



Northern Ireland  
Assembly

**Committee for Agriculture and Rural  
Development**

**OFFICIAL REPORT  
(Hansard)**

**Poultry Litter Utilisation and Disposal:  
Alternative Technologies to Fluidised Bed  
Combustion**

15 May 2012

# NORTHERN IRELAND ASSEMBLY

## Committee for Agriculture and Rural Development

### Poultry Litter Utilisation and Disposal: Alternative Technologies to Fluidised Bed Combustion

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**Members present for all or part of the proceedings:**

Mr Paul Frew (Chairperson)  
Mrs Dolores Kelly (Deputy Chairperson)  
Ms Michaela Boyle  
Mr Thomas Buchanan  
Mr Trevor Clarke  
Mrs Joanne Dobson  
Mr Chris Hazzard  
Mr William Irwin  
Mr Kieran McCarthy  
Mr Oliver McMullan  
Mr Robin Swann

**Witnesses:**

Mr Brian Ervine	Department of Agriculture and Rural Development
Dr Sinclair Mayne	Department of Agriculture and Rural Development

**The Chairperson:** I welcome Sinclair Mayne, who is the Department of Agriculture and Rural Development (DARD) scientific adviser, and Brian Ervine, who is a principal officer in DARD. Gentlemen, you are very welcome. I am sure that you have a presentation for us. Please keep it as brief as possible, and then we will go straight into questions. Without further ado, please proceed.

**Mr Brian Ervine (Department of Agriculture and Rural Development):** I will present on the policy context, and Sinclair will cover some of the detail of the technical aspects of the review. Today, we will cover the technical review, and that will lead on to the wider issue of poultry litter management.

Last week, the Committee considered and approved an SL1 about amendments to the nitrates action programme regulations concerning the field storage of poultry litter and the nutrient content. I noted that the Committee wanted clarification on a couple of points, and I can clarify those very simply. The question was this: would the permitting arrangements and the need for the increased buffer zones apply to existing heaps? The answer is that existing heaps will not have to be moved. We agreed that that would be phased in. Existing heaps may need to be registered from 1 August, but they will not need to be moved. As heaps can stay in place for six months, gradually that will phase out. Therefore, we have kept it as simple as possible.

The buffer zones were doubled to protect water quality and reduce the possibility of nitrogen and phosphorus getting into water, and that was done at the request of the European Commission. We do not see it as being a big practical issue for farmers.

We have provided a paper that sets out the main points on the policy context, and the paper includes a map of soil phosphorus levels. The poultry sector has a surplus of phosphorus, and that is because the sector imports feedstuff. The feedstuff is eaten by the chickens and partly digested, and the remainder, the manure, is mostly spread on land. With our industry, we do not have a cycle, because the nutrients are coming into the country in the feed, but they are not going out again. They are going on to land here, and the main effect of that is a build-up in soil phosphorus status. You will see from the map that we already have more than enough soil phosphorus.

The drivers to address the issue are not just EU regulations. Aside from the nitrates directive, the water framework directive and the need to deal with phosphorus, for us to continue with the current position is not sustainable. There is also a practical constraint on farmers. The industry would openly say that it has got to a position in which it cannot expand, because there is not a sufficient outlet for the litter. That is the practical side of it, which exists as well as the legislative side and the European dynamic. Hopefully, we are at the point at which we can address the situation without getting into heavy regulation.

I will digress slightly to make what is a very valid comparison. Last week, I was in Denmark at a major European conference on the nitrates directive and phosphorus. Our problem with soil phosphorus is not unique but affects other EU member states. For example, in Belgium, there is a state-run manure bank, and that is leading to a very high degree of regulation on where manure can be spread. Farmers have to produce detailed accounts, and all sorts of administration is involved. Hundreds of people are employed in that, and government inspectors even test the nutrient content of the manure that is to be shipped from one farm to another. In the Netherlands, the slurry tankers are fitted with GPS so that they can be followed. In Denmark, farmers can either submit fertiliser accounts to government every year or pay a tax on fertiliser. In Spain, there is a nutrient surplus in the north of the country, where pigs are produced, and in the south of the country, where crops are grown, there is a nutrient deficit. There are over 20 manure-processing plants from where manure is processed and then shipped to the south of Spain. There is a high degree of management and regulation, and if we can avoid getting to that position, we would be well-advised to do so. The Committee will agree, and it is acknowledged that there is a need for the surplus in the poultry industry to be addressed. Technology appears to be our way to do it.

