

DÁIL ÉIREANN

AN COMHCHOISTE UM GHNÍOMHÚ AR SON NA HAERÁIDE

JOINT COMMITTEE ON CLIMATE ACTION

Dé Céadaoin, 7 Samhain 2018

Wednesday, 7 November 2018

The Joint Committee met at 1.30 p.m.

MEMBERS PRESENT:

Deputy Jack Chambers,	Senator Paul Daly,
Deputy Marcella Corcoran Kennedy,	Senator Máire Devine,
Deputy Pat Deering,	Senator Tim Lombard,
Deputy Timmy Dooley,	Senator Ian Marshall,
Deputy John Lahart,	Senator Michelle Mulherin,
Deputy Tom Neville,	Senator Grace O'Sullivan.
Deputy Thomas Pringle,	
Deputy Eamon Ryan,	
Deputy Sean Sherlock,	
Deputy Bríd Smith,	
Deputy Brian Stanley,	

In attendance: Deputy Martin Kenny..

DEPUTY HILDEGARDE NAUGHTON IN THE CHAIR.

The joint committee met in private session, suspended at 1.40 p.m. and resumed in public session at 1.42 p.m.

Third Report of the Citizens' Assembly: Discussion (Resumed)

Chairman: I welcome members and viewers who may be watching proceedings on Oireachtas TV to the tenth public session of the Oireachtas Joint Committee on Climate Action. At the request of the broadcasting and recording services, members and visitors in the Public Gallery are asked to ensure that, for the duration of the meeting, their mobile phones are turned off completely or switched to aeroplane, safe or flight mode as they interfere with the broadcasting system.

On behalf of the committee, I extend a warm welcome to Mr. Brendan Gleeson, Secretary General, Department of Agriculture, Food and the Marine and his officials. It is Mr. Gleeson's first appearance as Secretary General. We wish him well in his new appointment. He is accompanied by Mr. Bill Callanan, chief inspector, and Mr. Fergus Moore, senior inspector. I also welcome Dr. Frank O'Mara, Teagasc, and Mr. Michael Maloney, Bord Bia.

I draw the attention of witnesses to the fact that by virtue of section 17(2)(l) of the Defamation Act 2009, they are protected by absolute privilege in respect of their evidence to the committee. However, if they are directed by the committee to cease giving evidence on a particular matter and they continue to so do, they are entitled thereafter only to a qualified privilege in respect of their evidence. They are directed that only evidence connected with the subject matter of these proceedings is to be given and they are asked to respect the parliamentary practice to the effect that, where possible, they should not criticise or make charges against any person, persons or entity by name or in such a way as to make him, her or it identifiable.

Members are reminded of the long-standing parliamentary practice to the effect that they should not comment on, criticise or make charges against a person outside the House or an official either by name or in such a way as to make him or her identifiable.

I invite Mr. Gleeson to make his opening statement.

Mr. Brendan Gleeson: I thank the committee for the opportunity to address members and to highlight the ongoing work on climate action in the agrifood sector.

The agrifood sector is a critically important part of the economy. It accounted for 174,000 jobs or almost 8% of employment in 2017. Many of these jobs are in rural areas. In Food Wise 2025, the sector outlined a vision for its development that involved the creation of 23,000 jobs and an increase in the value of exports to €19 billion by 2025. That vision recognised the critical importance of environmental sustainability giving it equal billing with its developmental objectives and recommended a range of environmental actions. Against that background, the department and its agencies have been engaged in environmental action for some considerable time, for example through the afforestation and rural development programmes. We have also recognised that positive environmental credentials can be an important element in our international marketing strategy.

Under the Paris Agreement, Europe has proposed an ambitious reduction of 40% in emissions by 2030. Every member state and sector will need to play its part. Agriculture contributes 32.3% of Ireland's overall emissions. This is not surprising given the profile of the economy

and the importance of agriculture.

Even in a successfully decarbonised Ireland, agriculture emissions as a percentage of the total will still be significant. It must also be recorded that our food production systems provide some of the lowest carbon footprint profiles across the EU on a per unit basis, as reported by the EU Joint Research Centre. The lowest emissions per kg of livestock product are created by extensive temperate grassland systems similar to the one that exists in Ireland.

Unlike other sectors, no one-off technological fixes can be applied to the agriculture sector. Mitigation requires the sustained application of improved management practices over time by farmers. Bearing all of this in mind, the national mitigation plan refers to a long-term vision for the agriculture, forestry and land use sectors. This is based on “an approach to carbon neutrality in the agriculture and land use sector, including forestry, that does not compromise capacity for sustainable food production”. This is entirely consistent with the principles laid down by the EU Council conclusions of October 2014. These provide as follows: “The multiple objectives of the agriculture and land use sector, with their lower mitigation potential, should be acknowledged, as well as the need to ensure coherence between the EU’s food security policy and climate change objectives”.

While agriculture contributes to emissions, it is also part of the solution. There are three strands to the Department’s approach and they are abatement, sequestration, displacement and substitution. Abatement reduces emissions of methane, nitrous oxide and carbon dioxide from the sector insofar as it is possible. Sequestration takes carbon out of the atmosphere through forestry and other land use mechanisms. Finally, there is the displacement and substitution of fossil fuels and energy intensive materials with renewable energy sources. From a departmental point of view, we are working with stakeholders and State agencies on all three strands of this approach. My colleagues and I are happy to brief the committee on what we are doing under each of these headings, including our investment in efficiency through the following: the beef data and genomics programme, BDGP; the new beef environmental efficiency pilot, BEEP, scheme; the targeted agricultural modernisation scheme, TAMS; investments in areas such as low-emission slurry technology; and work by both Teagasc and Bord Bia through research, advisory services and carbon audits.

The committee has been briefed previously on current compliance with the 2030 targets. Based on that analysis and a no policy change scenario, the gap to target in the 2021-30 period for the non-emissions traded sector is in the region of 90 plus megatonnes. Based on the flexibilities afforded to Ireland in the effort sharing regulation, the agriculture and land use sector, including afforestation, will contribute approximately 26.8 megatonnes towards closing that gap. This flexibility was provided to Ireland specifically in recognition of its large agriculture sector and its relatively low mitigation potential. In addition to that contribution, the latest research from Teagasc has identified significant additional abatement potential from the agriculture sector. Agriculture can also contribute to meeting the renewable energy targets. These are potentially major contributions.

The mitigation effort comes at a cost. If we are to achieve the ambition for the sector, it is important that we continue to incentivise positive climate action through the afforestation programme and a well funded, and appropriately configured, Common Agricultural Policy, CAP. The Department is currently engaged in a negotiation on Commission proposals for the post-2020 CAP. These require 40% of the budget to be directed at climate change or environmental measures. This approach is well aligned with the recommendations made by the Citizens’ Assembly, which recommended that farmers be rewarded for good environmental practices.

The Department and its agencies recognise the important contribution that stakeholders have to make, and not just farmers but farm bodies, education and advisory services and industry. We will only make progress if we bring all the various actors along with us. This will require us to configure public policy to assist farmers in their efforts. We must also recognise the strong synergies between those efforts and economic efficiency, and our positioning in the international market place as a source of high-quality and sustainable food.

The Department held a sustainability dialogue during the summer, which was attended by a broad group of stakeholders where we had good engagement and positivity around what the future requirements might be. There was a sense of collaboration on the day. We will continue to work at building consensus on the need for agriculture to make a positive contribution to the climate change debate.

I am happy to take any questions that the members might have.

Chairman: I thank the Secretary General for his presentation.

Chairman: I will start with two brief questions of my own. The first is about carbon neutrality. The national policy position suggests an approach to carbon neutrality for the agriculture and land use sector that does not compromise capacity for sustainable food production by 2050. What does that mean in practice and what approach is the Department taking in this regard? Is it the bio-economy or the circular economy, for example? Could Mr. Gleeson expand on that? Second, the balance between complying with our EU targets on reducing emissions while at the same time meeting the Food Wise 2025 targets is also a concern for many committee members.

Mr. Brendan Gleeson: There are two issues. First is an approach to carbon neutrality in the agriculture and land use sector, including forestry, that does not compromise the capacity for sustainable food production. What we are talking about here is a direction of travel that requires us to deploy all of the sequestration and abatement tools we have. We know what some of those tools are, for example, afforestation in land use. On abatement, we are incentivising practices such as low-emission slurry spreading and the development of more efficient livestock through breeding policies. This policy requires us to deploy all of those technologies and all of that knowledge to reduce the emissions profile of the sector. We are succeeding in reducing the carbon intensity of the sector through all of those mechanisms. Technology will move on over the next few years. We have succeeded in quantifying what can be done through those mechanisms.

The Chairman mentioned meeting our targets. We have a national target in the non-emissions trading system, non-ETS, sector, of which agriculture is a part, to reduce emissions by 30% by 2030. Agriculture can make a contribution to that. We can certainly reduce emissions intensity and flatline emissions output, even against the background of an increasing profile of production.

On Food Wise, there is a kind of fixation on the target which was, in fact, a projection by industry for itself. The headline figure was to increase the value of exports to €19 billion by 2025. There are a number of mechanisms for achieving that ambition. It could be achieved through additional production. However, it could also be achieved through adding value, for example to manufactured product, finding new markets and maximising the price we achieve for our product. When we talk about the ambition for the sector, it is an ambition that has been set by the sector for itself but with broad approval from successive Governments. I have heard some commentary that suggests we should resile from the ambition for the sector. We have to

maintain our ambition but we have to be sure that we focus on delivering it through methods that do not exacerbate the emissions situation. That is the objective but it is difficult. We have done a lot of work over successive years on focusing our policy through the rural development programme, for example, on emissions reduction. However, because of its nature, agriculture will always be a contributor to emissions. It is not possible to produce food without having emissions.

Chairman: I will move on to our speakers. First is Senator Máire Devine, who has ten minutes.

Senator Máire Devine: I thank Mr. Gleeson for his presentation. I note for the benefit of the committee that the Collins Dictionary's most notable word of the year is "single-use". We need to take into account the growing traction of that term.

The agriculture sector is extremely important for our economy but also for the environment. That is where the dichotomy is in terms of the problems and solutions for climate change. One third of the carbon is stored above ground in biomass and the remaining two thirds are in the soil. We are talking about forestry here. Plants and soil are acting as natural carbon sinks, accumulating and storing the carbon. We plant forests and many of us, while walking in the Dublin Mountains or wherever, see coniferous trees. Has research been done on how effective coniferous trees are as carbon sinks? I notice when I am walking that there might be a forest on one side with tall conifers while there are broadleaf trees on the other side. There is so much more wildlife in the broadleaf trees, whereas the coniferous forests are a dead zone. Has the effectiveness of conifers been assessed? Is there an evidence base for them? Are there other types of trees that might be more effective as carbon sinks? I have in mind rotation crops such as willow that grow quickly and are good for biomass as well.

My other concern is hedgerows, which are all over the country and are an important part of rural Ireland. The season in which cutting is allowed has been extended. Are hedgerows effective as carbon sinks? Has any research been done on that? What will be the impact of the extension of the cutting season provided for in recent legislation?

Agriculture and the agrifood industry are about producing beef, lamb, pork and dairy products. We need to take account of the increase in the trend of veganism, especially among our young citizens, many of whom are learning about it and deciding to become vegan. I do not think I could do that myself but it will be a significant factor for the generation that is growing. In about ten years, the current generation of 15 year olds will have been significantly influenced and that many will have decided to become vegan. The concentration should not just be on beef and dairy but also on horticulture and the excellent products from north County Dublin such as potatoes, lettuce and all the vegetables. However, vegetables cannot easily be exported. Has that been factored into the idea of the growth of the agrifood sector? We have a significant youth population of whom 25% will be vegan in the next ten years.

A dairy co-op in the Netherlands decided to invest in installing solar panels on over 300 farm structures as these barns and so on would give the most effective return in generating solar on a small scale. Have we considered that in respect of solar or wind? The buildings are there. If we made that investment we could reap the rewards from it.

Mr. Brendan Gleeson: I will deal with the Senator's question in the order in which they were asked. If I miss anything, I ask to be reminded. We have metrics around forestry. As part of our Paris or COP 21 deal, we were given credit for 28.3 megatonnes between now and 2030.

