COMMISSIONER: Good morning. The topic for this morning's discussion is financing and investment in nuclear infrastructure and I welcome from the UK, Mr Mark Higson. Thank you very much for joining us on a Sunday night. Counsel.

MR HIGSON: Pleasure to be here. Thank you.

MR JACOBI: The Commission has heard in the course of evidence thus far, of the long delivery times associated with the planning and delivery of nuclear projects. It is also aware of delays associated with delivery of recent nuclear power plant new build projects in France, the United States and Finland. Given the substantial capital investments necessary for the delivery of some types of plants, or other nuclear facilities, the Commission must consider the conditions in which private investors might be willing to invest in those projects in order to fully understand their feasibility and viability in the South Australian context. They include issues which apply generally to any long-term infrastructure project, including the ability to manage risks associated with project delivery and budget but to considerations peculiar to energy markets in which any potential nuclear power plan would operate. The Commission has already heard evidence about the nature of Australia's liberalised energy market and the effect of past interventions in that market at the point of generation. It has also heard of the challenges associated with development of energy generation projects in Australia and the challenges associated with nuclear projects overseas and the response of those implementing those projects to cost over runs in earlier projects.

To this end, the Commission in the course of the public sessions this morning and later this week will address the kinds of models for market interventions that have been used elsewhere in the world in order to understand whether they are relevant to Australian conditions. It will also discuss the source of private capital in Australia and internationally for long-term investments and the factors that affect the willingness of those investors to commit funds to any particular project. Mr Mark Higson is an energy specialist with extensive experience working with the UK government on energy market reform privatisations, economic regulation and asset management. Prior to becoming an independent consultant Mr Higson was the CEO of the UK Office for Nuclear Development where his work focussed on facilitating private investment in nuclear new build by removing potential barriers. Mr Higson has held a number of senior leadership positions in government agencies in the UK, including the Head of Nuclear for the Department of Energy and Climate Change and the Director of Postal Services for the Department of Trade and Industry. He holds a first class Honours degree in Chemistry from Cambridge University and the Commission calls Mr Mark Higson.

COMMISSIONER: Mr Higson, we might start with an understanding of what

has happened in terms of key market developments since the 1990s, so that we can then place in context the rest of our questions. Perhaps you could give us a brief précis of that?

MR HIGSON: By all means. Prior to the 1990s the electricity system was a nationalised monopoly but in 1990 the industry was broken up and privatised. The aim was to introduce competition progressively right down to competition in the retail market. That system has, I think operated to keep electricity prices relatively low, it has ensured reliability of supply and worked effectively for about 20 years. But things have changed. The most important thing that has changed is the setting of targets for carbon emission reduction and initially it was thought that the market in the United Kingdom could actually work to deliver low carbon generation for the future. But the experience of the last 10 years is very much that that isn't going to be the case. I guess there are two problems behind that. First of all, the market system would only operate if there is a carbon price and the intention was to set a carbon price in Europe in a trading system. That hasn't worked; the carbon price has been much too low to encourage any investment. And then the second change that was made, United Kingdom, within Europe, agreed very demanding targets for the introduction of renewable electricity and by 2010 say, it was pretty clear that the market as then constituted was not going to deliver the scale of renewables required at the pace that was going to be required.

So carbon reduction, that has been the driver of policy for the last 10 years and during that period I guess there has been a tension between those who favour market based solutions relying on competition, and those who prefer a more interventionist directed approach, such as setting targets or renewables and that debate carries on today. I was quite interested to see there was a statement by the Secretary of State for Energy and Climate Change, Amber Rudd very recently which set out her intention very firmly to steer back to a more market oriented system. There is still quite a long way to go. There has been a whole series of interventions which have effectively brought the competitive market for new generation to an end in Britain.

MR JACOBI: Mr Higson, I was hoping if we could pick up on those interventions. Australia has got its own unique set of interventions and we are just interested to understand what the interventions are in the UK before we get to the issue of CFDs.

MR HIGSON: Well, there have been a whole series of interventions; partly setting off a chain of unintended effects. So you have one intervention in a complex market and that often means that there are unintended effects which require further interventions to put right and in turn those further interventions create yet more unintended impacts. If it would be helpful, I could run through the principle changes that - - -

COMMISSIONER: Yes.