I spoke about the fact that manure is shipped the length of Spain. More widely, the key thing is the recycling of the nutrients, particularly phosphorus, in the manure. Although nitrogen fertiliser can be produced from, essentially, atmospheric nitrogen, phosphorus is a finite resource and has to be mined. The world's resources of phosphorus are limited, so, as time goes on, there will be an imperative to recycle it more and more. In any management, it is important to factor in phosphorus recycling. Again, that depends on economics, but, in the long term, agriculture needs phosphorus, and there is a limited supply. Indeed, the Commission is in the process of producing a Green Paper on sustainable phosphorus, so it will be an ongoing issue. That is the policy background, and I will now hand over to Sinclair.

**Dr Sinclair Mayne (Department of Agriculture and Rural Development):** Good afternoon, Chairman and members. I will focus on the technical review, which we have circulated along with the summary report.

The review was commissioned by the Minister of Agriculture and Rural Development in autumn last year. It is important to highlight that it follows on from a number of technical reviews that have been undertaken by the Department and other bodies. Those reviews have looked at technologies and options to better manage poultry litter. For example, the first study was by Invest NI in 2004. In 2006, the Expert Group on Alternative Uses of Manures (EGAUM) recommended a fluidised bed combustion approach, which was the basis of the Rose Energy proposal that was then taken forward. Indeed, we had updates on the report in 2008, 2009 and 2010. Therefore, the latest review is simply one of ongoing monitoring of key developments in technologies to handle poultry litter.

The review team included a member of my scientific division, policy and delivery group representatives, and a specialist scientist from the Agri-Food and Biosciences Institute (AFBI) was involved in the review. As Brian said, the key issue for the poultry sector is that we produce 260,000 tons of poultry litter each year in Northern Ireland but can sustainably manage only 100,000 tons of that. We are therefore left to find a home or an alternative use for 160,000 tons of poultry litter. Linked with that, we also have the prospect of expansion in the poultry sector. If the sector is to expand, our current challenge of 160,000 tons will grow in the coming decade.

The review group considered three essential criteria that any solution had to meet. First, it had to be a centralised or off-farm approach, because biosecurity arrangements on poultry farms require poultry litter to go once the birds leave the farm. Secondly, the end product must be significantly reduced in volume to allow us to think of an export market opportunity. Ideally, the phosphorus should be in a concentrated end product for which we can seek alternative markets. Thirdly, the process would ideally generate enough revenue — by producing energy or valuable end products — to cover the costs of its utilisation.

We looked at a wide range of options. We started with the simple ones, such as local land spreading. As we highlighted in the map, the main issue with doing that is that we already have too much phosphorus in our soils. In fact, even allowing for the reduction in poultry litter phosphorus content, which was developed through a DARD-funded study, we can handle only around 100,000 tons of poultry litter, primarily on arable farms. That reflects our relatively small arable farming area.

The nearest export market that needs phosphorus is arable land in east England or east Scotland, and transporting it there costs £20 to £30 a ton. We also looked at exporting the litter to other processing plants in Scotland and Netherlands, where some poultry litter was previously sent. Peat-burning power stations in the South are major users of biomass. The problem is that because of its high chlorine content, poultry litter requires specific plant design that cannot really be retrofitted. Therefore, that was not a runner. Mushroom composting uses a small but relatively static amount of poultry litter.

We then looked at more advanced alternative solutions. Anaerobic digestion (AD) is an increasing method of using manures on farms. The problem with AD is that all the phosphorus comes through in the digestate, so you are left with the same volume of phosphorus in the digestate. Therefore, AD really only takes the energy out of the litter. We are left with the problem of how to use the end product.

We then came to advanced thermal treatments, which are an advance on fluidised bed combustion — the current Rose Energy approach. The main difference with those advanced thermal treatments is that the poultry litter is thermally treated in the absence of oxygen or air — a very different process — from which the resultant gas emissions are lower. The litter is thermalised at 900 degrees, which converts it into an ash, or biochar, that is around only 15% of the mass of the initial product. It also produces a synthetic gas that has around half the calorific value of natural gas. You get two very useful end products: a biochar, which is rich in carbon and phosphorus and has a potential soil conditioning value; and gas, which clearly has a potential in renewable energy.

