Northern Ireland
Assembly

COMMITTEE FOR ENTERPRISE, TRADE AND INVESTMENT

OFFICIAL REPORT (Hansard)

Renewable Energy Inquiry

21 October 2010

NORTHERN IRELAND ASSEMBLY

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Members present for all or part of the proceedings:
Mr Paul Butler (Deputy Chairperson)
Mr Leslie Cree
Mr Paul Frew
Mr Paul Givan
Mrs Claire McGill
Mr Gerry McHugh
Mr Sean Neeson

Witnesses:
Mr Padraig Hanly) GT Energy

Mr Michael Doran) Action Renewables

The Deputy Chairperson (Mr Butler):

We welcome Michael Doran and Padraig Hanly to the enquiry. Michael was here last week.

Mr Michael Doran (Action Renewables):

I inflict myself on you again.

The Deputy Chairperson:

Please give a presentation lasting five or 10 minutes. Keep it brief, and then we will throw the

meeting open to questions from members.

Mr Padraig Hanly (GT Energy):

Good morning. I thank the Committee for inviting us. I am the managing director of GT Energy and I am accompanied by Michael Doran whom you met last week. I will give a five minute recap on the presentation that we gave you. I will touch on some of the issues and discuss what is here, and what we need to get done in Northern Ireland, to develop this new industry.

The company was set up in 2007 to develop geothermal resources in Ireland and in the UK. You can see from our presentation that the company is well developed in GB, especially in Manchester, the Isle of Wight and Newcastle. We develop geothermal resources for generation of heat and electricity.

What is geothermal energy? It is heat energy stored beneath the earth's crust. The temperature at the centre of the earth is 6,000°C. For every kilometre one drills downwards, it gets 30°C hotter. That energy can be brought to the surface, harnessed and used for heat or for electricity generation. The benefit is that this is one of the few base-load renewable energies available. It is an abundant resource. The estimate is that, with the technology we have today, 4,000 times our energy demand is available. Another big advantage is that the visual impact is low. Geothermal plants can sit in town parks. They look like electricity plants or any other industrial unit; so, they do not have a large visual impact.

The history and use of geothermal energy across Europe is as follows. You may not be aware of it, but in Paris, 34 such plants have been built since the 1970s; in Germany, 69 have been built since 2001. Another 150 are in the developmental stage.

I turn to the targets in Northern Ireland. We want to obtain 10% of heat from renewable energy sources in Northern Ireland; we are currently at 1·3%. Geothermal energy is an abundant resource in Northern Ireland and has been identified as such by DETI's reports to date. This could help us meet our renewable target of 10%. We estimate that the projects that we are currently working on in Ballymena and Antrim could meet 7% of the target.

In Ballymena and Antrim, we have been working with the councils to develop the projects. We have received grant aid from the Department of Energy and Climate Change in GB to

develop a pilot scheme in Ballymena that is at the moment going ahead.

Planning and consent seem to be among the big issues in the development of renewable energy projects in Northern Ireland. Those are not issues for geothermal energy plants, because they have low visual impact. We have met the Planning Service in Northern Ireland. It looked over our Ballymena plans and said that it had little issue with them. The proof is in the pudding. The file on a planning application that we submitted in Dublin contains only letters of support. As there are no letters of objection, the process is quite fast.

Grid infrastructure for renewable energy sources to connect to is also an issue in Northern Ireland. Given the nature of geothermal energy, we are seeking to develop such links in urban areas, where there is plenty of grid capacity and infrastructure to use electricity and the heat that its use generates. Also, once the right tariffs and support mechanisms are in place, plenty of private funding, equity and bank debt is available to fund such projects.

To get this new industry going in Northern Ireland, we first need to address how geothermal electricity projects in Northern Ireland are supported. Support is currently being provided under the renewables obligation certificate (ROC) provision. At present, there are two ROCs, which is not adequate. We requested the information that was used to provide that ROC support level. The Department of Enterprise, Trade and Investment provided that information, which was really just adapted from that of the Department of Energy and Climate Change (DECC). We then requested the information from DECC and found that the evidence used was not very substantive. It consisted of one paragraph taken from a 1980s report. So, we feel that there is a case for an emergency review.