MR HIGSON: - - - have been over the period. I can probably start with the climate change levy. That is a carbon tax effectively. Renewable – basically a tax on non-domestic electricity consumption and renewables were exempt. So that gave a relatively modest boost to the economics of renewables. That was not really effective to bring forward investment but those who were bringing forward renewables projects were actually relying on this increase to their profitability which meant that when that exemption was terminated earlier this year, that caused a great deal of difficulty and further undermined investor confidence.

MR JACOBI: Sorry, could I just interrupt you there Mr Higson. When it was terminated, did it operate such that it was terminated prospectively? That is, with respect to only new projects that was brought on board, or did it apply such that it interfered with projects that had already been brought on stream?

MR HIGSON: Interesting question, yes. It interfered with the economics of projects which were already up and running. So it was a change in the tax regime which effectively, to a relatively modest extent, but undermines the economics of renewable projects that had already gone ahead. So pretty controversial as you would expect. Next important thing I guess is 2002 the renewables obligation. That was a requirement for electricity suppliers actually to source a specific proportion of their electricity from renewables. My assessment would be that has been a successful policy in stimulating investment in renewables, it's also quite a flexible policy in that as ambitions for carbon emission reduction grow, it's a policy which can be adapted to that growing need. However, it has had a lot of criticism that it's overly complicated and expensive.

I have already mentioned the European emissions trading system, that started in 2005. I think I would assess that as a complete failure in bringing forward investment in low carbon technologies. For a start the price is far too low, that is really a reflection of the politics in setting the overall number of (indistinct) that are in the market. And then the European Commission across Europe had gone for setting pretty demanding targets for renewables. That means that some of the emission reduction targets are being met by renewables and therefore there is less work for the price to do, if I may put it that way and that further depresses the price. So I guess it has totally failed to create investor confidence. No one would invest in a nuclear power station or indeed anything else - - -

MR JACOBI: Sorry. Could I just - - -

MR HIGSON: - - - on the basis of the carbon price alone.

MR JACOBI: Yes. Could I interrupt you there and just ask about that interaction between the targets and the price? And I am just interested to understand the extent to which the difficulties with the mechanism or the difficulty arises because of the combination of having targets with a carbon price and with other forms of intervention?

MR HIGSON: Well, first of all I will just make the point that the main driver of the low price has been an excessive number of permits. So we need to, as it were, put that to one side. That is not a reason in principle why a carbon trading system can't work, it's just the politics behind it in Europe meant that the – too much generosity. But really there are two contradictor policies here. One is to rely on the market and a price signal and the other is to mandate targets and the two simply don't fit together. If you mandate targets you are essentially shoe horning renewables in to the market irrespective of cost and not surprisingly, given economics, that reduces the clearing price. So you can't really have both.

COMMISSIONER: Yes.

MR HIGSON: Shall I go on with - - -

MR JACOBI: Yes.

MR HIGSON: - - - one or two of - - -

MR JACOBI: Yes, thank you.

MR HIGSON: I'm conscious of time but very briefly, we already mentioned it now, the European target, this was the ones agreement reached in 2007 enacted in renewables energy directive in 2009 which is a 20 per cent of energy, that means energy rather than just electricity, should be met from renewables which was a very, very demanding target to be reached by 2020. We had other interventions, feed in tariffs for small-scale renewables. Again, my assessment will be that they have been effective in bringing forward renewables but again at the risk of excessive cost and we also have a problem which is that the cost of small-scale renewables, solar particularly, has reduced. And that means that if you have got a feed in tariff and reducing cost, there is then a boom in the deployment of that technology and that causes budgets to be over spent, so the feed in tariff is then reduced. And the industry goes from feast to famine until costs are further reduced in which case we then set off the next boom. So it has been a bit of a rollercoaster ride which is difficult for the companies who are involved in installing small-scale renewables.