Given that developments have taken place in gasification in the past five years, particularly in municipal waste treatment — a number of gasifiers, certainly in northern European countries, particularly Norway, are embedded in centralised heating systems — the use of gasification now offers potential for poultry litter. Having said that, we highlighted that there are currently some issues with using poultry litter and its potential properties as a feedstock. There is also more to be done to look at the actual properties of the biochar. For that reason, there is sufficient progress in the technology to allow it to be considered as a prototype alternative use for poultry litter in Northern Ireland.

Finally, we mentioned the difficulties and the discussions that we have been having with the Commission. If none of the options develops, we need to look at a short-term measure. We highlighted that the only short-term measure that we may need to look at within the next two to three years is the export of poultry litter to Scotland or England. If we are going to do that, we need to look at a cheaper way of transporting it there. However, that would be only an interim solution to allow a more longer-term sustainable solution to be reached.

Those were the recommendations that we considered in the review. We would welcome comments on those.

**The Chairperson:** Thank you very much. There is no doubt that this is a crucial problem for the farming industry. Last week, the Committee debated the SL1 and its progression. Members see the need for that derogation in the next two years, albeit that some of us might be surprised that we got that for so long. It has been a problem, because Europe has always been on our case about this, but we seem to have pulled something out of the bag. If congratulations are to be had by the Department, this is the time for them. Now that we have this period in which to do something to progress this, it is safe to say that we are able to store the litter where it sits at present, but that will still not resolve the issue of how we get rid of it. It will not allow the expansion of the industry. Those two elements are critical to the poultry industry.

You can clarify the position if I get it wrong: AFBI said — perhaps its view has changed of late — that fluidised bed combustion is the only show in town at present and that it is the only feasible, viable and economical method out there. Do not get me wrong — I am not against looking at alternatives. In fact, the Department needs to do that and needs to find other areas and other ways of using and removing poultry litter. Why was combustion not benchmarked against the rest of the alternatives so that we could see their viability and feasibility compared?

**Dr Mayne:** I am happy to answer that. The first issue concerns AFBI's position. I was a member of the original expert group back in 2006. We worked with AFBI. The scientist from AFBI was also on the Expert Group on Alternative Uses for Manures and was in my recent group in the review that produced the latest finding. It is fair to say that AFBI's position and DARD's position have changed. In 2006, fluidised bed combustion was the only show in town. It was the only proven alternative method of treating poultry litter.

It is now six years later, and I think it is fair to say that AFBI and DARD recognise the significant developments that have taken place in relation to gasification. The technology has advanced significantly. There are now a number of plants using gasification for municipal waste, in countries in Europe and in the US. There still remains the issue that it has not been proven with poultry litter. That is why we still need to demonstrate that it will work. We have spoken to a number of the gasifier manufacturers who claim that it will work, but we still need that proof that the process will work with poultry litter.

We know that fluidised bed combustion will work with poultry litter. There is a strong view that poultry litter can also be used with gasification, but, as yet, there are no working plants. That is the difference between the two processes. At the same time, there are some advantages to gasification. There are some countries, for example, that view gasification as more renewable energy, in that it is an advanced thermal treatment, with slightly lower emissions. There is some consideration that, in terms of renewable incentives, gasification may be treated better than fluidised bed combustion as a new technology. Given those developments, we feel that, at this point, gasification is worthy of consideration, whereas, six years ago, there was not enough evidence of that process actually working with other similar materials.

**The Chairperson:** With regard to the evidence in the report, you have already stated that there is no working — I am making sure I get my terms right here — there is no gasification being used on poultry litter at the present time. Just to clarify, that is what you have stated.

**Dr Mayne:** That is correct.

**The Chairperson:** There might be examples of gasification at a domestic level, albeit large domestic, in America, in Poland and other places in eastern Europe and northern Europe, where it is doing an area not of any major substance or ground.

**Dr Mayne:** No, by municipal waste standards, those are significant plants. A typical gasifier model will handle around 60,000 to 70,000 tons a year. The modular basis of gasifiers basically means that you can add two or three together. Alternatively, rather than having one plant with three or four modules, there are many advantages to having two or three plants located where the poultry litter is produced, handling that and providing that energy and heat back into local communities. That has certain attractions over one very large, centralised plant. The typical gasifier plant handling municipal waste in Norway will handle around 60,000 to 80,000 tons per year, but you can hook two or three together, if that is a preferred model, or you can run them separately.

**The Chairperson:** Has any of the research and evidence been costed?

**Dr Mayne:** The remit of the technical review was simply to look at the technological feasibility and what the developments were in terms of new technologies in relation to poultry litter. We were flagging that technology up in the same way as the original EGAUM flagged up fluidised bed combustion to the industry. Brian might comment on the policy side. We are working with the Department of Enterprise, Trade and Investment (DETI) and the Department of the Environment (DOE) to look at how that might actually be taken forward with industry.

