets, in the United States. Gas prices last week closed at the levels above \$10 a million BTU. I certainly don't expect to see them stay there. I think that the long-term equilibrium price is probably somewhere in the \$4 to \$5 range. But the volatility that you experience as you cycle between \$4 and \$10 is incredibly punishing to electricity consumers, so I think that was a consideration.

And then I think there always has been in the United States, and particularly in the United States Congress, and certainly in the Bush administration, a recognition that diversity of fuels and technologies is really the bedrock strength of any electric supply system, and that nuclear needs to be part of that fuel and technology mix, and we put all of that together and it was a very powerful policy combination. It really drove the policy.

Rita Mirwald

Thank you Richard.

David Lowry

My name is David Lowry. I'm a researcher and writer on nuclear issues. I wanted to raise a question arising from a conference that the IAEA held in London six months ago across town, on nuclear terrorism and the security of nuclear materials. I want to ask a question of those in the financial community as to how do you evaluate the hazard posed from either a terrorist nuclear attack on a nuclear plant, or the stealing of nuclear materials, in the period between consent being given to construct a plant and its completion? In terms of the effect it might have, as happened in the case of the Chernobyl nuclear accident where many plants were halted or delayed or cancelled, even though they had nothing in common with the design at Chernobyl but they happened to be nuclear plants, and the confidence that has drained from the industry.

Now I wonder how the financial community is looking at investment risk, take that into account?

Roger Ewart-Smith

I've got the short straw again. Look, I mean firstly there is no any easy answer to that and I suppose this is where I would say there's a divide. Well, it's you to answer that to satisfy the financial community. But I mean, in reality it's a

question of making sure that people have confidence fundamentally, as they'll need anyway, that these facilities are secure and adequately protected, and if the worse does happen, that there is insurance in place. But actually, to some extent, it slightly comes back to the first question which is how can you cope with changes in government decisions.

So government says we want new nuclear power stations. Something happens, whether it is an instance of the type you mentioned, say, some kind of terrorist activity or merely a safety problem at another site, and they suddenly say 'Well, we've changed our mind. This station maybe half built and actually we don't want you to carry on with it'. That is not a risk that the private sector can easily take, and they need to make sure that either the contractual framework has appropriate protections in place to cover them in those circumstances. Or alternatively, they have to have sufficient confidence in the government that it is not going to be the sort of entity -- organisation which is going to - maybe it's unfair to say - lose its nerve - it entirely depends on the nature of the event. It may be the right decision.

Rita Mirwald

William, you want to add to that?

William Vereker

Yes, I wouldn't add much more. I mean it's clearly a difficult question to answer. It is one that a lot of thought would go into in the detailed terms of a financing, and there would need to be a combination of support from the various parties involved, contractors and operators and insurance. And that would be the way the markets would think about it.

Martin Quick

My name's Martin Quick from Power Resources in Denver. I've got two questions. First one I'd like to ask of Mr Mokka. We've heard this morning from Skip Bowman and in more detail this afternoon from Mr Myers, about the incentives for nuclear build contained in the recent energy bill. There's been an investment stimulus and an investment protection for the first few plants that are going to be built, and Mr Myers explained that. Assuming the waste disposal challenge is resolved in various countries, is this the type of legislation do you think, a good template for yourselves and Finland, and other European countries to follow? Would it give the necessary incentives for new builds to take place?

I've got another question if I could for Mr. Oulton. It appears that the uranium miners and the nuclear plant operators have been put in the position of having been declared guilty. They then need to prove their innocence. I've never liked that kind of situation, but are the oil and gas companies viewed in the same way? And in fact, does the globally responsible funds contain carbon producers?

Rauno Mokka

I'm not sure I understand that question but, of course, it's beneficial to have a very nice infrastructure and the spent fuel repository at the same site. It's also, of course, a factor. But I think it's not an inevitable thing to have a plant and a repository at the same place. But it can be handled very nicely like the Swedes do it.

Rita Mirwald

Okay, thank you, and if we move to William.

William Oulton

Yes, thank you for your question. I agree with the sentiment. It's not about guilt and it's not about proving any particular sort of way of being ethical, responsible, good. Really what the work that we are trying to do at FTSE is to look at sectors where they have the highest risk and the highest impact, and the principle is that the highest requirement is reflected in those sectors. So if you look at the oil and gas sector then there are quite stringent requirements on them, certainly for this particular index, in a range of areas, which you don't find in the software industry. So it is trying to reflect the unique characteristics in many ways of particular industries.

Nobody is trying to prove that they are in any way whiter than white. It really is about trying to identify where the unique risk features are and then having a set of management system-based criteria that gives us a sense that these companies understand those risks and are managing them to mitigate those risks. So, this is the approach.

Rita Mirwald

Thank you, William. Anymore questions from the floor? No question from the floor, no questions from the panellists to each other.

Good news and bad news: The investment community is ready to invest, there is money out there. We, in the nuclear industry, have to manage the risks and, in particular, we have to get the policy framework in place. Both are doable. I think we have our insight into how to more successfully attract investments for the new build in the future.

Thank you very much for attending and thanks to the panellists, for such an interesting discussion.