That is largely from our existing forestry stock. One of the things that surprised me was that 30% of our existing forestry stock is in deciduous trees. There is a significant narrative, and I guess we will hear some of it today, about the preponderance of Sitka spruce being planted at the moment. We are sensitive to the need for more diversity in our stock of trees. The balance is between producing a stock of harvestable and renewable trees that provide a basis for a reasonable income for farmers while being managed in a renewable way, and remaining sensitive to the need to encourage biodiversity. This year, we increased our grant rate for deciduous trees. Our national requirement is now for at least 15% of planting to be in deciduous trees. We insist that at least 15% of planting is deciduous trees. Forestry is a critical part of the climate change discussion and we have credit for it up until 2030. Depending on how our obligations are accounted for after 2030, we would need to be planting trees now to provide mitigation potential for the period thereafter. That is why it is critically important to plant those trees now.

We are concerned, to be frank, that there is a negative narrative around forestry at present which might make it more difficult to reach our targets. While it is important to have a balanced discussion on the pros and cons and the difficulties involved, I urge this committee to make some sort of recommendation that encourages the planting of trees over the next period. People may have different views on how we do that but it is very important that we do not have an eternally negative narrative about afforestation because it is critically important in the context of climate change.

The issue of veganism was mentioned but I do not think it is productive to get into a discussion about peoples' dietary habits. Farmers grow vegetables as well as producing beef and dairy products. The reality is that this country has the most carbon efficient dairy production system in the world. It is not just me saying that; that is also the finding of the joint research committee of the European Union. We also have a very efficient beef sector. Generally speaking, our beef is produced on small family farms in an extensive way. This results in exactly the kind of environmental public goods that people want to see delivered. Notwithstanding the fact that agriculture contributes a significant percentage of the emissions pool in Ireland, our production systems are actually quite carbon efficient. I am not going to get into a discussion about veganism-----

Senator Máire Devine: I am not asking for a discussion on veganism. I am just asking for recognition of the fact veganism is growing and that we must cater for that fact. Emphasis must be put on the horticultural sector into the future, alongside beef and dairy. I am not asking that Mr. Gleeson would discuss veganism but----

Mr. Brendan Gleeson: I absolutely accept that. As a Department, we provide support to the horticulture sector on an ongoing basis. We provided €1 million last year in supports for that sector. We have encouraged the establishment of producer groups in the horticulture sector in order that producers can come together and market their produce collectively. It is an area with significant potential and we recognise that.

Senator Máire Devine: There is potential for growth. I also asked about hedgerows.

Mr. Brendan Gleeson: Again, through GLAS we encourage the planting of hedgerows. We provide financial incentives for the planting of hedgerows which has a role to play in carbon sequestration. Last year, there were 7,000 applicants to GLAS for the planting of new hedgerows and over 1,000 km of hedgerows have already been planted, incentivised by GLAS. It is something that we encourage farmers to do because hedgerows have a climate change mitigation function, as well as a biodiversity function. I cannot articulate precisely the carbon seques-

tration effect of hedgerows but can find out and revert to the committee with that information.

Chairman: If the Department could provide that to us, it would be very welcome.

Mr. Bill Callanan: Approximately 3.9% of our land cover is hedgerows and a research project is under way which is quantifying the carbon value of that, in terms of carbon storage and so forth. The specific question asked was on cutting hedgerows. A degree of flexibility is allowed, following changes made to the Heritage Bill, which is the responsibility of another Department. While I cannot quantify the impact of that I would point out that the changes relate only to the timing of hedgerow cutting rather than prescribing that hedgerows should be cut. That should not interfere with the volume of carbon stored in the actual hedges. The changes relate to the timing of cutting rather-----

Senator Máire Devine: Cutting back reduces the amount of hedgerow available. If there is growth for longer and a spread of growth for longer, it will have more impact. It is interesting to note that hedgerows account for 3.9% of ground cover. How does that compare with forestry?

Mr. Bill Callanan: Approximately 11% of the land area is forest, so it is quite significant in comparison.

Senator Máire Devine: It is significant.

Mr. Fergus Moore: We have a national forest inventory that takes place every three or four years. It measures all of the forests, including the different age growths and species growths. The inventory looks at between 1,700 and 1,800 plots all over Ireland. Everything is measured in the plots, including the above-ground biomass and the below-ground biomass. Those data are used to calculate the sequestration impact nationally. The national forest inventory is peer reviewed and conforms to international best practice. The metrics are there to measure the carbon. It is not just a question of getting a rough estimate. We can measure the carbon sequestration of our forests very accurately. Reference was made to large and small trees. Obviously different trees, depending on their age, have different rates of sequestration. Our national forest inventory measures old and young trees, including very small trees, across a whole range of species groups.

Chairman: Senator Devine's time is up.

Senator Máire Devine: I had one last question about investment in micro-generation, including solar panels and wind turbines on individual farms or buildings.

Chairman: I ask the witnesses to give a brief answer because we are running short of time.

Mr. Brendan Gleeson: We have a targeted agricultural investment scheme under the rural development programme which provides for solar panels, mainly for pig units, and under our young farmers capital investment scheme. It is an area that we will have to consider further in the future.

Chairman: Senator Mulherin is next.

Senator Michelle Mulherin: In the context of agriculture and emissions, Food Wise 2025 cannot be ignored. Under that plan, we will ramp up food production in beef, dairy and other sectors. As technology advances, we like to think that there will be technological solutions to problems arising. The witnesses have outlined three important areas, namely, emissions reduction, carbon sequestration and the use of renewable energy to replace fossil fuels. We can also

add to that the need to find new markets for the €19 billion and the 23,000 jobs that will be lost. In reality, we cannot do to cattle what we can do to cars and we will run out of road when it comes to agriculture and carbon neutrality. There are certain home truths about agriculture and food production in the context of emissions that cannot be denied. This needs priority, not just in Government policy but also in people's thinking because we are talking about food, which is not optional. We do not have a choice about eating, although we can choose what we eat.

The report produced by the Joint Committee on Agriculture, Food and the Marine recognised the importance of this issue. One of its recommendations is that an impact assessment be conducted on the climate change and sustainability targets set out in Food Wise 2025 to determine how they match up with our carbon emissions targets. As it stands, there are serious issues around emissions. We are trying to get down to the nuts and bolts here. A lot of what we are discussing today has been discussed previously. Teagasc has contributed to these discussions and has highlighted the strides that have been made in terms of carbon efficiency. Nonetheless, under Food Wise 2025, we are talking about increasing the size of the national herd, which has consequences. What assessment has been done in that regard?

Mr. Brendan Gleeson: Bovines produce emissions and that is the reality. However, there are a number of important considerations here and the Senator has touched on some of them. The description in the national mitigation plan is nuanced because some of this is difficult. We talk about an approach to carbon neutrality that does not compromise our ability to produce food sustainably, which is nuanced language for a reason.

On the Food Wise 2025 strategy, what is driving the expansion of the dairy sector is not public policy, which has been moved out of the way with the disappearance of the quotas. Rather, the expansion is driven by economics. We have an agricultural sector that provides a decent living for farmers and that produces milk in the most carbon-efficient way in Europe and, by extension, the world. This is not a matter of public policy; it is about farmers responding to market signals in a way that allows them to make a living. We are working hard to ensure that is done in the most sustainable way possible, for which we have many measures. It is important to stress that it is not a function of public policy but rather of economics.

In the case of the beef sector, we have been very careful since 2005, when we dispensed with coupling payments to beef farmers. We have ensured that when we intervene in the beef sector it is in ways that improve its carbon efficiency. All of our measures, therefore, such as beef genomics and the scheme that was recently announced in the budget, are configured to try to improve the beef sector's carbon efficiency. When we talk about an approach to carbon neutrality, it is an approach that configures public policy to improve its carbon efficiency to the greatest extent possible. More can be done, however, and there will be a new Common Agricultural Policy, CAP, post 2020. There will be an additional "greening" in that policy, that is, there is an undertaking in the proposal to require 40% of expenditure to be devoted to climate change or the environment, an ambition which Ireland has supported rather than resiled from.

We have defined what can be done in the agricultural context. If more needs to be done, say in the dairy sector, it would require a somewhat perverse step to reduce production in the most environmentally friendly milk production system in the world. There are policy options in the context of all of this, none of which are easy, but in considering what options we take in future, we must consider the cost and the social and environmental impact. As I said earlier, most beef producers are small producers in the west of Ireland who farm in an environmentally friendly way. We have defined an approach that allows us do what can be done with current technology without taking some of those more difficult or extreme steps that might have unintended

consequences for greenhouse gas emissions globally. We are clear that we are working hard to reduce the emissions intensity of these sectors, but maximising the potential of even that will require some difficult decisions about land use and so on. Going further, however, will require other difficult decisions and could have the global impact of increasing emissions when one considers that demand for dairy production globally is increasing and that somebody will fill the gap. There is a reasonably strong argument, therefore, that there is potential for carbon leakage from the more efficient producers of food to the less efficient producers of food if production is cut in more efficient places.

Senator Michelle Mulherin: Mr. Gleeson has just moved into the area of my next question. What steps has the Department taken to ensure farmers have been given credit for the carbon efficiencies they have achieved? I do not want to have a domestic conversation only but rather internationally, whether it is the Paris Agreement or any other climate action agreement. Mr. Gleeson said we are the best at dairy production and quite high in the ranks of beef production, although it is acknowledged there is more to be done. We want to be world leaders in this area and the world must be fed. As I understand it, more and more of the world is choosing to get its protein, which is required in humans' diets, from beef and dairy. If we do not produce it, it will be somebody less carbon efficient.

We need protein in our diets but in this country we do not have a great track record of growing beans and other protein-rich food crops, for which the most successful areas are in the warmer climates and the tropics. I do not hear people who promote lifestyles without meat argue that many protein-rich foods, such as beans and so on, are imported from areas with a significant carbon footprint and take food out of countries where people do not have much in the first place.

It is grand for us to have a conversation, but how is the message that we are a special case put out? We are the top of the class in dairy and we will get top of the class in beef also, but how will that be recognised? How will the farmer get credit?

Mr. Brendan Gleeson: We are certainly not saying that agriculture gets a free pass. It is important to record the fact that we are saying that the agriculture industry has done a great deal but must do more, which we understand. We want to use the lengthy opportunity of the next CAP to configure it in a way that helps us to do that.

On getting credit, in recognition that agriculture is such a significant part of our economy, we got special credit in the Paris Agreement for up to 28 megatonnes for the existing biomass in our forests and our land use. That is specific credit that we got in the context of our overall obligations.

There are national targets that must be met. Even domestically, there is a negative narrative about agriculture which is not justified. Agriculture has always been a significant part of our emissions, and it is not that it has performed badly over the past 20 years. In fact, the emissions from agriculture since 1990 have virtually flatlined, although they have begun to climb. There has not been any extraordinary increase, and that is the nature of the beast. It is important that we domestically communicate credit for farmers. As to the marketplace, if that is what the Senator is asking, we have positioned ourselves in not to compete with commodity producers but rather to try to get onto supermarket shelves in the European Union and extract the best price we can, which requires us to tell the story of our sustainability credentials.

Mr. Moloney from Bord Bia might like to talk about Origin Green and what is being done

about that. It is an effort to monetise the good work we have done on climate change.

Senator Michelle Mulherin: I am conscious that we are all under time constraints, myself included. Mr. Gleeson described credits received under the Paris Agreement, but we did not get credit for all the work done to bring dairy to where it is today. It is regrettable because we made changes which other countries have not. We are being responsible in how we produce it and we are up for more in the other sectors of our agriculture industry. The situation, therefore, is not right.

On the bio-economy, members of the Oireachtas Joint Committee on Agriculture, Food and the Marine visited the BEACON bioeconomy research centre at University College Dublin, where many technological advances are researched. In particular, the committee was informed of a joint venture in Tipperary between Teagasc and Dairygold to make plastic as a by-product of dairy, which would replace fossil fuels and would be biodegradable in plastics and adhesives. My understanding is that Enterprise Ireland is investing there. How is the Department investing in finding these technologies to reduce carbon emissions, or is it batting it over to some other Department? What is the Department doing to help farmers?

On renewable energy, what is the take-up of the renewable heat incentive scheme? How has it affected farming and emissions reduction?

Chairman: We will have to take brief answers because we must move on. If the Department wishes to provide more detailed replies, they can be provided in writing.