**Mr Ervine:** I think it would be fair to say that the technical feasibility for poultry litter needs to be addressed before you would get into the detailed costings. The evidence from elsewhere is that, if

that is being used for other things and for municipal waste as an alternative to fluidised bed combustion, it must be viable, otherwise they would not be building plants in various parts of Europe.

**The Chairperson:** Again, I am not knocking the Department, AFBI, or anyone for researching the alternatives and trying to see what is out there. There is absolutely no problem. That is what you need to do. If the Rose Energy plant was granted permission and built, would there be a market? Would there be enough litter at present to feed and make those other plants viable?

**Dr Mayne:** To some extent, Chairman, that would depend on expansion in the poultry litter sector. A number of issues are associated with the Rose Energy plant, and there is also co-fuelling with meat and bonemeal. So it has additional material going through. Fluidised bed combustion can deal with other waste streams. Potentially, it would depend on the waste streams going into Rose Energy as to whether or not there would be an alternative. Certainly, if the industry were to expand, and if the Rose Energy plant were to use some other waste streams, there would be enough scope to look at a gasification approach elsewhere.

**Mr Ervine:** To add a point about the gasification approach: because it is modular, it can be scaled up according to what fuel requirement you have or what fuel is available, whereas a large plant needs a certain amount. You can cut your cloth to fit your coat with gasification. If there is further expansion, you can add to it, but with a large plant it is not easy to tag on extra capacity.

**Dr Mayne:** The other advantage is that a smaller plant gives you more options to use the heat. With a large plant, you really need a large heat sink somewhere nearby to effectively use the heat. With smaller plants, there is more scope to embed and use the electricity and heat in a more localised environment.

**Mr Ervine:** The theory of using the heat and electricity — particularly the heat — should help the economics. That is an important factor. Ideally, you are looking to recover heat and phosphorus.

**Mrs D Kelly:** You will recall that, at our first meeting with the Minister, I asked her what plan B was in the event of Rose Energy not going forward. At that stage, we were told that the Department had no plan B. What now is plan B for the Department? I notice, even in my own constituency, some applications coming through for anaerobic digestion plants, which have been successful. Following on from your point about the raw material for Rose Energy, is there sufficient raw material in the North? What are the plans for the disposal of chicken litter in the South of Ireland, which is, of course, our nearest neighbour?

**Mr Ervine:** This is what we are suggesting as plan B. I am not saying it is a proven and completed plan B, but it is a very sound option that needs to be investigated. That is why we have recommended the setting up of a prototype.

You asked about the position in the South. Probably the best way to utilise poultry litter is simple: you use it as a fertiliser on arable land and plough it in. That is not an option here, because we have a large poultry sector and a small area of arable land. In the South, it is slightly different, in that the poultry sector is smaller in relation to the area of arable land. However, there is still a problem there, and a looming problem. Phosphorus controls will be starting from 1 January 2013, whereby manure can be spread on land up to a phosphorus surplus of 5 kg per hectare. In 2015, that goes down to 3 kg per hectare, and in 2017, it goes down to 0 kg per hectare. That will greatly constrain the amount of land that is available. Of course, the pig industry is also looking for spread land within the phosphorus requirement. There is an issue, and probably quite a major issue. Also, the poultry industry in the South is not evenly distributed. In fact, it is gathered up in the north-west corner close to the border. There is a nutrient surplus in that area.

**Mrs D Kelly:** What are your next steps?

**Dr Mayne:** This report was circulated to the Committee, DETI, DOE and the industry. Since the report was published, we have had one interdepartmental group looking at how this might be taken forward. We are exploring that with DETI and DOE at the moment.

To refer to your earlier question, it really is the plan B. If Rose Energy does not go ahead, we need alternatives, and this offers a real opportunity. It needs to be explored. There are issues; it is not proven to the same extent as the other option, but I have highlighted some advantages. Plan C is

that, if none of those go ahead, we will need to look at exporting. However, that is not a long-term sustainable option because it has a significant cost to the industry. However, we are getting to an important stage.

On the issue of field heaps, the Commission clearly said that it wants to be updated on developments with alternative measures to control poultry litter, and the current action programme ends at the end of 2014. We will be in negotiation during 2014, and that deadline will be critical in demonstrating that we have an alternative way of dealing with poultry litter.