Members are probably aware that the renewable heat incentive (RHI) was announced in Great Britain yesterday. We feel that that will push geothermal energy forward in the UK. We are already working on three sites there, and we have identified 100 sites on which it could work. If Northern Ireland wants to develop its renewable heat sector, it must implement an approach similar to RHI.

Although legislation is not needed in Northern Ireland or in GB at the moment to develop heat or geothermal electricity plants, if we want the industry to develop to its full potential, then, ideally, legislative and development frameworks should be put in place that will create security of

tenure for investment and an orderly development structure. In Germany, a development framework was put in place in 2001. Before then, no geothermal plants had been built there. The industry is now worth €4 billion, and 150 plants are in the development stage. That is all I have to say for now. I am more than happy to answer questions.

The Deputy Chairperson:

The Committee was impressed by a geothermal plant it visited at Soultz. What are the aims of the Antrim and Ballymena projects?

Mr Hanly:

We are seeking to build a geothermal plant and to develop a heat network to supply heat to the towns. In Antrim, we are working with the Northern Ireland Housing Executive, which has 3,000 or 4,000 houses in the town that currently use oil or gas. The project is a big opportunity because geothermal heat is renewable and has zero emissions.

By its nature, geothermal energy enables us to give 20-year contracts for heat. We can tell customers what the price of heat will be for 20 years. Very few technologies can do that. It cannot be done for biomass, because the price of biomass next year, let alone the year after, is not known. We know our price, because all our capital costs are up front. The energy cost is built into the capital cost of developing the geothermal plant. In Germany, it is estimated that such plants will last for at least 150-200 years. The up-front investment is high but good, because of the future benefits to be reaped.

Mr Neeson:

Thanks for the presentation. The concept is fantastic. Will you tell me more about GT Energy and how the Committee can help the company to expand in Northern Ireland?

Mr Hanly:

As regards expansion, we have been asked by many councils to come and look at their sites. Every council to which we have spoken wants to look at this. Some have visited projects, and the proof is in the pudding: they go and see it, they touch and feel it, and they all want one. The issue is not about getting support for developing geothermal energy; it is about the financial incentives to build a plant. To build one in Ballymena requires £30 million to be spent. If we could get bank debt to cover that amount for 30 years, the plant would pay for itself without any

financial incentive whatsoever. However, because of commercial rates, and because private investors want to see a return in 15 years, we need that level of support up front to make sure that it is paid for.

There is also an opportunity here for DETI and for the Northern Ireland government— we have also made provision for this in the Republic — to charge a royalty for geothermal energy because it is state property and because it is so cheap after the plant is built and paid for.

Therefore, the current ROC level for geothermal electricity needs to be reviewed. At present, it is incorrect. No thought was put into setting it at the current level. We need to see the introduction of an RHI.

In Ballymena, the district heating network will be around 27 km. That is based on NIHE housing and council stock but also includes extra provision for anyone else who wants to connect to the network. District heating technology could last for a hundred years, no matter the energy source. One could change over the energy supply of an entire town with the flick of a switch. During the past 10 or 15 years in Northern Ireland, we have been investing in rolling out gas networks. We should have been investing in district heating networks, because any energy source can be plugged into them. That will safeguard and future-proof energy in Ballymena and Antrim.

Mr Neeson:

You also talked about the possibility of generating electricity from the network. How will you achieve that?