We had direct public sector investment in technologies, most notably a promise one billion pounds for carbon capture and storage. Again, this is something that has not been so far successful, there has been a lot of delays, potential investors have withdrawn and last week the government announced that since the one billion pounds has not actually been spent, it was now going to be withdrawn. So that leaves a huge question mark over the two projects which were potentially going to go forward. And then we had a whole variety of schemes aimed at incentivising energy efficiency in the – particular in domestic sector (indistinct) industrial sectors as well. We had something called the – well, indeed still have something called the energy company obligation which is a requirement on electricity suppliers to delivery energy efficiency measures. I think that is successful in stimulating expenditure. Whether that expenditure was well spent and value for money is controversial in Britain.

We also had something called the green deal which was intended to allow people to borrow money for energy efficiency improvements in their homes and then to repay the borrowings by linking it up with the electricity bill, which should therefore be reduced by more hopefully than the repayments of the loan. That has been a significant failure with an extremely limited take up. So a whole series of interventions which have led to quite, I think, might be described as confusion in the market as to what is actually coming next. We ought to, I guess, turn on to contracts for difference and the capacity market but those I think more or less complete the whole canopy of interventions that we have had over the last few years.

MR JACOBI: Mr Higson, could I just pick up, you spoke of there being a sequence of knock on effects, so I am just interested to understand – we have gone through a series of policies, perhaps you could walk us through what you think the – what the knock on effects of one policy to another policy has been?

MR HIGSON: Well, perhaps start with the very demanding targets for renewable generation. So this is shovelling in to the market renewable generation, quite a successful policy in terms of actually delivering a significant increase in renewables but that means that other forms of low carbon generation, particularly nuclear, were not able to compete. If you have got a target for renewables, irrespective of cost, the obviously nuclear can't compete on a level playing field. So the impact, I think not foreseen at the time, of agreeing to demanding targets, was that nuclear was not going to be able to compete. So in order to enable it to compete, the next intervention was contracts for difference. So contracts for difference, I think yet to be proven because we haven't built any nuclear power stations but progress is being made towards that end, so that the policy has brought forward potential investment in nuclear. But the effect of bringing forward nuclear, which is inflexible, coupled with renewables which are intermittent, has a knock on effect of undermining the economics of gas-fired generation.

So gas fired power stations are not going to be built and that in turn led on to another intervention, setting up of the capacity mechanism in order to ensure that the gas fired power stations were going to continue to be built, continue to be available, to make sure that we have actually got adequate capacity. So it is one intervention leads on to another. I think one might speculate that the combination of subsidising renewables, nuclear and now through the capacity mechanism gas, what is left? And I suspect what is left is demand side management, so all these interventions are going to reduce the price signals appropriate for demand side management and if we want to encourage that, we shall have to intervene even further to deal with that. The general point I would make is that electricity supply is a complex system, so if you intervene in one part of it, you have to have regard to what is going on elsewhere n that complex system.

I think that s a lesson that we have learnt to our cost in Britain but is very difficult to foresee what the knock on effects are actually going to be, of any one intervention in this complex system.

MR JACOBI: Can I just pick up, we have read the consultation document, "Electricity Market Reform" that was released in 2010 and I am just perhaps – whether you can offer us a brief précis of what was the dilemma that the UK was facing as it stood when it released that particular consultation paper in 2010?

MR HIGSON: The main issue was the difficulty of attracting investment in any new generation capacity which became very clear following the financial crisis of 2008. So at that point, I think it crystallised the government's view that the market itself was not going to be able to deliver the new generating capacity that was going to be required, as a result of the inadequacy of pricing signals both for carbon but also for bringing on future capacity. This is obviously against a background of the importance of bringing forward low carbon generation and the difficulty of bringing forward low carbon generation is that most forms of low carbon generation are high capital costs, low running cost. And that requires confidence on behalf of investors that they will actually be able to recoup their investment. And the market, as it was in 2010, was clearly not providing that confidence. So that led the government on to a conclusion that there needed to be a radical rethink in how the market was going to go forward and I think, borrowing a phrase if I may, posting what they call the energy trilemma, trying to get three things right. The three things being affordability, security of supply and low carbon. And it is very easy to get two of those right but getting all three of them right at the same time is actually quite difficult and requires a complex liberal trade off of different objectives.