**Mr Ervine:** With AD, you will get energy recovery out of the litter, but you will not be able to manage the nutrients because all the phosphorus will still be in the digestate, and the digestate normally goes to land. So, it will not solve our P surplus. There may be a complicated way of getting some of the phosphorus out of the digestate, and that would be technically feasible but cost prohibitive. That is probably the best way to describe it. Furthermore, with AD, there is a limit to the proportion of poultry litter that you can put into it. So, for any large quantity of poultry litter, you would need an awful lot of AD plants. I am not dismissing it by any means, but if it goes to AD here in the North and the digestate goes onto land in the North, it does not really solve the issue.

**Mr Clarke:** It is like sitting here with your eyes closed and waking up after six years. I have a degree of sympathy for these two gentlemen because it seems to me that they have been briefed and told to come up with something other than Rose Energy that is not supportive of that plant. If you were in the sales world, how could you suggest that you have a plan B when you do not know whether it works because it has not been tested and you do not know how much it will cost? When you did the technical options, you said that it has not been costed. However, you have costed the other options. It is interesting to note that you gentlemen have been put together, along with others, to come up with another solution to avoid us going for the fluidised bed that Rose Energy has.

That commercial company made an application, and it seems to me that the Minister, as with previous Minister, will do anything to prevent it from happening. That is to the detriment of the industry. We have an extension to 2014, and one of the questions asked whether we will we get another extension. That was not answered in the report, but I have a feeling that, at some stage, Europe will say, "No, you are not getting an extension." Northern Ireland producers will be caught out badly because they have been let down by this Minister, the previous Minister and the Department because you have not come up with a solution that suits the Ministers. A commercial company has come forward with a solution but, for some reason, it has been held up by another Minister and the Planning Service because they do not want to make a decision.

**Mrs D Kelly:** Chair, is that —

**Mr Clarke:** Chairman, can I finish? I think that I have the Floor at this stage. How can we talk about this plan B, given that nothing else has been used for chicken litter? How can you say that it is an alternative?

**Dr Mayne:** The only option that we costed was the transport to Scotland and England, and the reason we can cost that is that it is relatively easy to do so because you simply look at transport costs. We said that, if we have to go for a short-term solution, transport to England and Scotland is our only option, and the cost of that will be £2 million to £4 million a year. That highlights the cost of not doing anything and the impact that that will have on the industry.

You asked about the alternative options. I was on the original EGAUM, which was chaired by the chief scientist at the time, George McIlroy, that came up with fluidised bed combustion, and we have been working with AFBI over the past six years. That report was in 2006, and we have been looking at other technologies that are emerging. If we were back in 2006, I would be saying that, with my credibility as a scientist, fluidised bed combustion is the only show in town. However, since then, significant advances have made in gasification technology. We are now saying that, because Rose Energy has not happened in six years, other technologies have caught up on processes and are now offering an alternative to Rose Energy. It is not that we are trying to come up with an alternative solution because one is not going ahead. We are simply saying that the fluidised bed combustion technology has pretty well stood still. It was a well proven technology then and still is, but gasification has developed in the meantime and is now being used and is being recognised by some member states as a technology that will attract higher renewable premiums, in renewables obligations certificates (ROCs) and so on, than fluidised bed combustion. Having been involved in reviews over the six years, I can say that that is what has happened. Having said that, I accept the point that

gasification is still not a proven technology, but there is sufficient confidence in the technology that it can be applied to poultry litter. We are saying that it is a stage where we need to look at a prototype plant in principle and consider whether it will work. We may or may not need to have an alternative, depending on what happens to Rose Energy.

**Mr Clarke:** I accept that the science has moved on in many fields, not just in this one. How can you suggest something as a plan B if it has not been proved whether chicken litter works with it? Secondly, no costings have been done for that, so how can we say that it is an option? The industry may not be able to afford it. We have nothing to tell us today that it works for chicken litter, but it may work for other materials. We have nothing to say today how much it will cost to process it against other alternatives and whether the industry can afford that. If this is the only option and the fluidised bed does not come forward, it is a matter between this and shipping it. We know that shipping will cost, and we cannot afford shipping. How do we know how much this will cost and whether the industry can afford that?