Mr. Bill Callanan: The bioeconomy falls within the research remit so I will answer on that matter. It is entirely correct to say there is a project relating to the use of whey permeate and Glanbia is at the forefront with its facility at Lisheen. The company has been clear that the objective is about adding value to milk and giving the returns to the producer. There is a discussion at European Union level on that. We are involved in the support of the project. The Department has been heavily involved and the Department of the Taoiseach published an over-all policy position on it quite recently. Our Department contributed strongly to that. We chair a working group jointly on how that bioeconomy can be moved forward. There is no question of us handing it over and we see that as being particularly important with respect to forest fibre and milk. The mushroom industry, for example, is involved with proposals at Lisheen as well. The bioeconomy development will very much be part of agriculture in future.

Senator Michelle Mulherin: Are people investing in it?

Mr. Bill Callanan: Much of the development in the bioeconomy is predicated on work that is called the BioÉire project, which we funded a number of years ago and which identified the capacity and opportunities here. It is really about enabling industry and setting pointers in terms of where people should be looking to add value. That came directly from the Department of Agriculture, Food and the Marine and it was implemented by Teagasc.

Chairman: Will you provide written information on the investment in research and development? That is the basis of the Senator's question.

Mr. Bill Callanan: Yes.

Chairman: We would appreciate getting that in writing afterwards.

Mr. Bill Callanan: The renewable heat scheme is the responsibility of the Department of

Communications, Climate Action and Environment.

Senator Michelle Mulherin: The witness does not know to what extent the farming sector is availing of it.

Mr. Bill Callanan: We have supported a number of ancillary investments, such as burners in the horticulture sector for mushrooms and pig units. The more intensive sectors generally have a requirement for heat. The likes of the dairy sector etc. has a requirement for electricity. It is a different matter. For those sectors that need heat, supports are available through the Targeted Agricultural Modernisation Scheme, TAMS, system for those types of investment, building on the renewable heat incentive scheme as well.

Mr. Brendan Gleeson: We can provide those figures.

Senator Michelle Mulherin: I am asking to what extent this is having an impact on reducing carbon emissions. It is one of the strands that Mr. Gleeson suggested to displace the use of fossil fuels. Surely the Department should be able to audit what is happening on farms with food production to displace those fuels.

Mr. Brendan Gleeson: To the extent that we invest in this, we can give the Senator the figures.

Chairman: It would be great to have that in writing and other members can follow up on those questions when they get their opportunity to speak.

Senator Michelle Mulherin: I thank the witnesses.

Deputy Eamon Ryan: Mr. Gleeson indicated in his opening statement that the new Common Agricultural Policy, CAP, reform requires that 40% of the budget be directed to climate change and environmental measures. What is the current percentage? Will he briefly outline his ideas on what to send to Brussels on how to achieve that 40% figure? How will we pay our farmers to do that?

Mr. Brendan Gleeson: The current requirement is that 30% of Pillar 2 payments be directed towards environmental requirements. The new requirement under the CAP proposals is that 40% of the overall expenditure would be devoted to climate and environmental requirements. There are two mechanisms for this. One is kind of new and under Pillar 1, the traditional income support payment for farmers, there would be a requirement for an eco scheme. Farmers will receive their direct payments, which come with conditions, some of which relate to the environment, but in addition to this we will be required to establish some kind of eco scheme. We are thinking about what that might look like but I do not have the policy answer right now. It is something on which we will engage stakeholders. In the rural development scheme we will have a range of measures and my view is that we must focus to a more significant extent on the climate impact of those measures. There are measures in the green, low-carbon, agri-environment scheme, GLAS, for example, covering issues like water quality, biodiversity and some climate impact. We will have to look more at the climate impact of those schemes.

With regard to investment, there is currently a TAMS element for production and some environmental investment. We must consider what we want to invest in the next time around and whether we want to focus investment on elements that have an impact on the environment. For example, do we want higher grant rates for things that may have a positive climate impact? There is a new provision, for example, under the proposals to allow for low-cost loan schemes

and grants. Do we want to configure grants versus loan schemes on productive versus environmental expenditure? These are some of the questions that arise and although I do not have the answers now, we have already engaged in a significant national consultation, including on the environmental pillar of CAP regulations. We will be required to draft a national Common Agricultural Policy plan, embracing both Pillar 1 and Pillar 2 of the Common Agricultural Policy. We will engage in consultation on the shape of that.

Deputy Eamon Ryan: I suggest we might have to speed that up to include some of the provisions in our national energy and climate action plan, given that agriculture plays such a large part of our emissions. Mr. Gleeson said in his presentation that agriculture will contribute 26.8 megatonnes of the gap we must close of more than 90 megatonnes. I presume from the comments thereafter that this will largely come from existing forestry.

Mr. Brendan Gleeson: Yes.

Deputy Eamon Ryan: That will largely use the flexibility mechanisms. Will Mr. Gleeson provide a list of any of the other measures that make up the 26.8 megatonnes later to the committee?

Mr. Brendan Gleeson: I will do so. Apart from the 26.8 megatonnes, we have identified measures that can contribute to some additional abatement and we are funding some of those measures. We must reflect, in the context of future policy, on what else we do. For example, Teagasc has done much work on a marginal abatement cost curve that identifies potentially mitigating strategies and we must reflect on the fruits of that work. Dr. O'Mara can speak a little to that cost curve or we could provide it in written form.

Deputy Eamon Ryan: It would be useful to present it in written form. There is much talk of increasing biomass use, grass to gas and all sorts of other initiatives, as well as further increasing our herd and further increasing output. How will we do that in a country where in the past three or four years we have had to import fodder to feed the herd? How will we complete these objectives with biomass and increased production when we cannot feed the existing herd? Are we not overstocked?

Mr. Brendan Gleeson: I am not sure that is true. Looking at stock numbers over the past ten or 15 years, they have gone up and down in accordance with market dynamics. The overall stock numbers now are not very much higher than they were in the mid-1990s. We had a particularly difficult year this year and it is certainly true we must consider resilience strategies. Dr. O'Mara from Teagasc would have more to say about this than I would. We know people are under-utilising the resource we have in grass and there is potential for significantly more production of grass if people managed their land correctly. Dr. O'Mara can speak a little more about the technology behind this.

Dr. Frank O'Mara: The production of grass on Irish farms is variable. Top farms are producing 15 or 16 tonnes of dry matter per hectare per year but the average as measured in the national farm survey is probably less than half of that. By improving grassland management there is the possibility to produce much more grass in the country. If farmers wanted to and market conditions were right, there is the opportunity to produce some of that for the production of biogas.

Deputy Eamon Ryan: We are in a world where climate change is changing the weather. We saw significant crop failure this year, as our grass crop failed at the height of the growing

season and the best climate scientists tell us that is likely to happen again and again with greater intensity. We must take that into account as well.

In the Citizens' Assembly, Professor Alan Matthews, our best land use economist, set out a very good case for putting a signal into the agriculture system to get productivity and generate revenue that we could feed back into the Irish agricultural system to pay farmers in the less affluent areas who are not part of the milk bonanza. Is the Department opposed to his proposals and if so, why?

Mr. Brendan Gleeson: Is this the carbon tax proposal?

Deputy Eamon Ryan: Yes.

Mr. Brendan Gleeson: I am not sure I can answer that as it is a policy question. I am not going to propose or oppose policy or try to bind the hands of any Minister or Minister for Finance in the future. Carbon taxes have, however, been applied elsewhere. There are issues with where to apply the tax. If applied at production level, one of the issues for farmers is that it is a low margin business and it would impact on profitability. The objective of a carbon tax is to change behaviour. We have to ask ourselves again if there are alternative options for farmers to improve or change their behaviour. We have already discussed the technological limitations on what can be done to mitigate or abate emissions from farming. I am not going to say that I agree or disagree with policies that may or may not arise but there are issues to be considered in the context of reflecting on that policy. I have mentioned some of those.

Deputy Eamon Ryan: Mr. Gleeson said we would need to do a great amount of afforestation to meet our post-2030 targets, given that the forest we have already will use up all of our flexibility mechanisms. Any new forestry is for what happens after 2030. Does Mr. Gleeson have figures on afforestation and the type of afforestation the Department believes is required? How many hectares of forestry should we plant each year by the middle or end of the next decade? Will this be continuous cover or will we continue to bet everything on single clear felling of sitka spruce?

Mr. Brendan Gleeson: We have a national objective of 18% of forestry cover. That compares with a European Union average of approximately 35%. I ask Mr. Moore to discuss the kind of cover and the other questions the Deputy asked.

Mr. Fergus Moore: Our national target is to have 18% forest cover by mid-century. Our afforestation targets in recent years were not as good as they could have been. It is important for sustainability that we continue an afforestation programme every year. We are getting the benefit now of the forestry we planted since the 1980s. We planted more than 300,000 acres since the 1980s and it is important that we continue afforestation over the next number of years that will affect the next commitment period. On the type of forestry, under our forestry programme we have a target of 30% of broadleaf forest cover for that part of the afforestation programme.

We are trying to influence farmers' decisions. We provide higher grants and premiums for the planting of broadleaf trees. We also introduced a minimum requirement that every single forestry application must have a minimum of 15% broadleaf cover. Looking at the national afforestation that has taken place in recent years, some farmers have planted 100% broadleaf, which is great. Some plant much less but they plant a large amount of coniferous forest. Even with coniferous forests, a certain minimum level of types of broadleaves must be planted. We also have stringent environmental requirements that must be taken into account for every single

forest.

Deputy Eamon Ryan: If we are to increase forestry cover to 18% and beyond, we want to have forestry that is a joy to walk through and that enhances areas. We should look not only at the volume of forestry or number of trees but also the nature of the forest. We need continuous cover forest because it provides an environment that people like to live in. I am conscious of time so I will ask a final question. I wish Mr. Gleeson well in his job. He will need our best wishes.

I put it to Mr. Gleeson that Ireland is a net importer of food. Last year, when we had a storm we found within a couple of days that our supermarket shelves were starting to empty. We are in a very insecure position regarding food because we rely on such distant supply chains. There are some Irish vegetable growers but they are few in number. There may be only about 150 of them left and many will pull out of the sector because of the climate problems we had this summer. Some 90% of farmers here are earning less than the minimum wage, if they are not below poverty levels. There may be 15,000 farmers doing well but there are 115,000 who are earning next to nothing. We have a farming sector where the average age is 57 or 58. In truth, it is impossible to get young people to go into farming because we do not pay farmers or foresters enough.

Emissions are rising in Ireland. The line of argument that we are better than Brazil or somewhere else on carbon leakage will not work in the environmental sector. The scale of the change we have to make means that everyone has to cut emissions. The truth is that Irish agricultural emissions are rising and projected to keep rising, with no plans in place to cut them. The Department must ensure emissions in the sector reduce. The system is working for public limited companies but not for Irish people. Going green is the chance to change the system for the better for citizens and farmers. While I wish the Department the best of luck in that, we are not ambitious enough in what we are doing.

Chairman: Does Mr. Gleeson want to respond?

Mr. Brendan Gleeson: I am not sure the Deputy asked a question.

Deputy Eamon Ryan: The question is whether we will continue with the old story about Ireland's agriculture sector being the most efficient. Scientists state that it is the quantity of carbon going into the atmosphere that counts. Carbon emissions must be reduced. We can think of ways of doing this which will help Irish farming and give Irish farmers a better payment in the future. They are not served well by the current system. It is the public limited companies rather than people who are gaining and that must change.

Mr. Brendan Gleeson: I have already said we are doing a considerable amount in this area but I accept that we need to do more. We have national targets and agriculture has to play its part in meeting them. The issue is complex, however, and there are a variety of economic and social considerations to take into account in the context of national policy. While this is difficult for administrators and politicians, that does not obviate the need for agriculture to make a positive contribution. We are up for doing that.

It is important, however, in the context of the narrative on this issue that the negativity around agriculture is totally counterproductive. I appreciate that Deputy Ryan has not done that. If we want to bring farmers with us, we have to acknowledge what they have done and encourage them to do more. We need to provide the public policy tools to compensate them for

the extra work they have to do to achieve these goals. That is how we have to shape the next round of the Common Agricultural Policy.

Deputy Eamon Ryan: I agree with Mr. Gleeson.