Mr Hanly:

To step back from that for a moment, I mentioned that a number of reports were produced by DETI and the Geological Survey of Northern Ireland (GSNI) on the potential for geothermal electricity in Northern Ireland. They have identified numerous places here where that potential exists, which means that one is able to drill to depths where heat is sufficient to generate electricity. We are looking for temperatures of about 100 degrees. We are using binary cycle technology, which uses lower temperatures to generate electricity. We are actually doing a small bit of work for AECOM, who are producing a report for DETI on that potential. We estimate, based on the information that we have at present, that we could probably build 20 geothermal electricity plants and still have waste heat left over; perhaps, five or six megawatts of heat that

could supply 5,000 or 6,000 houses. The ideal thing to do would be to build those in urban areas and supply electricity to the grid. Waste heat that is left over could, then, be supplied to local buildings, housing or whatever is in the area. That would be the ideal situation.

In Germany, those plants are being built in towns and villages; for example, in Pullach, a small town with a population of 9,000 people around 12 miles south-west of Munich. The people there took the initiative to build a plant in their town park, around 50 metres from the school and 80 metres from their houses. The project involved a 13-month build. The plant now provides around 80% of the town's heat. It has had much higher uptake rates than were expected. In the beginning, an uptake rate of around 40% was anticipated. Now, the rate is 80%. The town is actually considering developing a second system to meet future demand.

Mr McHugh:

You are welcome, gentlemen. Geothermal energy is an interesting concept. It must rank alongside some of the renewable energy sources that we are pushing for, such as wind energy. A number of others have been discussed. How does geothermal energy compare as a future, sustainable method of heating that will replace energy sources that are already in use? In the North, some areas do not have the option of gas, such as the area that I come from, the west. Has an all-island approach been taken to geothermal energy? Money wise, and so on, how can we best move that forward?

Mr Hanly:

Obviously, you will say that I am biased. However, if geothermal energy could be deployed in Northern Ireland, it would be by far the best option when compared with other renewable energy sources. First, as far as base load is concerned; if you compare it with wind, wind is available perhaps 30% or 40% of the time on the best sites, whereas geothermal energy is available all of the time. Whenever you want to use it, it is there to be used. As far as heating is concerned, we are still looking to import biomass because we do not have adequate supplies in Northern Ireland. Eventually, we will be importing biomass from Russia, as we do with oil. That is a volatile supply of an energy resource. Geothermal energy is available all of the time. It is indigenous. We are sitting on it anyway. It does not affect any other industry that we have at present. It only complements every existing industry.

There are, indeed, opportunities for an all-Ireland approach. For example, the GSNI has been

involved in work on legislation that is currently being drafted in the Republic.

There is an opportunity for members to look at that to determine whether it is suitable for what you want to adopt here. I return to the German model: all you need to do is to put the framework in place and industry will introduce and develop it. It does not need to be mothered along; if the development framework is in place, along with the right incentives, it will result in a big industry. Germany has generated €4 billion since 2001, and that is where it is needed. I mentioned that there is 4,000 times the original demand, and that is with the current technology. We estimate that the cost of developing these technologies will drop, even in the first five or six years, by 40%, just by getting the first plant built. We have made provision in the Republic for putting a feed-in tariff in place, putting a cap on the number of plants that are built and reviewing the level again because the costs are expected to drop substantially in the first few years.

Mr McHugh:

Where does geothermal energy rank in the Government's priorities? Should the Committee, in its inquiry for example, decide which projects should go forward or have money spent on them? Should the Committee invite industry to invest in them? A decision will have to be made to drive forward one area rather than another, or to proceed with a combination of two areas.

Mr Hanly:

DETI has to drive it forward. To date, there has been only soft support. Geothermal energy is not well known, nor is it high on DETI's agenda. It needs to be pushed up the agenda. DETI has already spent some money on looking at the resource, and the reports have been positive. Those have indicated that there is a substantial resource and that there may be more. DETI can raise the level of awareness of that resource, start talking about it and put the development framework in place. Those things do not cost that much money to do.

The ROCs are in place; we just need to make sure that they are at the right level. There is no point in putting ROC support in place if it is not at the right level, because nothing will happen. The proof is there; the support was put in at two ROCs and nothing is happening. Nothing will happen. Until a renewable heat incentive is put in place, the heat plants will not develop either. Unless DETI decides to put bank funding in place over a 35-year or 40-year period to pay for those plants, which, I believe, will not happen, the best way forward will be through private investment, which will allow development to happen a lot faster.