MR JACOBI: We have read in the White Paper that there were a series of options that were being contemplated, which I think ultimately resulted in the CFDs and I am just interested to understand what those other options were and I guess in – in broad terms, why they were discarded in favour of CFDs?

MR HIGSON: Oka. Happy to run through those. They are actually set out in the consultation document and first one on the list is carbon price support. This is basically if you are not satisfied that the carbon price being generated in the European trading system, is the right price and are concerned that it's too low, then an obvious policy intervention is to effectively set a floor price. So that is what they have actually done – has been done in Britain but it is not effective in encouraging investor confidence. Again, we come back to renewables and nuclear being initial high capital cost and then subsequently low running costs. You do need that confidence that the regime in which you invest is going to remain stable to allow you to recoup your investment. And carbon price support by political intervention is seen as being capable of being removed at whim in the future and not providing that confidence. So that was considered as a – as an option on its own. But on its own, not enough.

The next one is basically to take the renewables obligation which was operating in Britain and extend that to make it a low carbon obligation. And the advantages of that was that it would leave the decision about which forms of low carbon generation to bring forward in the hands of supply companies. So it would have preserved a greater element of the market system.

I think, as I mentioned before, the renewables obligation has been criticised for being too complicated to administer and its effectiveness has been pretty controversial. So I'm not sure I necessarily personally agree with this, but the government concluded following the consultation that a low carbon obligation would be inefficient and expensive, and also it does leave some market risks with investors and judged to be less cost effective an alternative by the government.

A premium feed-in tariff. That means just a mark-up on the wholesale electricity price and that's something that has been applied in Europe quite widely, specifically in Spain for renewables. It does leave investors exposed to the risks of price volatility going forward in the future and was thought to be unattractive for that reason.

The next on the list is a fixed feed-in tariff, again quite commonly applied within Europe, in Germany for renewables, for example. This is simply that generators receive a fixed unit price of electriciy they generate, and in some ways it's fairly similar to the contract for difference, which I'll come onto in a moment, but one of the features of this which caused the government in Britain to reject it is that there is no incentive on the generator to sell on the market at

the best possible price. They get the fixed feed-in regardless.

Another option is the regulated asset base, again quite commonly used around the world, rejected by the government because it didn't provide an incentive for the generator to minimise generation costs and it therefore particularly passes the risk of cost overruns to the customer. Obviously it depends on how it's applied, but rejected on those grounds. I would say in its favour is that you should be able to get a reduced cost of capital reflecting the reduced level of risk, but that was not the conclusion of government in Britain.

The next one on my list, slightly oddly, isn't actually in a consultation document at all, but it has actually been considered within government, which is simply direct procurement, and again, that's something which is done fairly widely in Europe and around the world. In other words, the government actually procures a power station of whatever kind, and there's a certain irony in this. In practice, procurement is not very different from the negotiation of individual contracts for difference on a one-on-one basis.

I turn to the option that has actually been adopted, which is contracts for difference. So this is a long-term contract with a generator and I think the clue is in the name. The importance of this is actually a contract, and contract law in Britain - well, not just any in Britain, I guess, but contract law is pretty strong. Contract for difference basically means that the generator needs to sell electricity in the market, but if the market price that's assessed by an appropriate indicator is lower than the agreed price, which is called the strike price, then the generator receives a top-up difference, and equally, if the market price made by the indicator is above the contract for difference price, the strike price, then the generator pays the difference himself.

The pluses and minuses are to the account of electricity customers generally. So there's a mechanism to collect the money from customers and pass it to generators. The perceived advantage of this approach as opposed to a fixed feedin tariff was that the generator remains incentivised on a short-term basis to sell electricity at the best possible price. If he sells it negatively below the indicator and the wholesale market, then he will not get the top-up to the lower price that he actually achieves. So there's an element of risk there, but also an incentive to sell at the best possible price.

MR JACOBI: You mentioned the notion of there being one-on-one arrangements for CFDs. That is, I assume, a negotiation between government and the generator. What are the alternatives in terms of how CFDs might be struck?