**Dr Mayne:** We are saying that we need a prototype plant to address those questions. The view from those involved in the technology is that this process will work with poultry litter. It needs to be taken to that stage on a small-scale prototype plant to look at feasibility, and we have been discussing with the other Government Departments how that might be taken forward as, if you like, a demonstration project. It is to provide the data that will then look at the costings, the properties of the biochar, the potential of value of it and the potential gas yield. Our recommendation was that it should be a prototype plant. We did not recommend industry to go forward and start to build those. Our clear recommendation was to develop a prototype poultry litter plant, almost as a feasibility exercise. Time is not on our side, but it is there as an alternative option. If other options do not proceed, we should at least be looking at a prototype alternative that will provide the costings and the evidence to allow something on a larger scale to go forward, if it works and if it is economic.

**Mr Clarke:** I am concerned about the "ifs" on that one. I am someone who knows nothing about gasification. I have seen the fluidised bed in Fife. We did not get onto the site, obviously, but we saw it from the road. We went to Holland and saw one. Willie, you were there as well. There is major opposition to Rose Energy from people who live in the area. You have Nimbyism, and regardless of what technology is used, you will have such problems. Brian said that you can join some of these plants together, but, if I have done my sums right, they are all based on 60,000 tons —

**Dr Mayne:** Between 60,000 and 70,000 tons.

**Mr Clarke:** There will be approximately six plants, and Brian said that, from the scientific point of view, it is possibly better that they are in different locations. Given that, what is the process and what is the likelihood of encountering Nimbyism in relation to those?

**Dr Mayne:** That is a good question. Generally, it is fair to say that, in some areas where fluidised bed combustion has not been accepted, gasifiers have been developed. That has been the US experience. That is not to say that there will not be objections. There will be concerns, but the process is very different. Fluidised bed combustion is burning with oxygen present. Gasification is basically heating to 900° without any oxygen present. Therefore, you do not actually have combustion; you have a thermal treatment, which produces a char, as opposed to producing burning and emission of gases. From that point of view, generally, public acceptability elsewhere has been slightly better for gasifiers than has been the case for fluidised bed combustion. Whether or not that applies here is a matter of communication and ensuring that the message gets out about what the process actually involves.

**The Chairperson:** On that point, you talked about time. Time is obviously not on our side, but is there any timescale for the production of a prototype?

**Mr Ervine:** It would be fair to say that it will be done as quickly as possible and practical.

**The Chairperson:** But there has been no research done as to how that would get through the design stage, the planning stage and the developing stage to the actual operation?

**Mr Ervine:** Yes, there is a whole project to be managed, but it is fair to say that there are modular gasifier units that are not quite bought off the peg, but are in production and can be produced relatively quickly. However, those units need to be adapted with higher grade steel because the issue with



poultry litter is the corrosion arising from the acids coming off it. However, you are not starting from a blank piece of paper.

**Dr Mayne:** The key challenge is the procurement process. The technology is there, and the modular gasifier plant is there, but the quality of the steel needs to be up-specced to deal with poultry litter.

**The Chairperson:** Are we talking about a two-year plan, a six-year plan or a 10-year plan?

**Dr Mayne:** We have had initial discussions with other Departments, and we have another meeting next week to see how quickly procurement can be taken forward. If need be, initially, we will look at a more detailed case study in relation to some of the economics and points that have been made, based on the technical review. If that stacks up, we will take it to a prototype stage. This has opened the discussion about the need for a prototype to demonstrate the economic feasibility and viability of using poultry litter.

**The Chairperson:** So, it is fair to say that we are not at a prototype stage. We are at the stage before prototype.

**Dr Mayne:** In respect of our discussions with other Departments, yes.

**Mr Irwin:** I may be out of step with the rest of the Committee, but I welcome the fact that, at least, we are looking at alternatives. With regard to Rose Energy, we do not know yet what way that is going to fall. However, irrespective of that, it is good to look at other possibilities, and I think the industry will welcome that.

Industry has real potential to expand. I am closely involved with the industry, and I know for a fact that they are sitting back at the moment because of this issue. The Department of Agriculture and Rural Development and other Departments, right to the very top, have not taken the issue as seriously as they should have. My view is that whatever it takes to sort it out, it has to be done.

Exporting poultry litter would be a last resort, and not many people want to go down that route. That would be a last-gasp solution. We talk about our carbon footprint, and we are drawing all our fuels into Northern Ireland; we do not want to have to export it all out again. However, the questions have been asked, and you could not give answers on how long this is going to take. It is imperative that there is no sitting on the fence in regard to this issue, because, at the end of the day, solutions will have to be found, regardless of whether this will be the solution. I am frustrated about it. There is a large pool of poultry producers, so it is definitely a big issue in my constituency and right across Northern Ireland. I am hopeful that you can move forward as quickly as possible.