The Deputy Chairperson:

You mentioned feed-in tariffs and said that there is no real incentive here for renewable heat.

Mr Hanly:

There is absolutely no incentive whatsoever.

The Deputy Chairperson:

Is that a barrier?

Mr Hanly:

It is. We mentioned that to the council. We have spent quite a bit of money on feasibility studies and we are rolling out the pilot project to demonstrate the technology. Until the RHI or its equivalent is put in place, the technology will not go ahead because it would just not make sense. We still want to push the project forward. Ballymena and Antrim are still eager to do so; they want those projects to be developed in their towns because they have seen what is happening in Germany and they want to replicate it in Northern Ireland. Unless the RHIs are introduced, nothing will happen. Some people ask whether capital grants are required; I do not think so. I believe that if the incentive is in place, private equity investors can provide the money.

The Deputy Chairperson:

What about feed-in tariffs versus ROCs?

Mr Hanly:

I favour feed-in tariffs, because they provide more clarity and are a cheaper option. People are funding wind projects with ROCs, which are working; but I would like to see a feed-in tariff on a project. A ROC might be trading at £47 or £48 per megawatt hour, but to get long-term stability requires the participation of a utility, which will offer only £41 or £42, which is not the real market rate. It is not a true reflection of what you are getting support for. The feed-in tariff is the way to go. Germany, France and Portugal have feed-in tariffs and that is how the industry has developed.

Mrs McGill:

The information pack is very helpful. I would like you to elaborate on the points that you make

in your submission under the heading “Legislation and regulation”.

Mr Hanly:

We believe that the current legislation in Northern Ireland requires a definition of the ownership of geothermal energy resources in Northern Ireland. At present, development would be permitted through planning permission and, obviously, water extraction licences. That is an ideal; it gives enough comfort at the moment. In the Republic, we want the Government to take ownership of geothermal energy and the right to administer it. That provides security of tenure; once a new licence is granted, it creates an exclusion area of about five kilometres, giving the licence holder the sole right to develop in that area for a 25-year period with a right to renew for a further 25 years.

An investor will look at the framework proposed in the Republic and judge that it will give them a lot more security of tenure for their investment. There is a designed programme in place that covers exploration and development and gives an investor a security of tenure of 25 years, with a view to continuing for another 25 years.

If we look at Northern Ireland, it is about planning permission and water extraction processes, which were not designed for geothermal purposes. No one was thinking about geothermal development when they put development frameworks in place for planning, for water extraction and so on. We are trying to adopt those and make them work for what we are trying to do. That is not ideal. In time, if we want to see a proper, substantial industry with a lot of jobs develop, a proper framework needs to be put in place.

The Deputy Chairperson:

Does GT Energy have planning permission for your current projects, or is that ongoing?

Mr Hanly:

Planning permission for the Ballymena project will probably be sought in the next three to four months.

The Deputy Chairperson:

OK.

Mr Hanly:

In Dublin, planning permission appears to have gone through and we hope to get an announcement on that in the next two months: therefore, so far, so good.

Again, we can go ahead, but it is not ideal. If there is to be confidence in the investment community, a proper framework needs to be put into place. GSNI has been heavily involved in this in the Republic with respect to what has been pulled together on the template. A lot of that could easily be adopted in Northern Ireland. On a number of occasions, we have asked the Department what it plans to do about this. The response is that it is still looking at the matter. It must be done. Look at the industry that has been groomed in Germany since 2001, when its framework was put in place. In Australia, a development framework was put in place in 2004: £300 million has been invested in the industry since then in a small area of Australia alone. Therefore, that really needs to be looked at.