MR HIGSON: In Britain (indistinct) is the one-on-one negotiation that took place most notably for the nuclear power station at Hinkley has really been

exceptional and transitional, and the intention is to move to a position initially where there are competitions between potential generators with the same technology, say, and then ultimately to move to a position where contracts for difference are competed directly across technologies. So although the negotiation of the Hinkley contract was, as I indicated earlier, fairly similar to direct procurement, it is seen very much as a step on the way to a much more competitive system where potential generators are competing and the generator that has the technology which is able to achieve the lowest price, over time will dominate future deployment of a low carbon generator.

MR JACOBI: Are there perceived to be any difficulties with having an auction for CFDs given the different life spans between different generating assets?

MR HIGSON: Well, I think it's going to be very difficult to have competition between technologies, difficult but not impossible. That's certainly the long-term aim. It is notable that offshore wind generation has contrasted - they had already been an auction, by the way, for offshore wind in Britain, and I can go to that, but that led to contracts for differences being awarded for 15 years and Hinkley is 35 years, and that reflects the difference in lifetime, as you point out, in the technologies. So there are even further technologies like tidal lagoons which may have a lifetime of 120 years. So it would be difficult to have a competition which is technology neutral.

MR JACOBI: Can I just pick up this issue of price, and perhaps we can first deal with what the outcome of the auctions for the CFDs, and then I want to come to deal with the price associated with the one-on-one.

MR HIGSON: We're talking about the negotiations for Hinkley. The agreed price was £92.50 per megawatt hour, reducing to £89.50 if the second nuclear power station is built by the generators, who in this case are led by India. So that was a one-on-one negotiation. The current wholesale price of electricity is around about £50, so significantly higher than that, but I would say that the current wholesale price is not sufficiently high to remunerate any form of new generation, which is why of course we've gone down the road of a capacity mechanism.

MR JACOBI: I was interested in picking up on the challenges in fixing a price, bearing in mind that one is looking at fixing that price for a 35-year period, and the sorts of challenges that one faces as a policymaker in identifying what an appropriate price should be.

MR HIGSON: Yes. There are really two approaches to this which need to be used, I guess in combination: one is bottom-up, detailed negotiation relating to how much would it actually cost to build a nuclear power station, what is an

appropriate return for the investors, and that leads to how much it costs and that also leads to – and how – over what period is it necessary actually to have that certainty and then there was a top down view about is the price that emerges bottom up, affordable. And that requires the very difficult position on behalf of government as to whether something running forward at £92.50 for 35 years is value for money compared with the alternative? And assessing the alternative is difficult. The most obvious alternative and the one that was used to review whether Hinkley was value for money and affordable was gas-fired CCGC generation together with a deemed cost of carbon. So that necessarily means taking a view about likely gas prices for the next 35 years and also a view on likely carbon prices, either set in a market like the European trading system, or a social cost of carbon measured in some other form. So both of those are exceptionally difficult. Anyone can have a view about them I guess but the answer is not to say we are not going to take a view because if we don't take a view and don't enter in to any long term projects, you are necessarily taking a view that in the long term, carbon prices and energy prices are going to be low. And although you may not have taken that view explicitly, by declining to sign up to long-term contracts, you are taking it implicitly.

MR JACOBI: Can I just pick up, what happens beyond the 35-year period? We know that nuclear plants have been licensed to operate for 60 and some – 60 years and sometimes longer, what happens in the window outside that? Is the nuclear simply left to essentially sell in to the market?

MR HIGSON: That is correct, yes. Effectively the nuclear power station becomes a merchant generator; it will sell its electricity in whatever shape or form it can. I mean interestingly, at that time we would expect the marginal cost of generating electricity from nuclear power stations to be low. Low for up to 50, 60 years, so obviously a nuclear power station has value but it has value 35 years out. So by the time you have discounted that, the appropriate discount rate, it's relatively low.

MR JACOBI: And in terms of the funding of the CFD itself, and that is who pays for the – this – the margin if the price is lower, how is that distributed amongst – is that distributed amongst the taxpayers or amongst electricity users?