Deputy Jack Chambers: I welcome the witnesses and thank them for their attendance. I read a recent Teagasc report by Trevor Donnellan, Kevin Hanrahan and Gary Lanigan, titled, Future Scenarios for Irish Agriculture: Implications for Greenhouse Gas and Ammonia Emissions. I refer to the factory economic model used and the projected scenario planning there. The report provides a bleak scenario analysis of agriculture in the context of greenhouse gas emissions and ammonia, even with mitigation measures. Is the Department at one with that study in respect of the projected scenario planning? I am referring to the case where, even if we do everything in respect of mitigation, greenhouse gases, ammonia in our cattle population will still increase by 2030? We will be closer to the 2005 position than the aspirational target of 2030. Does the Department wish to comment on the scenarios provided in the report? They are bleak and uncertain in the context of some of what the witnesses have outlined on the general emissions targets.

Mr. Brendan Gleeson: We do not resile from the research Teagasc does. It is always objective and well conducted and it is financed by the Department. We do not ever seek to hide from the facts. I mentioned previously that there is an acknowledgement, not only in Ireland but internationally, that there is a limit to what agriculture can do if we want to continue to produce sustainable food based on existing technologies and management strategies. The Department is doing much research and Teagasc is doing much work to explore new mechanisms for abatement and sequestration.

I will ask Dr. O'Mara to speak about the work done by Teagasc but I believe it was based on current practice and there being no additional measures. I am not sure that the scenarios were projections. They were simply scenarios based on certain assumptions. Stock numbers will be driven by market dynamics. Again, I said earlier that we have been careful in the context of supports, for example, not to pay for stock numbers in the beef sector but instead to provide supports for environmental action. That is the policy of the Department. Perhaps Dr. O'Mara wishes to say something about the research to which the Deputy referred.

Dr. Frank O'Mara: I will comment briefly. There were two parts to the study. The first part was as Deputy Chambers outlined. It was a set of scenarios as to how the national herd might evolve over the next 12 years up to 2030. That is hard to determine. As Mr. Gleeson said, the national herd is below the level at which it peaked and slightly above the figure at which it stood in 2005. The increase in numbers is gradual. We picked six scenarios and a range of about 1 million animal numbers between the highest growing scenario and the lowest growing one. We currently have approximately 7 million cattle. The range was from almost 8 million to slightly under 7 million. The way in which that evolves over the next 12 years will depend to a large extent on market conditions. I would not like to describe the scenario as bleak but everyone takes a different view.

The second part of the study provided information on what can be done. We approached it as something technical, a marginal abatement cost curve, but it is really just a way of setting out what the options are. From research to date, there are 14 options available for policy makers to consider to encourage farmers to adopt these measures. The good thing about it is that most of them are things farmers would want to do anyway as they are about improving the efficiency of how they operate their business. The total mitigation potential of the measures is about 2 mil-

lion tonnes, on average, over the commitment period 2020 to 2030. At the end of that period about 3 million tonnes could be delivered if all of the measures were adopted at the level we have assumed in the study. It will not be easy to get that level of adoption, but at least it shows that there is something that can be done.

Research will continue. Some of the measures in the marginal abatement cost curve were not in place ten years ago. Even five years ago when we brought out the first version, it included measures that are not in the current one. I have no doubt that when we do the list of abatement options again in the future, we will add other mitigation options to it which will I hope allow the sector to do as Mr. Gleeson says, that is, to do more than what we currently see can be done. While it is challenging, “bleak” is not the word I would use.

Deputy Jack Chambers: Dr. O’Mara set out a number of scenarios. He said there could be an increase of up to 30% in greenhouse gas emissions. The level of ammonia could be up by 20%. The percentage reduction attributed to potential mitigation is less than what is attributed to the increase in what I mentioned. It is bleak to think that in 2030 - if some of us are still sitting here, as I hope we will be - the environmental impact of agriculture will be greater than it is now. That is a bleak assessment. I do not think Dr. O’Mara has outlined a scenario in which there is not a positive curve in that mix of analyses.

Dr. Frank O’Mara: That is a fair assessment. Availing of the mitigation options available would bring emissions below 2005 levels by 2030. There is a mitigation figure of about 3 million tonnes by the end of 2030 which would bring emissions below those levels, depending on how the national cow herd grows. As I said, the challenge for us as researchers is to find other abatement strategies. We are continually working on them and involved in a lot of international research to find other solutions to the problem which I hope will emerge over the period.

Deputy Jack Chambers: I have a question related to food waste. The Citizens’ Assembly recommended that Ireland try to improve in that area. Is the Department working on anything to try to enhance what is being done on the issue?

Mr. Brendan Gleeson: We are not doing enough and it is an issue. In the analysis of a new Common Agricultural Policy food waste is specifically called out. We have to reflect on this. Bord Bia may have done some work on the issue.

Mr. Michael Maloney: It is part of the Origin Green programme. Some of the targets for companies within Origin Green involve a reduction of food waste. It is something we are continuing to encourage with companies in setting targets within Origin Green.

Deputy Jack Chambers: Is there an issue in the marketing of best before dates? Some of the big conglomerates set a time for when something is supposed to expire when that is not the case. Who sets the standards in that regard? In the United States and other places there are different standards in the use of best before dates. What are the regulations in that regard? I assume they contribute to the level of food waste.

Mr. Michael Maloney: Anything will contribute to the level of food waste if it is not used for the purpose intended. The focus of Origin Green is not on labelling but on ensuring that across the supply chain food waste is minimised. We are focusing on the issue with companies in setting their targets. Whether it is at retail level or at the level of food companies that are members of Origin Green, it is about focusing on the reduction of food waste across the supply chain.

Mr. Brendan Gleeson: Teagasc is doing a lot of work on things such as extending the shelf life of food. It is good for all kinds of reason, but perhaps Dr. O'Mara might tell us a little more about it.

Dr. Frank O'Mara: Teagasc is very active in areas of research because about one third of the food produced is wasted. In western countries it is wasted mostly after it leaves the factory. In less developed countries it is generally wasted before it gets to the consumer. For us, the big challenge is to try to extend shelf life in order that foods will go off more slowly. There are two approaches, the first of which involves better packaging, while the second involves reducing the passage and load throughout the food production and processing chain. There is a lot of progress being made. If one looks at the carton of milk one buys, ten or 15 years ago the best before date was probably only three or four days away but now it is ten or 11. It could probably be extended significantly. The meat industry is also working with us. There is a new initiative, Meat Technology Ireland, which is researching many aspects of meat processing, but a big target for the sector is shelf life extension because of product spoiling. It is an area in which we have to make progress. We are actively addressing the issue.

Senator Ian Marshall: We are all aware of the importance of agriculture on the island of Ireland. A target of a 30% decrease by 2030 is ambitious. It is a large sector, with relatively low mitigation potential. The points made about the three strands of work are valid. Abatement, sequestration and displacement and substitution are important. I was disappointed that a fourth strand - efficiency - was not included. It is something we have overlooked in the industry. If we make a comparison with the position after the Second World War, the output in terms of litre of milk per kilogramme of beef is much more efficient now, but we are not given credit for it. The point was made that agriculture would present some of the solutions, for which it should be credited.

I will pick up on the comments made on small family farms and the public good element which is often overlooked. Because we cannot put a number on it, it is difficult to quantify its value in the real economy. What work has been done to establish the reality that there must be a place for large, efficient, modern farms in conjunction with and alongside small family farms? There is a notion among the wider public that big is always bad, but that is not the case. Very often big farms can offer opportunities when it comes to welfare, the environment, efficiencies and our carbon footprint. The reality, albeit it is not popular to say it, is that on the island of Ireland a big dairy unit has a smaller carbon footprint per litre of milk than a small family farm. However, it is not a comfortable discussion to have. It is the reality, but we do not want to see Ireland covered by large industrial farm units. As it is such an emotive subject, often charged by opinions of groups not directly involved in agriculture or food production, what work is being done to make sure everything we do is based on evidence-based policy and that we are not making policy decisions based on public opinion and what is in vogue? We have paid the price for doing so in the past in the food industry. For example, 20 years ago we were all told that saturated fats were killing us. As a reaction, we removed saturated fats from our diets and replaced them with sugar. Twenty years on we find that it is killing us. We need to consider evidence-based policy underpinned by science.

Mr. Brendan Gleeson: I agree 100% with the point made about efficiency. When I spoke about abatement, I included efficiency which is a critical part of the abatement effort. The more economically efficient people are, generally, the more climate efficient they are. What potentially attracts farmers to climate mitigation measures is the knowledge that they will also have more money in their pockets at the end of them. That is a critical linkage we have to make. On

the small family farms versus large farms, people talk about the Common Agricultural Policy as being multi-functional. It is multi-functional in that it has economic, social, spatial and environmental functions. The supports we provide do not distinguish in any qualitative way between small farms and commercial dairy farms. I mentioned earlier that with the lifting of quotas we have succeeded in producing a cohort of farmers that can make a decent living from farming.

On small beef farms, as mentioned earlier by Deputy Eamon Ryan it is more difficult to make a profit as a beef farmer. When it comes to justifying the public input into this type of farming, one has to consider the environmental piece. There is a lot of beef produced on small farms in the west that produces downstream benefits in terms of the purchase of local inputs and processing and marketing jobs in the meat sector. When it comes to justifying the public policy intervention one has to consider the public good that is being provided. We are doing a lot of work on the environmental piece. From the point of view of the contribution that agriculture can make to climate change, through agencies such as Teagasc, we have done more research work than any other Department across Europe to quantify the climate impact of what we are doing. This research work will continue. As I said earlier, we do not resile from the facts. The facts inform our judgments but they are also tempered with difficulties in terms of the implementation of policy and the social and economic impact on small communities of decisions made. A complex set of facts inform policy decisions. We will continue to fund Teagasc. This climate change piece is an important part of the work of Teagasc into the future.

Senator Ian Marshall: Mr. Gleeson and Deputy Chambers mentioned food waste. When it comes to food waste, anaerobic digestion and so on there is not enough cross-departmental conversation going on. In other words, conversations had in one Department that are pertinent and relevant to another Department are not being fed to the latter Department. It is important there is a strategic approach to anaerobic digestion. The strategic management of food waste, farm waste and so on provides huge benefit. Does Mr. Gleeson believe there is sufficient cross-departmental conversation on this issue?

Mr. Brendan Gleeson: Mr. Callanan has just told me that we engage regularly on the issue with the Department of Communications, Climate Action and Environment, DCCAE, but I accept we can do more. From the point of view of farming and anaerobic digestion, there are issues of scale and relative costs of alternative energy sources that have to be considered, again, in the context of developing public policy. This is specifically called out in the policy documents around the proposals for the new Common Agricultural Policy. It is an issue that we are examining and can do more on but it is not one-way traffic in terms of discussion. Teagasc has established an anaerobic digester in Grange on a pilot basis.

Dr. Frank O'Mara: Yes.

Mr. Brendan Gleeson: The fruit of this work will inform our policy going forward. I agree that we need to cohere our efforts cross-departmentally.

Mr. Bill Callanan: The area in which I foresee opportunities is biomethane for transport. Anaerobic digestion is expensive as a technology based on mitigation alone, notwithstanding the Senator's remarks regarding food waste. However, in areas such as transport in which it is difficult to effect significant change for trucks etc., biomethane would seem to be an opportunity. We are engaged with the Department of Communications, Climate Action and Environment, DCCAE, in this regard.

Chairman: The witnesses can pick up on the other issues raised during their interaction on the next round of questions. I call Deputy Stanley, who has two minutes.

Deputy Brian Stanley: Mr. Gleeson mentioned in his response to Senator Devine that the Department operates a grant scheme for renewable energy. What work is being done on solar panels? In other countries, solar panels are being installed on cattle sheds and farm buildings, with the energy generated being used for own use or being fed into the grid.

On biomass, for a number of reasons, not least our international commitments, we have to phase out peat in the midlands. The midlands is in danger of becoming a rust belt unless we put in place alternatives fairly quickly. We do not have the biomass to feed the three power plants that are currently being fed with peat unless we import it from places such as Indonesia, which does not make sense in terms of carbon footprint. The cost of shipping it here, financially and environmentally, is high. What is the Department doing to establish a biomass industry? I am aware of the difficulties encountered with miscanthus and willow but there are other crops that can be used, including, for example, birch. What is being done in regard to the use of birch and other products that can be potentially used in this area? People in the midlands counties are watching this space. The recent announcement by Bord na Móna has shocked the public in terms of what is coming down the line. Why are these schemes not yet in place?