I have touched on the licensing system, and our submission pretty much explains what that is. In the Republic, the licensing system will be similar to that for mineral extraction. People will apply for a five-year licence to explore an area. Money must be committed to the project and must be spent in that area in that time. If there is a decision to develop, a development licence, valid for 25 years, must be sought for that area, which the Department will decide to grant or refuse. Such an approach is streamlined and pulls a lot of the development elements out of the planning framework because those involved in that framework do not know how to deal with such applications. Never before will we have had to deal with requests to drill three or four kilometres deep and extract water from such depths. There is no provision for that in current planning procedures, but there would be such provision in special legislation.

Mrs McGill:

I am trying to understand what Mr Hanly said. Will GT Energy identify sites? Does GT Energy hope that the Department of Enterprise, Trade and Investment or the government will then take control of the process and have authority over it? How would that be done?

Mr Hanly:

Northern Ireland will require legislation to provide that the Government will state that they own an interest in geothermal energy in Northern Ireland and that they have the right to administer the development of that energy source. After that, a development framework would be put in place.

Until the Government decide that they own geothermal energy, planning regulations allow anybody to develop it. A Government decision stating that they own geothermal energy, and the putting in place of legislation for its development, will mean that the Government will control the orderly development of geothermal energy; they will decide where plants are built, and they will determine what is feasible.

Legislation may also provide for a future royalty, which has been done in the Republic. That is what we need to look at because renewable energy plants are costly. Government support would be an investment. We are looking at a long-time, secure supply of energy that can also be seen as an investment from which there will be a return. As I said, the price of electricity during the first 15 years, as the plant is built, is expensive, but, once the plant is built and paid for, the price of electricity is quite cheap. There is room to apply a Government royalty. That has been done in the US, where geothermal energy was developed in the 1970s and royalties are collected on geothermal plants, rather similarly to the way in which royalties are collected for mineral or petroleum exploration.

Mr Cree:

I am intrigued by the sites that you identified in Northern Ireland. Are there others that you have identified but yet followed up on?

I am particularly interested by the fact that you have no sites in the greater Belfast area. From what I remember of the Soultz visit, there had to be a certain type of rock to make this work, a type of hard rock. Are there other sites that are commercially feasible? I notice that your current projects vary considerably in capacity; why is that? Can you flesh out the renewable heat incentive? What are you talking by way of money? You mentioned capital costs of £30 million. How can we get all that down to a large, viable project operating quickly with a good rate of return and making itself viable within the 20 year period?

Mr Hanly:

I will first address your question as to why we are looking at certain areas. The project you visited in Soultz was a different type of geothermal project. It was a HDR or a hot dry rock project, which is an R&D project. In Soultz, they are drilling into granite which has no water in it and they are pumping water down into the granite to create an artificial aquifer. In Northern Ireland, we are drilling into existing aquifers buried three or four kilometres deep because those

are a lot less risky. There are a number of HDR projects but they are still in R&D and they are higher risk. We want to drill into existing aquifers which are, in essence, sponge layers of rock, buried three or four kilometres deep, which hold water. We see that as less risky. If we are very specific about aquifers at that depth, only certain sites will be suitable.

You referred to the HDR process: that can be done anywhere in the world. It does not necessarily have to be in granite, though granites give off a lot more heat. Any point in Northern Ireland can be a drilling site because there is heat everywhere and it is just a matter of how to harness that heat. We feel that it is five or 10 years too early for those projects and we want to harness existing geothermal potential at the moment. There were a number of oil and gas exploration programmes in Northern Ireland which drilled into formations and found water at those depths. They have shown that there is water there and that it is at a certain temperature. It shows the potential of those areas and we know that the risk is a lot less in those sites. That is why we have identified Ballymena and Antrim. We know that the geology is good in those areas and we do not have to do a considerable amount of exploration work.

You are right, though. I have looked at 20 sites for which I know that there is potential. We are not going for any more because we want to get one developed and from there we will move to the next. It takes resources just to maintain relationships, develop the projects and keep them going. There is no point in having 20 projects if the first is not going to get across the line.