MR HIGSON: It is charged on electricity prices to – at the moment to all customers. So that is both large-scale industrial users of electricity but also domestic customers.

MR JACOBI: Can I come to the auction, and the outcomes of the auction associated with offshore wind that I think you mentioned?

MR HIGSON: Yes. There was an auction for offshore wind projects and I

think administration of potentially the power of competition. Entering in to the competition, the government and many commentators were expecting the auction price to conclude at perhaps around 145 pounds per megawatt hour. That is obviously more expensive than 92.50 for Hinkley and considerably more than the current wholesale price. The actual auction process led to a couple of projects for offshore wind to reach a strike price of 119 pounds per megawatt hour. So the government drew the conclusion from that, that the mere fact of being able to have competition, potentially greater supply than was actually chosen in the auction, as a way of really reducing prices.

MR JACOBI: I am just interested in your view as to whether you consider – or whether it is viewed that the CFD scheme has been successful?

MR HIGSON: Early days, early, early days. I think it has been successful in its first auction trial of offshore wind, has reduced costs. There was also a separate simultaneous auction for other forms of renewables and I think again, some success can be claimed for that. I think also further success would be the very significant continued interest in nuclear power in Britain. It is – not only is nuclear power expensive up front, capital costs up front for it, the high end operating costs are low, but actually preparing to build a nuclear power station involves quite a lot of initial costs and I understand that EDF (indistinct) have spent two billion pounds so far in getting ready to build at Hinkley. So I think you would say that a company's willingness to invest a very large sum of money demonstrates significant investor confidence and I would say that that is directly the result of the regime that the government has put in place of contracts for difference.

I think there are other markers as well, Hitachi for example, making a significant investment to the second nuclear site Wylfa. I don't know how much they have invested so far but they did acquire a company either owned the site at Wylfa of 700 million pounds. So again, demonstration of a very significant level of confidence that this is a regime that will actually support major investment.

MR JACOBI: I am just interested about whether it can be measured as successful against I guess the standard that there will in fact be the new capacity within the system to replace retiring or higher carbon energy generation assets in the system that need to be retired?

MR HIGSON: In the long term I think the answer will be yes. I think there is still a significant short-term problem. A problem that the capacity mechanism was intended to deal with and I think it is yet to be shown whether the capacity mechanism is actually going to be effective at doing that. I think early indications are pretty mixed frankly.

MR JACOBI: Yes. Actually I was just hoping you might actually take us there now in terms of just explaining what the capacity market is that has been introduced?

MR HIGSON: There is a looming shortage of capacity in the short term. And by short term, I mean particularly around year – four years hence. And it's really part of the overall market reform that there is concern that contracts for differences on their own are for low carbon electricity generation but actually we need gas-fired generation as well. So the concern was that, as I mentioned before, the inflexibility of nuclear coupled with the intermittency of renewables undermines the economics of gas-fired generation. It does that through reducing the load factor which they are able to operate. So there is value in a gas-fired power station being available, even if it is not actually running. And the conclusion in the Electricity Market Reform was that that value needs to be recognised explicitly and that led on to a view that there should be payments for capacity being available on the system, even if that particular generating set is not right.

So there was an auction, it's planned to be annual auctions. The first one took place just over a year ago and that brought forward a relatively limited amount of new capacity for four years hence. It did bring forward one new gas-fired power station. The price was relatively low, lower than expected and thought by many commentators to be insufficient to bring forward new gas-fired power stations beyond the limited amount in that auction. But if that is so, one might expect the auction price to be increased. I think the figure is – if I can turn to, I think it's 19 pounds whereas the figure expected to remunerate new CCGTs generally is thought to be rather higher than that, probably 35 pounds. So early – early days. Early days yet, so whether the combination of CFDs for low carbon electricity and the capacity mechanism for gas – particularly for gas-fired but it applies more widely, will be sufficient to set the market successfully on a new course.

MR JACOBI: I am just interested in – we spoke about knock on effects within the electricity system itself and I am just interested to understand whether there have been other sectoral impacts from the sorts of interventions that we have talked about? We often hear in Australia about the effects on energy intensive industries?