Crop rotation and the genomics scheme were mentioned. In terms of tillage, sugar beet is a cover crop for four months of the year. It is a broadleaf, sustainable crop that is very important in terms of nutrients for the soil. It is also an important cash crop. From an environmental point of view, what is the Department doing in regard to sugar beet?

On biogas, in respect of which Mr. Gleeson mentioned a pilot scheme, there are 8,000 functional schemes in Germany and 600 in England. We have a problem here in terms of agricultural waste. We are repeatedly seeking derogations in regard to slurry spreading instead of trying to find a way of sustainably dealing with this waste, which is disgraceful. Mr. Gleeson's comment in regard to the unit cost of electricity is correct. However, northern Italy is also using dried slurry as fertiliser, the benefit of which is that it can be spread on land dry such that one does not have to wait until a specified date in January to open up one's slurry tank. I am sure the Secretary General, Mr. Gleeson, is aware of the problems this causes and the damage it does to the land.

Chairman: I ask the Deputy to conclude to allow the witnesses to respond.

Mr. Brendan Gleeson: On the grant scheme, under TAMS we pay grants for energy efficient systems, but in the pig sector.

Deputy Brian Stanley: The Department does not grant aid for the installation of solar panels on roofs.

Mr. Brendan Gleeson: No.

Deputy Brian Stanley: Has the Department raised the issue with the Department of the Communications, Climate Action and Environment?

Mr. Brendan Gleeson: We have reflected on the issue. The funding for the current rural development programme is fully committed, such that the options for changing tack in our investment schemes are limited. Mr. Moore will respond to the Deputy's question on biomass and Mr. Callanan will respond to his question on sugar beet and anaerobic digestion.

Mr. Fergus Moore: On biomass, the current level of forest cover is 11% and this is creating a lot of biomass. Currently, approximately 4 million cu. m of timber are being harvested. This will increase to 8 million cu. m by 2035. The larger trees are used for timber and the smaller ones go towards making biomass for energy production to displace other fossil fuels.

The more afforestation we do and the more thinning that takes place, the more biomass is available. Currently, there is approximately 2 million cu. m of material available for biomass and fibre. On the use of willow and so on, we have a new measure in our forestry programme to incentivise the production and planting of eucalyptus and faster growing trees in an effort to bring more fibre into the marketplace earlier than it currently comes on stream. Currently, we face a few mobilisation challenges. We have over 22 forest owners in the sector and we must try to move the timber and manage the existing forests they have to put some of that material through areas like biomass and other markets. The Department has therefore put in place a forestry roads scheme to facilitate the building of roads in that forest estate. Once a forest road has been built into a forest estate, farmers will be able to thin their plantations. The more thinning that takes place, the more biomass will be available.

I was asked about willow, for which the Department had a scheme a number of years ago. However, the uptake for that was poor. We are concentrating now on targeting our forestry for fibre scheme with a focus on faster-growing species like eucalyptus, aspen and poplar. We have various planters-----

Deputy Brian Stanley: Has the Department looked at birch which grows very well on marginal land?

Mr. Fergus Moore: Yes.

Deputy Brian Stanley: We have a lot of cutaway bogs in the midlands close to the power stations.

Deputy Brian Stanley: We have grant aid for birch plantations and the Department will consider any application if someone wants to plant birch. Teagasc has done a great deal of work on improving the quality of birch over the last number of years and we provide grant aid for the production of plantations of birch woodland.

Chairman: I will bring Mr. Callanan in on the other matter.

Mr. Bill Callanan: On the sugar beet industry, I note that the programme for Government includes a commitment to review any business case brought forward on the redevelopment of a sugar processing plant. However, people in the industry have identified the cost of doing that at over €400 million. That is a significant investment. In reality, sugar prices are approximately 50% off the peak they have previously reached. As such, prices are particularly low on world markets. While there is a commitment to review the matter, it is contingent on someone coming forward with a business plan that makes sense. Naturally, state aid issues will arise in such a case and in any event no business plan has been brought forward.

The issues of waste and slurry were raised. We consider slurry to be a fertiliser and therefore not waste. Our messaging around that has been very focused. I appreciate what was said about the emotions of calendar farming but if slurry is considered to be a fertiliser one must ask whether somebody would buy it during the current closed period and spread it. The answer to that is generally “No”. Our focus has been to maximise the efficiency of that by supporting low-emissions technologies, including “trailing shoe”. From a standing-still scenario less than three

years ago at the beginning of the targeted agricultural measures scheme, we now have 2,000 applications for that technology. Over 4,500 farmers are being paid a targeted element under the GLAS scheme for using trailing shoe technology at farm level. This technology increases efficiency and also increases the window of application because animals can be returned to land in a shorter period where such technology is used. It is not for everyone, but farmers are voting with their feet and they are supported by the Department in doing so.

Deputy Brian Stanley: My point about dry fertiliser was that there is either no closed season or a shorter one for the simple reason that it does not involve spreading wet slurry on wet land.

Mr. Bill Callanan: While that is correct, my understanding of the nitrates regulations applying at European level is that our closed period is one of the shorter ones. Whether applying dry or wet fertiliser, it will not be applied at best use except to grow a crop. During the winter period, therefore, there should be no encouragement in any country to apply dry manure during the closed period. Certainly, I am not aware of any.

Deputy Brian Stanley: The point is that the land damage is removed.

Deputy Timmy Dooley: I thank Mr. Gleeson whose presentation was upfront and frank. He takes seriously the obligations on the farming sector and the industry generally. By comparison with some of the other departmental officials who have come before the committee, Mr. Gleeson has been a breath of fresh air. I note from Deputy Eamon Ryan with whom I shared a text that the bar has been set relatively low so far. Mr. Gleeson is well ahead in that regard and can take it, perhaps, as a compliment. Mr. Gleeson referred to the potential to do more and he is right that it would involve policy decisions. Notwithstanding that, has the Department done any scenario planning looking at the impact of any policy imperatives or changes to do more? Clearly, Mr. Gleeson has thought about it given his presentation. He rightly identified that there would be significant knock-on impacts and costs to society. While he may not have them to hand, perhaps he might share at some stage any metrics on various levels of increased activity. Mr. Gleeson identified the dairy sector. What are the implications of that and what might play out?

On carbon sequestration and increased planting, can Mr. Gleeson provide a view on the incentives that will have to be put in place and the costs associated with them? That is a real issue. Has any effort been made to look at State-owned land? The State owns a great deal of land that is not necessarily looked at from a managed-forest perspective. Could we do more to plant trees on parklands without destroying the other amenity benefits associated with our parks? Local authorities own vast tracts of land. If we were to do a multiple of the cover that currently exist, it might have some impact. Certainly, there would be no significant loss of amenity. Has any work been done to consider what lands are in public ownership and how we might increase the level of afforestation cover on it without it being managed forest *per se*?

Mr. Brendan Gleeson: I thank Deputy Dooley for his kind words albeit I am not sure the other Secretaries General will be too pleased. For the brief period where nice things are being said, I will take it all.

Deputy Timmy Dooley: Mr. Gleeson might have to come back again.

Mr. Brendan Gleeson: As to measuring costs, part of Teagasc's work on the marginal abatement cost curve, MACC, involves identifying sequestration potential and cost. As such,

that work is there identifying the costs associated with particular policy measures. While we are looking at the broader issues, there is a sequencing issue as we are engaged in a whole-of-Government consideration of how Ireland will meet its climate change obligations. However, we are also looking at developing a departmental strategy on climate change. We have a potential title, namely “climatewise”, but it is not there yet. We will look at all of this, including various options in the context of that strategy. We are working on that right now.

Deputy Timmy Dooley: That is good to know.

Mr. Fergus Moore: The Deputy asked about forestry and lands in State ownership. Coillte is the largest landowner in the country with over 400,000 ha. We have been in discussions with Coillte for a number of years on whether there is much capacity to plant more trees on the lands it holds. Some of the land in the Coillte estate was planted in the 1950s and 1960s. It planted the lower slopes of mountains it acquired from making large-scale land purchases at the time. Some of the land which is unplanted is at the top of mountains. As such, much of it is unsuitable for growing trees. We have also looked at the National Parks and Wildlife Service which has a great deal of land on which there are no trees. However, those lands are important for habitat purposes. We have to juggle whether land is there as a good habitat for biodiversity. These may be Natura 2000 sites or protected peatland sites which are unsuitable for growing trees. Doing so might go against the conservation objectives of a particular site. However, we have a number of schemes in place, including a native woodland conservation scheme with which the National Parks and Wildlife Service has engaged over many years to plant additional oak woodlands associated with its existing oak forests. If other public bodies have available land, they can come to us and we can examine whether funding can be provided for planting. Under state aid rules, we are prevented from providing certain levels of financial support but, to answer the question, we are in touch with Coillte and other organisations regarding the potential to plant lands. Discussions are ongoing in that space.

Deputy Timmy Dooley: Local authorities own significant amounts of land which might not be suitable for commercial afforestation but where planting could add to the amenity rather than to take from it.

Mr. Fergus Moore: We have a very successful NeighbourWood scheme to create and encourage public access. A local authority may have some land and a car park where there is open ground which is suitable for planting trees. From a purely amenity perspective, it can put in trails and picnic tables. We also have Coillte forests adjoining urban population centres where there is scope to improve woodland use by looking at funding to provide centres of excellence with car parks and trails. That can open up woods and provide members of the public with better access. There can also be informal access in more remote areas, with no formal car parks but a forest gate and a place to walk one’s dog.

Deputy Timmy Dooley: Does the Department provide any advice to the National Roads Authority in respect of planting on the sides of roads, whether as regards the grasses that are used or any other foliage? Some grasses have a greater sequestration profile than others.

Mr. Fergus Moore: I am not aware of this but I believe there have been discussions in the Department on it. I can come back to the Deputy at a later stage with a clearer answer.

Deputy Timmy Dooley: I thank Mr. Moore.

Chairman: Any further information would be welcome. There is a recurring theme here,

which is the question of joined-up thinking between Departments in the area of climate action.

Senator Tim Lombard: I welcome the new Secretary General of the Department and I wish him the best of luck in what is one of the most pivotal roles in Irish agriculture. It will be interesting to see how we decide to reform our policy in this area. The reform of the Common Agricultural Policy will be a key aspect and a new CAP is due to come in by 2020. Does the Secretary General see the CAP as a catalyst to drive policy and change in the agriculture industry? We have heard about the success of the trailing shoe and the major change it has made to the agriculture sector in just three years. Most farmers are using the system, whether in or out of derogation, because they see the benefits of it. What policy changes will there be in the CAP to enable us to transfer to a greener and more efficient economy?

I know that Teagasc is doing work in the area of biodigestion. If there is to be a whole-of-Government policy, will it be led by the Department of Agriculture, Food and the Marine or another Department? Biodigestion has been successful in Germany, the UK and all over Europe and it seems to be a major part of the agriculture industry. Which entities, outside of industry, does the Department see playing a part in this? Co-operatives could be a major catalyst in the branding of biodigesters, especially in the major dairy areas where there is a slurry by-product, which can be a great asset if used appropriately. Teagasc is doing great work and the Department is the driver of the policy but how will industry get behind it? I am concerned about the fact that we do not have one Department driving it forward. What is the vision of the Secretary General in this area? In my part of the world there are a large number of dairy cows and this issue is mentioned at every meeting. Perhaps agriculture is the solution and not the problem and we will need to expand on the great work done by Teagasc.

Mr. Brendan Gleeson: In answer to the question on the CAP, there are two ways we can influence policy on climate change. One is through regulation, which we do through nitrates control and other things, and the other is the €1.6 billion per annum we get from the European Union to support farm incomes and encourage developmental change in the sector. The first thing we have to do in the next CAP round is protect the budget. At the moment, there are proposals for a cut of about 5%, which would be a loss of approximately €98 million a year to Ireland. We have to try to maintain the budget we have because that allows us to influence things.

There is still an income issue in farming so we need to protect the Pillar 1 payment that provides the basis for income support. However, we accept the Commission proposal for additional conditionality to be attached to income support in the context of climate change. There would be some kind of an ecoscheme in Pillar 1 so that farmers would get a baseline payment and if they do a bit more for the environment, they will get a top-up. I am not in a position to say what the shape of that might be.