The RHI scheme is a mechanism of support for a limited period. In Great Britain, we have worked with the Department of Energy and Climate Change to get the right level of support in RHI. We are looking at 4·5p per kilowatt/hour for that term; that is what it takes to develop this project. Once it is paid for, this is the cheapest energy you will get. How it is paid for is the biggest issue. Everyone must decide for himself what way he wants to do that. You could look at the renewable energy feed in tariff (REFIT) scheme, which takes a levy off electricity supply costs and uses that money to provide support. Or, it could be paid for like the ROC support, whereby all the providers of conventional energy must buy certificates, which creates a revenue line.

For Government, the best way must be cost neutral. Money cannot be taken from Government coffers at present; the money is not there. It must be something that is passing through. This is an investment for the people of Northern Ireland. They are the ones who will benefit in the long

term. People need to stop thinking about the short term. I know that there is a little extra cost to be absorbed while we build these plants, but, in the medium-to-long term, they will provide a secure supply of energy.

I do not think people put a high enough value on security of energy supplies. We are at the end of a very long pipeline. If someone turned it off, we would be in dire straits. Germany puts a lot more value on security of supply than on price, because Germany has been very volatile.

Stability of supply is also important. Here is an example. We are working on a project in Manchester, and we hope to finalise a commercial deal with Manchester University. Our proposition to the university is that we will build the project and fund it — the university will take absolutely no risk — and we will give it a price for its heat for the next 25 years. We will set that price here today. That is a good proposition. Very few technologies can do that. It helps the university because its budgets are cut back as well. I am competing with gas and I am still able to do that. That is what the proposition is, and that is the one I make to all the sites in Northern Ireland. I mentioned that I went to the board of NIHE (Northern Ireland Housing Executive). I made the same proposition to it, and that is what the Housing Executive liked about the deal.

Mr McHugh:

Do you think that Governments, such as ours or, indeed, the Irish Government, are aware of the issue around security of energy? During the fight over oil prices, a lot of the ships that were bringing oil here turned round and went to China or wherever because they got a better price for it while at sea. We could leave the industry and ourselves open to great risk. I just wonder how that argument is going along. Are people happy with our present position?

Mr Hanly:

That issue is not highlighted or taken seriously enough. A lot of the industries in Ireland and Northern Ireland are here because of the long-term price stability of energy. However, once that stability goes, because we do not know where our energy supplies are coming from, that situation will change. The Sustainable Energy Authority of Ireland produced a map that shows that all our gas will come from Russia and the Middle East by 2025. The North Sea supply will no longer exist, pretty much, at that stage. The year 2025 is not that far away. Therefore, now is the time to invest in geothermal energy. Mr McHugh is right to say that the bigger nations in central Europe such as France and Germany are taking a lot more consideration of the security of their fuel

supply than we are, even though we actually are in a more volatile position than they are.

There are a number of issues here. If we sat down and analysed it, we would realise that this is a good news story for everybody. Geothermal energy will help us to plan for future demand, to provide a stable supply and price for our energy and to invest in the industry in Northern Ireland. Take the example of the plant in Ballymena. It will cost £27 million in capital spend to develop. About £13 million or £14 million of that is for building the plant; the rest is for distributing the network. All of the work involved — civil engineering, digging roads, trenching — can be done by firms in Northern Ireland. We have all the skills here to do that work. Geothermal energy is not competing with any other industry. I use the word "competing", because with biomass, there will be a need to start growing fuel groups, which will affect the food industry somewhere along the line and then the price of food. However, geothermal energy does not affect anything. It is simply another brand new industry created out of nothing, and it needs to be looked at.

The Deputy Chairperson:

Thanks. Michael, do you want to add anything?

Mr Michael Doran (Action Renewables):

We support GT Energy's project. I am here today to answer any questions about how geothermal energy relates to other energies. However, I think that Padraig has presented the position very well.

The Deputy Chairperson:

Thank you for your presentation, Padraig. Before you both go, are you content to answer any questions that were unanswered today?

Mr Doran:

We will answer any questions that you have.