MR HIGSON: Yes. Well, that remains very controversial in Britain. The effect of going for renewables has been necessarily to increase the price of electricity and that undermines the competitiveness of UK companies that are energy intensive units. So most notably there is controversy at the moment about future of the steel industry. Plants have closed. Yes it is true that there is a surplus of steel making capacity in the world but steel producers in Britain have argued that the increased electricity price is actually a factor in

undermining their competitiveness causing a number of sites to close. So that raises the question of whether there should be exemptions from the application of the levy to support contracts for difference and that remains controversial.

MR JACOBI: I am just interested, just to pick up on where we were before, perhaps as a final question to understand – we talked about transitioning to a technology neutral CFD type auction. I am just interested to understand, what are the sorts of incremental steps that we might be expecting to see in the UK over the next perhaps three or four years as – if such a step is taken, how would you get there?

MR HIGSON: Well, I think it's rather difficult to predict how it might go. The thing to watch is what happens on the auctions. So I would expect there to be a further auction for renewables next year, next calendar year. I think it's very hard to underestimate the difficulties of technology neutral auctions. Effectively it will require the government to set out explicitly the relative valuations of 15 and 35 year CFDs, so that bidders will know effectively what to bid for. But I think that is still quite some way off.

MR JACOBI: If there is not to be neutrality and I am just interested to understand, how is the decision made to, for example, have an auction for renewables or to have an auction for say nuclear? Is that essentially a political decision as to which of the technologies is ultimately pursued?

MR HIGSON: At the moment, yes. Political in the sense that there are mandatory targets within Europe for renewables. So it is political within Europe rather than solely within the United Kingdom. Those are targets of 2020; yet to be clear what happens as regards targets beyond 2020. But at the moment, whether or not to proceed with Hinkley was clearly a political decision taken on the basis, as I said, of bottom up; working on the costs and rate of return and top down on what was affordable compared with alternatives. So it wasn't sort of political in a vacuum, a whim if you like of politicians. It was a political decision in a wider sense, taken hopefully against a framework of rational market reform.

COMMISSIONER: Mr Higson, can I ask a couple of questions? In relation to the politics of contracts for difference, I appreciate that it is a contract. What is the opposition's view? Have you got some political certainty in relation to the way that the market is being progressed at the moment?

MR HIGSON: You ask a very difficult question. Up until relatively recently, I would have said that the contract for difference was not a party political issue and that it had – I mean it has its roots in the work done by the Labor government which preceded the coalition government which took office in 2010. So already the Labor administration at that time was coming to the

conclusion that the market needed a reform. I (indistinct) in answering the question regards the Labor party's current policies because they have elected the new leader in September - - -

COMMISSIONER: Yes.

MR HIGSON: - - - and there is going through a fairly wide-ranging policy debate. But my assessment would be that the contracts for differences are relatively non-political. One can argue how much we should be reducing carbon emissions which you can argue how much a role the market ought to play. But I think in the short to medium term, given where we are in Britain today, it's hard to see that contracts for difference are not going to prevail for the medium term.

COMMISSIONER: Can I refer back to your evidence on CCS technology? Where do you think that is going in the UK in to the future?

MR HIGSON: Nowhere; in a word. The original intention was to be a world leader, to develop projects integrating the technology in a way that isn't really done anywhere in the world. The intention being that if we could do that first in Britain then we could develop the know how and potentially export it pretty widely around the world. I think the ambition has fallen by the way side. The removal of the one billion pounds set aside to bring forward a couple of projects is actually a very significant blow because it's very hard to see how those projects could go forward without direct investment of that order by government. So I would expect none of the projects to go forward. We will wait in Britain to see what developments are made elsewhere and if it turns out that carbon capture and storage is the cheapest technology to produce low carbon generation then we will doubtless seek to acquire it on a world market. But we will not be world leaders.

COMMISSIONER: Thank you very much for joining us on Sunday evening Mr Higson, we very much appreciate your time and your evidence. We will now adjourn until 09.00 when will have Mr Brendan Lyon from the Infrastructure Partnership Australia Organisation.

MR HIGSON: Thank you very much.

ADJOURNED **[7.48 AM]**