Senator Marshall mentioned the debate between intensive farmers and smaller-scale farmers. The reality is that we have to work with both groups and they deserve significant attention from the perspective of the environment and climate change because if we do not work with them, there are potentially damaging consequences for biodiversity and water quality. We also need to recognise the public good which smaller farmers provide and reward that in some way. We have accepted the principle of doing more for the environment while protecting Pillar 1.

Pillar 2 is the rural development programme, where the requirement is that 40%, excluding the ANC payment, has to be devoted to the environment. We will have decisions to make on how we configure that policy and it could involve deciding what we support with investment. Will we support productive investment or climate change investment? Will we provide higher

rates of grant for climate change investment? Our job in respect of the Common Agricultural Policy is to ensure that regulations allow us to do what we want to do. Step 2 will be to devise a national Common Agricultural Policy plan for Ireland for the first time ever. In the course of developing that plan we will have a discussion on how we can support the climate change ambition. This will involve wider consultation with the farming community and with NGOs and industry.

Mr. Callanan will talk about biogas but I believe industry has a significant role to play. In the context of the scale of farming in Ireland and the investment that would be required in anaerobic digestion, it is not a realistic proposition to expect individual farmers to invest in the necessary technology. It will require some kind of collective effort from co-operatives, processors and even producer groups if we succeed in establishing them. We have to have a discussion with all stakeholders about how we approach the issue. We will not be the lead Department in the development of anaerobic digestion. It will be the Department of Communications, Climate Action and Environment but we will work very closely with that Department.

Mr. Bill Callanan: A draft bioenergy plan was published in 2014 by the Department of Communications, Climate Action and Environment. We will take a lead from that in terms of the next steps. We had a dialogue with industry in June and it was very interactive. We asked for ideas and we identified challenges. A clear message was given by Teagasc, the Department and Bord Bia about the requirements in this space. There are regulatory drivers as well as market drivers and it was quite evident that the industry realises the necessity to communicate its message about what it is doing and what its commitments are going forward.

A couple of farmers spoke too and they understood that industry was engaged. They need it to be translated into language that they can understand so that they can know what is expected of them. We need to focus on identifying what we are asking farmers to do and why we are asking them to do it. I have dealt with calendar farming for a long time and I appreciate their frustration. Unless we are able to communicate why the rules exist, we will lose.

Senator Tim Lombard: What is Teagasc's view on the future of biodigestion? It has a pilot project in this regard.

Dr. Frank O'Mara: We are building a pilot plant at our research centre in Grange, County Meath. We are almost ready to commission that. We see the need for research regarding the best way of running digesters should the policy framework encourage the development of a significant anaerobic digestion centre. The Senator rightly mentioned slurry. The problem with running biodigesters on slurry is that our dairy and cattle farms do not produce slurry all year round so there would be no year-round feed stock to go into a bio-digester except possibly in the pig sector, which is small in Ireland, so we must co-digest with something else. That is the same in most other countries. In Germany, it has tended to be maize silage----

Senator Tim Lombard: Where does waste food come in?

Dr. Frank O'Mara: Waste food comes into that as well as a possibility. The quantities tend to be low and localised. Going back to Deputy Eamon Ryan's question, grass would be the cheapest form of co-digested material to use in a biodigester. The research we will carry out will look at the optimised ratios of grass and slurry. The technology around biodigestion is moving on in terms of being able to extract more gas from a given amount of material that goes in.

I have one other comment about the issue of grass. Deputy Eamon Ryan correctly identified the significant difficulties we faced this year regarding grass growth. If we had a significant biodigestion industry based on grass silage, one of the benefits would be that in a year where there is bad grass growth, we might have a stock of silage that would normally go into biodigesters but that could go back into the livestock sector if there was a shortage of fodder for cattle. It is a co-benefit one would hope not to have to use too often but it could be a release valve.

Senator Paul Daly: I congratulate Mr. Gleeson on his appointment and wish him well. It is the first time we met since his appointment. I have a list of questions, many of which have been covered. I had the figure down as 440,000 km of hedgerows and sporadic growth. The witnesses have given 3.9% as a land percentage. They say Teagasc is working on what value that may have or that it will be included in our sequestration figures. How soon will that be included? Where is that work? How long will it take? How well will Teagasc be able to identify it geographically on an imprint of the island? Where I come from, it involves small fields and ditches as opposed to other areas where there is a larger spread of land. Will Teagasc be able to regionalise it?

Mr. Brendan Gleeson: Mr. Moore tells me that he can provide a figure.

Mr. Fergus Moore: As part of national forest management, we survey a range of different things. We have a figure for our hedgerows but it is a statistical figure so we do not measure every hedgerow in the country. We do a sampling and then we basically bulk it up. There are roughly 280,000 ha of hedgerows in the country, which is probably in the region of 3.94% of our national estate. There is another body of work to be done regarding the carbon aspects of that. I am not too sure who is working on it at the moment.

Senator Paul Daly: I asked about sequestration.

Mr. Bill Callanan: There are two different questions here. One involves the actual value and volume in terms of the carbon sequestration. There is a research project that quantified some of that. The question then involves the actual contribution this can make to the national inventories, etc. They are evolving and are at various tiers in terms of the level of material that is there so I would not like to suggest at this point that once we quantify it, we will get inherent value for it. We are working through a process and the inventory levels will improve as information improves. We have already identified that we will report in respect of land use in terms of grassland versus arable. That decision is inherently there. Within the IPCC structure, there is a capacity to evolve reporting and that will arise over time. It is wrong to suggest that once we quantify it, we will immediately get credit for it. It is an evolving science.

The position regarding methane is the same. Professor John FitzGerald of the Climate Change Advisory Council identified that the knowledge in terms of methane, how long it stays in the atmosphere and its global warming potential over a period are being quantified as well. Quite simply, everything is translated into carbon dioxide equivalents over a 100-year period. Carbon dioxide remains in the atmosphere for thousands of years. Methane, which is predominant emission from the agricultural sector at approximately 60%, has a 12-year cycle after which it breaks down. The knowledge relating to that involves identifying that if this is the case in practice, provided that methane emissions do not go up, it does not have an additional global warming potential as a consequence. That is why the primary focus of our interventions is on carbon dioxide, etc.. Those parts where we can-----

Deputy Eamon Ryan: Sorry-----

Mr. Bill Callanan: We will send on the work that has been brought to our attention. Let us be clear; it is an evolving science. I would not claim that it is an answer at the moment. I am not suggesting it as a get-out-of-jail clause either because it does have an impact in terms of the national herd but it is an evolving issue, the whole objective of the exercise is reducing the global warming potential and methane needs to be considered slightly differently to carbon dioxide in that discussion. That is what I am saying. We can send on the research paper.

Senator Paul Daly: Regarding agriculture, if we look back over the years, we can see that from 1990 to 2016, greenhouse gas emissions in agriculture decreased by 3.5% while production increased by 40%. These are figures I have quoted here previously. It is now beginning to go in the opposite direction. What can we learn from what we did from 1990 to 2016? I know it was probably the introduction of REPS. We were working off a blank page. It is like running a marathon; while the first 20 miles might not be easy, they are the easiest. It is the last three miles that are the hardest. Can we learn anything from what we have successfully done in the past? I know it involves extra production. We can talk about Food Wise 2025 and I know that to an extent, they are aspirational figures, targets or predictions but the bottom line is that based on population growth, food production must increase by 50% by 2050. We have a good track record in agriculture. It is beginning to slip slightly. What is the reason for this and what can we learn from what we were doing positively through achieving a reduction in emissions during a period of increasing production such as that from 1990 to 2016?

Mr. Brendan Gleeson: There might be others around this table who are more qualified to talk about the specifics but what we know is that if we increase efficiency, we can produce more output from the same number of animals. We know we can do that. In respect of what has driven that kind of production increase over the years, in 1984, we probably had 65,000 dairy farmers producing 5.5 billion l of milk whereas today, we have 16,000 dairy farmers producing 7.5 billion l of milk. This is being driven by efficiencies in the system. A significant part of our abatement involves trying to improve efficiencies whether it is through beef data and genomics, better grassland or investment in the economic breeding index in the dairy sector. They are the things that drive efficiency and allow for increasing production without a corresponding impact on the climate. I am not sure if Dr. O'Mara wants to say more about that.

Dr. Frank O'Mara: That is about it. From 1990 - and even before then - until 2014, Irish farmers were continually improving the genetic merit of their dairy cows, beef cattle and so on. They were improving grassland management, fertiliser use efficiency and the way they used slurry. All those improvements contributed to a drop in the carbon footprint of milk and meat production in the country. Due to the fact that we had a ceiling on the production of milk and because the beef herd was fairly static, overall emissions were tracking down. Those efficiency gains are continuing and we see them as being very much part of the future contribution farmers can make as they continue improving their efficiency but when output is also going up and possibly going up more rapidly than the efficiency gains, we then get this increase in the volume of emissions. The figures we track from the national farm survey show that on average, the carbon footprint of milk production is going down by approximately 1% per year. This has been the trend for an extended period and we envisage it continuing. I hope that as some of the additional mitigation or abatement measures are adopted, the decrease in the carbon footprint will accelerate.

Senator Paul Daly: Organic agriculture has not been mentioned. What role can it play? What role can the Department play in incentivising and subsidising it or making it profitable?

Mr. Brendan Gleeson: Organic agriculture is an important sector and one for which there

is enormous consumer demand. There is no doubt about that. We provide incentives. We invest approximately €10 million per year in the organic sector. We could do more, perhaps. My view, which is entirely personal, is that we may need some of the big players and processors to develop serious interest in organics. They will be driven by market potential and the relative cost and by whether they can get some kind of premium from organic output. The Senator is correct that it is an important sector. We provide support for it. It is something we would like to do more on.

Senator Grace O’Sullivan: My first question is on the marine aspect of the Department’s portfolio. There has been no mention in the discussion thus far or in the presentation paper of the role of the Department in mitigation and adaptation measures in the marine sector. There has been no mention of the fishermen and fisherwomen and the supports being put in place to deal with the displacement of their industry owing to species migration. What is being done to support the fishing communities around the coast with regard to climate change?

What is Mr. Gleeson’s view on marine-protected areas in terms of sequestration? With phytoplankton and zooplankton, there is great capacity for our seas, which are healthy, to sequester. Does having marine-protected areas and low-impact fishing constitute something positive towards which the Department could work?

My next question is on soil fertility and health. Healthy soil is good for sequestration and growth. What research has been done in this area with regard to climate change?

My next question is on diversification. For most of this meeting, we have spoken about agriculture, the supports in place, and the very good production efficiencies that have been achieved. I do not know whether, when talking about efficiencies, we are talking about efficiencies achieved in lowering greenhouse gas emissions because they continue to rise. What is the Department doing about diversification in horticulture and tillage? I ask this because, when talking about efficiencies, Mr. Gleeson has spoken about moving from the farm to the food product. We have not talked about efficiencies in terms of food miles, however. There was a suggestion about Ireland feeding the world. What is the cost of this in terms of efficiency and bringing food or milk from the farm gate to China? I sometimes wonder whether we are considering the concept of efficiency holistically. Is the Department just considering the concept in narrow terms?

Chairman: For time reasons, the witnesses may respond to those questions now.

Mr. Brendan Gleeson: We are currently working on a climate adaptation strategy, and the marine will have to be part of that. I do not have an official from my marine unit present. The Senator is taking me slightly out of my comfort zone, I am afraid. I will revert to her on the marine issues with some kind of paper if that helps.

Senator Grace O’Sullivan: That would be very useful.

Mr. Brendan Gleeson: Funded by the Department, Teagasc is doing a lot of work on improving soil fertility. Dr. O’Mara will intervene on that point.

Dr. Frank O’Mara: Soil fertility has always been a major area of research for us. Our team in Johnstown Castle have focused on it for many years. In recent years, we have introduced a programme on soil microbiology. It concerns the soil microbiome and recognising the importance of microbes in the soil in ensuring that nutrients are used as efficiently as possible, that plants grow as well as possible, that plants are as healthy as possible, and that the soil is what

we call “healthy”. This is a new and important area of research for us.

Let me comment on food miles and horticulture. Like the Department, we are very committed to the horticulture and tillage sectors. With money provided by the Department, we have just invested €2.5 million in new horticulture research facilities at our facility in Ashtown to help to support the growers. We very much recognise the importance of fruit and vegetables in a healthy diet and would love to see the sector strengthened and more Irish food and vegetables. It is a very tough sector. The tillage sector is a very tough sector in which to make money because there is a global market. The world price makes it tough for Irish farmers to produce and compete. We give them whatever support we can through research and advice.