**Mr Swann:** Thanks, gentlemen, for your presentation. We have talked about the science and the options. We have forgotten the 7,000 jobs that the poultry industry supplies to Northern Ireland and its contribution, I think in the region of 21%, to our agrifood business. This will be a major stumbling block because it could bring that entire industry to its knees. There should be the opportunity for expansion but there are farmers who are not expanding because of not knowing what will happen to their poultry litter, where it will go or how they will manage it.

The Chairman asked about timelines for prototypes. We have the extension for on-field storage until 2014. How long will Europe allow us to continue at this speed by coming up with alternatives that never manifest themselves? We will work with on-field storage but move it another 40 metres if that keeps you happy. How long before Europe turns around and says, "You are not serious about solving this problem"? Then your only answer is to put it in lorries and ship it across to Scotland.

**Dr Mayne:** That is the key question. Brian and I were involved with the two previous nitrates action programmes. Right through all those discussions we said that the industry in Northern Ireland will be developing an alternative solution to the poultry litter problem. We have kept the Commission updated on progress with Rose Energy and reductions in phosphorus levels, which has been significant.

We should not underestimate the fact that the levels of phosphorus and poultry litter are over 30% lower than when we started talking to the Commission 15 years ago. That is because of the work at AFBI, where we looked at lower phosphorus diets, adding enzymes. That has helped to some extent and the Commission is aware of that.

The Commission is also aware about field heaps. We funded research at AFBI with industry — Moy Park was involved — to demonstrate that field heaps were not a problem in terms of leaching. We presented that scientific case to the Commission, which is the only reason we have been allowed to keep field heaps until 2014. The Commission reviewed those data very carefully and, based on the results, allowed field heaps to go through.

I agree we are getting to a crunch time, which will come at the end of 2013 when we start our negotiations with the Commission about the next action programme, which will start on 1 January 2015. By that stage, we would need to have concrete going in somewhere for the foundations of a plant. If we have demonstrated real progress and something is happening, we may be able to talk the Commission round. If nothing is happening by late 2013, however, we will be in a very difficult position with the Commission. It indicated to us clearly that it expects to see a solution emerging and something concrete happening on the ground before we get into the next phase of our discussions.

**Mr Ervine:** That is an accurate summing up of the situation. None are more acutely aware than Sinclair and myself, who negotiate with the Commission on this matter. Mr Swann, you made a valid point: farmers are not expanding because they cannot get rid of the litter. However, if we have something happening by next year and can demonstrate to the Commission that we are working on this, we may be able to make progress. In addition, it helps the case very much if farmers are being responsible and not expanding to show we are serious about this. We are not just trying to dodge things and continuing to pile up a problem here. We are solving the problem before we increase our production.

As I alluded to earlier, the position that some member states are in is because the problem got too big and then you are into a huge amount of regulation, control and all sorts of things. If we can collectively work for a solution here before that problem gets worse, then well and good.

**Dr Mayne:** Another point is that this is a cross-departmental issue. DARD is a key player but we also need the Department of Enterprise, Trade and Investment and the Department of the Environment. We need the Departments to work together to develop this because there are jobs, industry expansion and environmental issues, and issues clearly for DARD. However, it is very much a case of working together. We have the interdepartmental group. There is a further meeting of that, I think, scheduled for next week, to look at really taking this option forward quickly. So, we do recognise the need to progress a solution as quickly as possible.

**Mr Ervine:** The ultimate judge is the Commission. It will base its judgement on what the water quality is like.

We have actually made very good progress in the other sectors. Yes, there are issues, problems and wee things to sort out, but we have had a huge investment under the farm nutrient management scheme (FNMS), we have a completely different attitude to managing manures and fertilisers and we have had great uptake on the manure efficiency technology scheme (METS). We are getting there on sustainability in the other sectors. The poultry sector is still to be addressed. Maybe we have not solved everything, but things are going the right way in the other sectors. This is, if not the last bit, a major part of the jigsaw.

You will recall that, when Michael Hamell from the Commission was over, he was asked what we had done well. Generally, we have addressed the nitrates directive well, once we accepted that we had a problem. Jointly, farmers and government have got on with it. However, the poultry litter issue is proving a hard nut to crack.

**Mr Swann:** We should recognise the work that you two men are doing. You are stuck with delivering bad news to everybody, should it be the Committee, the industry or the Commission. We recognise that it is not of your doing.