On food miles, let me give an example of where we have made a major contribution. Sea transport of food is quite efficient in terms of energy and emissions. Land transport, by truck or rail, and transport by air are very intensive in terms of emissions.

We have recently developed a means of making cheese from milk powder. This has allowed Ornuia to build a factory in Saudi Arabia. The milk is dried in Ireland and all the volume and weight is removed. The powder is shipped to the plant in Saudi Arabia and reconstituted to make the soft cheeses the consumers in that region want. It is a very innovative and efficient way of moving food. It still allows us to export but without a large volume. If one transported the cheeses fresh, there would be much more weight and cost. We are conscious of the issue, and the industry and Teagasc are working closely on it.

Mr. Brendan Gleeson: With regard to the question on horticulture, there is €6 million in our budget this year to support the horticulture sector. We are trying to encourage the establishment and functioning of producer organisations whereby people organise and market their produce collectively, giving them a stronger hand in dealing with buyers. They can buy inputs collectively. We recently published a producer organisation strategy to provide guidance to those who wish to engage.

Deputy Pat Deering: I welcome Mr. Gleeson and his team. I wish him well in his new role. The importance of the agriculture sector, which has been mentioned, cannot be overestimated. It has meant so much to the economy and rural areas. We hear daily about the demise of rural areas, including in respect of school transport and post offices. The agriculture sector is crucial to rural sustainability. One must bear this in mind in the overall context of the conversation, while also bearing in mind that agriculture has to play its part in the climate change agenda.

A crucial part of the climate change debate we are having involves the need to develop an even better communications strategy. Many around this table and the public are not aware of what has been achieved in the agriculture sector. The rural environment protection scheme, REPS, the agri-environment options scheme, AEOS, and the green low-carbon agri-environment scheme, GLAS, have made a great contribution but many do not realise that. People are perhaps tired of hearing the same thing, but we are the most efficient dairy producers in Europe. That is a key point to make. However, we need to do more. The communication agenda needs to be ramped up to educate not just the general public but also the farming sector on what has been done and on what needs to be done.

Forestry is a major issue. It was mentioned earlier, but it can be very helpful in this whole discussion. In certain parts of the country, there is huge negativity about forestry. Other parts could play a bigger role. What incentives could be introduced to encourage more farmers to consider going into forestry? After dairy, forestry is the most profitable farming sector. Many

people are not aware of that, but it is true. That fact should be more widely communicated.

Efficiency is crucial. The report published by the Joint Committee on Agriculture, Food and the Marine a year ago mentioned three key words, namely, “better before bigger”. The message in this regard needs to be communicated time and time again. More can be produced from less. There is no doubt about that; it has been proven.

Teagasc can play a major role in respect of this matter. The professional voice is very important in the context of agriculture. I would like to know the advice Teagasc is giving to its advisers who go out to farmers on a daily basis and seek to improve efficiencies. One of the key issues discussed was Origin Green. What benefits has it achieved?

Mr. Brendan Gleeson: I agree with the Deputy’s point about communications. It is important to have balance in public discourse, which tends to be dominated by extremes. Agriculture is responsible for a significant proportion of our emissions and that will continue to be the case. Emissions had more or less flatlined in recent years but they are starting to climb now so we have to take action. That is the situation. We acknowledge that we have to do more. However, we also acknowledge the effort that has been made. Perhaps we are not as good at communicating that aspect. We worked hard on our public consultation on the Common Agricultural Policy in the context of talking about the environment. A representative from the EPA was on stage with us and made a presentation to farmers. We have to align farm policy and environmental policy. Farm bodies and farmers are up for that, but it has to be explained to them in simple terms.

There is an issue with forestry. If one looks at our dry stock sector, for example, it is clear that most of the participating farms have little stock. The average stocking rate is 0.8 livestock units per hectare. Most farmers have some land on their farms that could be planted and this could supplement their incomes. They could carry on with the same beef production as they currently do but provide a bonus for themselves through the planting of forestry. Perhaps Mr. Moore will talk about what we are doing in the area of agroforestry. There are sincerely held concerns about forestry, some of which might be legitimate, but we should not allow those views to dominate discussion about forestry. We need to encourage forestry. I do not want to dismiss anyone’s concerns. I know people have concerns but they cannot dominate the narrative. There has to be balance.

Mr. Fergus Moore: Afforestation levels have dropped in recent years. That is obviously a concern. The Department, working closely with Teagasc, will be involved in a promotional campaign over the next two or three years which will target all kinds of media outlets to increase the awareness of forestry. We want to identify farmers who have planted previously and ask them for some good news stories in order to promote and sell the message. We are also grant aiding knowledge transfer groups. In recent months, the Minister announced a knowledge transfer scheme. It will get like-minded foresters and forest owners together to talk about forestry and to discuss certain aspects of it, including how things can be done better. We have also revised our environmental requirements. There are many regulations in place which seek to control forestry in a certain way. These regulations have given rise to increased negativity in recent years. It is important that we stress that afforestation is a voluntary scheme, but it is important that it is done in a certain way. We have had close engagements with the National Parks and Wildlife Service, the EPA and our registered foresters and have held a public consultation on a range of different measures. We have produced a document concerning environmental requirements which discusses the good things forestry does. It informs people that when trees are put in the landscape they should be kept back from water courses in order to avoid damage.

It tells people to stay at least 60 m from houses, and it encourages an increase in the level of broadleaf planting in particular forests.

A mid-term review of measures we have taken to try and increase and promote the uptake of forestry shows that we have increased our grant rates and some of our premiums. We have put a stronger emphasis on broadleaf planting; we know many members of the public like broadleaf trees. At the end of the day, farmers are looking at this as a commercial enterprise, so we have to take that into consideration. There are now higher premiums for the planting of broadleaf trees. If, for example, a person was to plant a hectare of oak woodland, he or she would get €645 per hectare for 15 years. A Sitka spruce woodland would generate €510 per hectare for 15 years. There is a differential there which seeks to nudge people to make certain decisions on the type of trees they want to plant. We are also looking at encouraging a greater range of species to be planted, including Douglas fir, Scots pine, birch, Sitka spruce, oak and beech. There are many different species which attract different premiums. There are higher premiums for broadleaf trees and lower premiums for conifers, generally speaking.

We are conscious that we have to sell the forestry message as a Department and promote the benefits. Forests are not just about carbon. They also provide timber, which displaces fossil fuels by providing fuel for heating. It is important to look at the many benefits of forestry rather than focusing on the carbon sequestration aspect. Forests provide a range of different services.

Dr. Frank O'Mara: I fully agree with the “better before bigger” slogan. We emphasised that to dairy farmers in the post-quota era, telling them not to get bigger until they were sure they were doing everything as well as possible on their farms.

The Deputy asked what key messages our advisers take out to farmers, specifically livestock farmers. There are five messages. The first concerns better breeding, and reminds me of the old saying, “An ounce of breeding is worth a ton of feeding”. The idea is to improve the genetic merit of one’s herd, which then is in place for ever. We encourage farmers to use the tools at their disposal, including the economic breeding index, EBI, and the maternal index for beef cow breeding.

The second thing we talk to farmers about is grassland management. Grass is the cheapest feed farmers have, and so the bigger proportion of the diet of cows that comes from grass the better for the bottom line. It is also better for the health characteristics of the food produced, and from the point of view of the animals, which are out grazing. Extending the grazing season within manageable limits is something we promote. The win-win from the point of view of the environment is that the emissions of grazing animals are lower than when they are eating silage and concentrates. Every day of extra grazing reduces emissions.

The third area concerns soil and ensuring good fertility. It is important to maintain the phosphorus and potassium status and to make sure it is adequately limed. It also concerns making the best use of fertiliser and manure, with the view to getting the most out of the manure produced on one’s own farm, meaning slurry and farmyard manure, so that one can minimise the amount of bag manure that has to be bought and used. Clover has a role to play in that as it cuts back into the grassland management area.

The fourth area we emphasise is animal health. Having health animals means that they perform well, fewer are lost, and efficiency in the system is improved. This is good for farmers, and also leads to lower emissions because fewer sick animals are being carried and fewer replacements are required. The last piece of advice we always give to farmers is to always be

conscious of cost. Farming is not a high-profit business and farmers need a relentless focus on the cost of running a business. Whatever farmers do, they need to keep the bottom line in mind. One of the initiatives Teagasc has, in collaboration with Bord Bia, is to encapsulate those messages into what we call the carbon navigator, which is a process we go through with farmers to point out to them what they can do on their farms and how their own farm benchmarks against the norms for those measures I have just outlined and give them a direction that they could do a bit better on their nutrient management, or the herd economic breeding index, EBI, or getting cattle out to grass in the spring. That is one of the initiatives Teagasc has done with Bord Bia and a lot of farmers have gone through the process of doing a carbon navigator with their adviser.

Chairman: Is there scope for an online recording system in this regard to let farmers know how they compare with the averages?

Dr. Frank O'Mara: Absolutely, yes. Mr. Maloney wants to comment on that.

Mr. Michael Maloney: Absolutely. Farmers are given feedback about what their carbon footprint is relative to their peers. Not only that, they are shown where the areas for improvement are, whether that is the length of the grazing season, the amount of fertiliser that is spread, the slurry that is put out, when or how it is put out and so on, or the EBI. They are shown exactly where they can make improvement.

There was a question on the benefits of Origin Green and whether we got the best out of it. Origin Green is a work in progress at this time. It was put together back in 2012 and it is the programme we use to market Ireland's food and drink abroad. That is what it is, in essence. It provides the proof and data that substantiate any claims we make about the sustainability of Irish food production. We have been building it since 2012 with the Department and Teagasc. More than 50,000 farmers and 350 companies are in the programme. I take the point that it is important we get the message out. More than 90% of the beef produced in the country comes from Origin Green farmer members while more than 95% of dairy farmers are Origin Green members. The 350,000 companies in Origin Green represent in excess of 90% of all our food and drink exports.

We did international market research this year and found that, across 13 markets globally, what resonates with trade buyers, in particular, is the importance of what we are doing with the Origin Green programme. We are communicating the message on a business-to-business basis at this point, which is where we are getting the most value for our money, but what resonates with them and what they are finding good is that we are carbon footprinting all of the 50,000-plus farmers in the programme. Every 18 months, they are carbon footprinted. As Dr. O'Mara said, more than 200,000 carbon footprints have been done. We are unique in terms of doing that. We are not saying everything is perfect on all these farms but the fact that we are measuring what is happening on these farms certainly resonates with trade buyers.

Chairman: I will cut into Mr. Maloney's time. I would like Deputy Dooley to be quick because I want to move on.

Deputy Timmy Dooley: I have a brief final question to Mr. Gleeson. We mentioned the CAP and the new policy will be the environmental CAP, as such. How do we square the circle as there has been an increase in intensification, for example, in the dairy industry in the eastern part of the country? At the same time, the new CAP is going to see a flight of funding to the west when the east may require additional assistance to develop systems relating to a climate

change agenda. How does the Department square that circle?

Mr. Brendan Gleeson: The Deputy is referring to the proposals for convergence of payments closer to an average payment per hectare. That may, in the final analysis, be mandatory as it is in the proposals now for member states, or it may be voluntary. When we look at how we configure our plan, which is separate from the regulations, we have to consider all the environmental challenges and some of those relating to intensification and we have to consider how we assist the more intensive guys to farm in a more sustainable way. We are doing that anyway at the moment. We launched a programme the other day where we appointed, along with industry, which is playing a part in this, 30 sustainability advisers around the country to help more intensive farmers to protect watercourses and to farm in a way that is sensitive to the environment.

We have to configure our Pillar 2 payments in a way that provides some kind of support for the more intensive people but, equally, to allow, through Pillar 1 and also through this Pillar 2 payment, payments that recognise the environmental public good that is being provided by smaller farmers or by the beef sector.

There are other ways. I mentioned before there are two ways to influence the impact of agriculture on climate. There is regulation, which the Department is doing through nitrates, and then there is utilising the CAP. We will have to address those twin problems. We need to adopt measures that will help the intensive farmers to farm in a more sustainable way.