From what I am hearing, and given the way the timelines are falling, I cannot see any alternative to our industry having to, at some stage, export poultry litter. Sinclair, you said that you have costed that. What are the additional implications not only for cost but for the licences, the transfer of waste, biosecurity and actually finding somebody who will readily accept it? In the past, with farm waste, we have seen that companies start to buy it. However, within a few months, they are doing you the favour of taking it off your farm. At first, they are charging only £5 a ton. In a few months, it is £50 a ton. It almost becomes an industry to take that waste away. What is the future prospect for the regulation of transferring poultry waste out of Northern Ireland and the potential of additional costs?

**Dr Mayne:** Again, that is an important issue. We have talked to the Environment Agency in England, and to the Agricultural Development Advisory Service (ADAS) and others about the potential demand. At the moment, there is sufficient need for phosphorus in the east of England and Scotland to take all the poultry litter we produce and more. The problem is that poultry litter is not an easy material to handle and there are all sorts of issues with the smell, etc, in getting it there and spreading it. It tends to get a discount value relative to phosphorus fertiliser. It is still easier to buy phosphorus fertiliser. That is the problem. Also, you are looking only at arable farms. We have botulism on grassland, so it is very much limited to arable farms where there is a potential market. On arable land, there is enough demand. It is a question of getting it there. The licensing side is something we have been looking at. The economic cost is the big issue, even as a short-term solution.

**The Chairperson:** You said, Brian, that it is good that the industry has not expanded. I know what you meant by that, but it could be perceived that government is stifling business. That is very difficult for me and other members to take. We know that the industry is there to expand. It is ripe for expansion. If allowed to grow, it will take our country out of recession. I know the point you are making and I know why you are making it. However, you can see how people will construe it.

**Mr Ervine:** Yes. That should not be taken out of context. I suppose what I mean is that it demonstrates our intent to the Commission to behave responsibly and not focus on economic benefit without taking into account the environmental impact. That is where I was coming from. It is in our review paper that the poultry sector has great potential for expansion here, if the litter issue can be solved. Northern Ireland has a tremendous record in poultry production. We can build on that, if this issue can be solved.

**Mr McMullan:** For gasification, are you saying that municipal waste could work along with poultry litter?

**Dr Mayne:** Municipal waste is currently used in gasification. If you start to bring poultry litter into that sort of plant, you need to upgrade the plant because of some of the chlorine and acidic products that are formed during combustion. The gasifier people have said that, if that upgrading is done, they will probably run it with all poultry litter, or 80% poultry litter, to try to get the payback in handling that litter as opposed to having an upgraded plant that they do not really need to handle municipal waste. However, it could be run along with municipal waste. It could also be run along with woodchip or some of the other forest by-products. It does not have to be 100% poultry litter, but it is likely to be 80% or 85% poultry litter to justify the investment in upgrading the gasifier to cope with poultry litter.

**Mr McMullan:** Is it pretty expensive to upgrade a gasification plant?

**Dr Mayne:** Extra steelwork, and so on, is needed to avoid the more corrosive properties of poultry litter. Yes, there is a higher cost.

**Mr McMullan:** One of those plants was proposed for here.

**Dr Mayne:** A gasification municipal waste treatment plant is proposed for the west. That is currently going through the planning process.

**Mr McMullan:** I was just wondering about that. The question of whether that was an option came into my head.

**Dr Mayne:** I understand that another two gasification plants are in the planning process as well as the one in the west, but they are for municipal waste. They would have to be upgraded to cope with poultry litter.

**Mr McMullan:** Could you build one on the same site?

**Dr Mayne:** Yes. Those are the sorts of options that could work.

**Mr Ervine:** If you were to co-fire with municipal waste and upgrade the plant, you would miss out on being able to recover the nutrients and the phosphorus.

**Dr Mayne:** The biochar would be different.

**Mr McMullan:** Would that be offset by what you get back from the likes of ROCs?

**Mr Ervine:** Therein lie the various permutations, combinations and economics. It depends on the price of phosphorus, how well you can recover it, and so on. Speaking agriculturally, long term, you want to be recycling phosphorus. Morocco holds three quarters of the world's reserves, and they are dwindling. The price is only going to go one way.

**The Chairperson:** There are no further questions from members. Gentlemen, thank you very much for your presentation and your answers to our questions. It is a very important issue for the farming and agriculture industry, and the poultry industry in particular.