Deputy Marcella Corcoran Kennedy: I thank Mr. Gleeson for attending. I note, in his presentation, that he held a sustainability dialogue during the summer. Is linked to the national dialogue on climate action, or is it something the Department is doing itself? What will the follow-up actions be?

There were a number of actions within the Joint Committee on Agriculture, Food and the Marine report relating to requirements for the transition within the agriculture sector in respect of climate action, which was referred to by Deputy Deering. Is the Department looking to progress some of the suggestions in that? If so, has Mr. Gleeson a timeline?

The additional abatement potential in the agriculture sector was mentioned. Perhaps somebody from Teagasc might give me some specifics on that.

Is there much in the line of research being done on the addition of certain products to food-stuffs consumed by our cattle to try and help reduce the methane emissions?

There were references earlier to organic farming, but what else is the Department looking at in terms of land use? For example, is it looking at re-wetting bogs to bring us towards being carbon neutral?

The other question was about the bio-economy and the circular economy. Is the Department looking at policies around that and what are its plans? We are in a challenging time and I wonder if Mr. Gleeson could answer some of those questions.

Mr. Brendan Gleeson: There is a lot there. The sustainability dialogue was the Department's initiative. Mr. Callanan chaired it so I will ask him to tell the committee a little about it.

Mr. Bill Callanan: The EPA is doing a citizens' dialogue on the issue of climate and building awareness. We claim we were a little ahead of the curve on that in June of last year, but the clear objective is to be able to communicate why we are doing things and to raise awareness

and get feedback on the interventions. We did it in an interactive format where we collected a massive number of comments from approximately 200 people who participated and we distilled that into a short report for the participants.

The message coming from that is that we communicate that and it is translated. We have a working title of “Climate Wise for Agriculture”. We are articulating what agriculture is doing, but also identifying what needs to be done, or where the policy needs to go in that regard.

The Deputy’s second question was about foodstuffs, etc. There is work on two points. One relates to protein content, which has an impact particularly on ammonia emissions, and that is identified in the Teagasc marginal abatement cost curve, MACC, as an intervention point. Protein is required for growing animals, less so for fully grown animals. There are opportunities to reduce protein content with a positive impact on ammonia emissions.

Regarding additives, there is a lot of talk about seaweed and all these types of additives. We need to see evidence of that before there is a policy intervention.

There were 14 potential interventions within the Teagasc MACC. The three biggest of those are, first, improving breeding, and we have the economic breeding index, EBI, in that regard. The second is fertiliser, in terms of the use of protected ureas for example, as an intervention point. Research work has been undertaken to ensure nothing appears in the final product as a consequence of that. Safety of food is critical in that element of it. We have provided funding for work to be done in that regard. The final element is the trailing shoe technology, low-emission trailing spreading, for which we have financial support. That constitutes 60% of the action points identified in the MACC that are working.

I addressed the bioeconomy earlier. Agriculture is front and centre in respect of bioeconomy delivery. Whether it is through work in UCD or the work of Glanbia on the use of whey permeate, it is a significant opportunity for agriculture. The critical point is that it needs to reflect back to the primary producer as well and that this is not just value added that is gained by industry but rather contributes back to the original producer of the product. That is reflected as well in Commission commentary. That is the case whether we are talking about forestry owners or milk producers, among others. That is the objective in the development of the bioeconomy.

Chairman: Does Dr. O’Mara wish to comment?

Dr. Frank O’Mara: Mr. Callanan has covered well what is in the MACC regarding options and feeding. Feeding has always been of interest to scientists. I was an animal nutritionist and I spent a good few years of my earlier career in that area. We always set out with the ambition of turning off methane by changing diet. We found out that it is tough to turn off. The production of methane is a natural process as the animal ferments forage foods in its rumen. The only way to effectively turn it off is to change the diet radically. If ruminants are moved to a high concentrate diet, so that they are almost being fed like a monogastric such as a pig, then that could dramatically change methane emissions. Mr. Callanan mentioned protein. The other option we considered was adding fat or oil to the diet of animals. That is quite effective, but the economics of it are not great because it is expensive. Sustainability is a major issue in terms of where one gets the oil from. There is much controversy about the production of palm oil, for example, so the use of oil is not a simple equation. We have it in the MACC but it is in there as a small point.

We are interested in herbs such as chicory and plantain as forage feedstuffs that might have

an impact but much more research is needed on them. There are always new suggestions coming along, such as seaweed, which we are currently looking at. The feed industry is actively researching various additives that might be included in the diet, for example, that might act as a chemical inhibitor for methane. I understand there is a promising initiative from an international company, which is almost ready to submit to the European Food Safety Authority, EFSA, for approval as a dietary supplement that would have a significant impact on methane. That is what I was referring to earlier. Being optimistic, research has the potential to bring further solutions as well as the 14 we mentioned in the MACC in the years ahead.

Chairman: Is it correct to say they are at early stages?

Dr. Frank O'Mara: They are at quite early stages. Quite a lot of work has been published on the one I mentioned from the international feed company, which shows it is effective at reducing methane emissions by approximately 30%. It will take several years to get approval to use it on farms. It needs to be fed not just every day but several times a day so it is suitable for animals that are indoors and being fed a TMR diet. It is not suitable for grazing animals. We are interested in working with the company to see if we could make a version that would be suitable for grazing animals.

Deputy Marcella Corcoran Kennedy: I also mentioned re-wetting bogs in respect of carbon sequestration.

Mr. Brendan Gleeson: One of the options in the MACC is re-wetting peatlands. That is something that will fall into the mix in discussions on future policy, for example, on the CAP. It is in the MACC and it has a significant impact.

Dr. Frank O'Mara: It does, and the level we have suggested is approximately 30,000 ha. As I understand it, there are approximately 300,000 ha of drained peatlands. When peatland is drained, carbon is released. As I understand it, we are currently counting that in our inventory. A total of 300,000 ha of peatlands are emitting carbon because they were drained at some time in the past. If they have become re-wetted through the drains breaking down over time, or if they were re-wetted, then there is potential to reduce the amount of land we are counting in the inventory at the moment. I do not have the figure off the top of my head but that 300,000 ha would give rise to a significant emissions savings - almost 500,000 tonnes of carbon.

Deputy Marcella Corcoran Kennedy: What about the report of the Joint Committee on Agriculture, Food and the Marine?

Mr. Brendan Gleeson: I mentioned earlier about the sequencing of policy. We are involved in a whole-of-government discussion on how we meet our national targets but we are working on a departmental policy, which we call Climate Wise. We are doing some of what was recommended in the report and we will consider that in the context of our Climate Wise report.

Deputy Marcella Corcoran Kennedy: My final point relates to communications and the fact that we need a whole-of-government, and a whole-of-society approach, to achieve what we need. We are trying to tease out the communications between the Department of Agriculture, Food and the Marine and other Departments and whether they are actively working with each other on the challenges. What mechanisms are the Department participating in?

Mr. Brendan Gleeson: We are working with other Departments in meeting our national obligations. Mr. Callanan is on an interdepartmental committee that tries to cohere national policy and the national strategy for meeting our obligations.

Mr. Bill Callanan: Of the 30 sustainability solutions Mr. Gleeson mentioned, ten are from industry, ten are from the Department and Teagasc and ten are from the Department of Housing, Planning and Local Government. That is evidence of collaboration.

We also work closely with the National Parks and Wildlife Service. We have taken on three ecologists within the Department. We see the environment as critical in terms of the message we send out on agriculture.

Regarding the Food Wise 2025 strategy, the Minister chairs a high-level implementation group and I chair a group below that, which is an environmental sustainability committee that includes members from Teagasc, Bord Bia and other Departments. We focus on improving monitoring and we have an inventory group that aims to pool our knowledge of datasets to improve monitoring of environmental outcomes.

Chairman: What is the name of it?

Mr. Bill Callanan: The environmental sustainability committee.

Chairman: Is there another cross-departmental committee?

Mr. Bill Callanan: That one includes the other Departments in terms of our oversight of Food Wise 2025.

Chairman: I thank Mr. Callanan.

Deputy Sean Sherlock: It would be useful for the committee to have a map of the various committees that exist across the Government and between Departments on climate change because it can be confusing when we hear acronyms and terms that come out of nowhere. I would welcome any clarity on that.

Chairman: We will look into that and we will liaise with the Deputy on it.

Deputy Sean Sherlock: I wish to clarify something Dr. O'Mara mentioned. He said that output is outpacing efficiency gains in respect of the national herd. He referred specifically to milk production. In layman's terms, I would like to gain an understanding of how that gap is being narrowed or closed. A question arises if the gap is narrowed and one has maximum efficiency gains, and one is still planning on increasing output. If I understand the interventions correctly, output will keep increasing. We will continue to produce beef and more milk or milk products or derivatives thereof. If that is where we have put our eggs in terms of the market - Dr. O'Mara keeps referring to the market - then how do we close the gap? If we close the gap between efficiency gains and increases in output and if we were trying to peg it out in years, at what stage of the process will we get there? Will it be 2025, 2040, 2050 or 2100 by the time the gap is closed?

The IPCC's report has brought what we are facing into stark focus. This morning I got a sense of the work the Department was doing, which is laudable, but there was no great sense of urgency, particularly in forestry and making efficiency gains. I say this because tackling climate change requires resources. In his Budget Statement the Minister for Finance spoke about the environment efficiency pilot scheme for the beef section, yet I do not know what is the overall figure for the scheme. When one examines the initiative a little, it seems that it will cost €40 per cow and that the weight of cows will have to be recorded at marts.

Has the rhetoric at the working groups of the European Union changed owing to the 40%

figure in the CAP negotiations? Can the rhetoric be tracked to dialogue within the Department that states, “If we keep going the way we are, we are going to far surpass the target set of 32.3% for Ireland’s overall emissions in agriculture”? I firmly believe we cannot maintain such a trajectory. I am trying to be evidence-based in dealing with this matter. Based on the interventions made today, it seems that there is no way in hell that we will be able reach the figure of 32.3% at the current rate of intervention. It is just an impossibility. I would prefer the Department of Agriculture, Food and the Marine to tell us how much we need in pounds, shillings and pence, outline what policy interventions are needed and how much money is required for same.

My last questions are about forestry. If I run out of time, the Secretary General can supply the committee with his answers in writing. Is 18% of the land area of the country under forestry? We are talking about schemes under which farmers will be paid X amount for 15 years. Surely we need to be telling them, “Do not farm that land any more because this is what we are going to pay you in perpetuity and your antecedents,” because otherwise, frankly, we are on a hiding to nothing.

Mr. Brendan Gleeson: In my opening intervention I mentioned what the gap would be by 2030. I have mentioned that we have received credit for 28 megatonnes, which figure is attributable to agriculture and the forestry sector. I have also mentioned that there are other things we could do. At a maximum, we are talking about a figure of 17 megatonnes. The national target is 90 megatonnes. I have articulated the contribution agriculture can make in meeting the national target, based on the use of current technologies. I stress that the technology will evolve. There could also be feeding strategies and other things we could do over time.

Deputy Sherlock mentioned a new scheme. It is on top of the €300 million we are spending on the beef data genomics scheme. We are putting €4 billion into the rural development programme. Please forgive me if I do not come across as an expert in this area, but I am catching up fast. My Department has a lot of people with expertise and we have recruited two ecologists recently. The Department has put big resources into tackling climate change as it affects the environment. Therefore, I cannot accept the Deputy’s assertion that there is no sense of urgency. I am here to present the facts as I know them. I have presented what agriculture could do based on current policies and technologies. If one were to decide that it could do more, one could have long discussions on whether that would be wise. I am sure people seated around the table hold differing views. There are other things one must take into account, including the social and environmental impact globally.

On what the Deputy said about forestry, we provide very generous incentives. The current level of forest cover is 11%. Our target is 18%. The European average is 35%.

The Deputy asked whether we should pay farmers not to farm. That initiative would have environmental, biodiversity and other consequences. He outlined his proposal but perhaps he was trying to be provocative. Perhaps that is what he really thinks, but it remains to be seen. We need to ensure that when we intervene in this space, we do so in a way that helps farmers to farm in more climate friendly and efficient way. That is what we have tried to do.

Deputy Sean Sherlock: It would be helpful if we understood where we were in the negotiations on the CAP because it is an opportunity. I argue that everybody seated around this table wants a just transition for farmers.

Mr. Brendan Gleeson: Yes.

Deputy Sean Sherlock: One does not want to put farmers out of business overnight. We need to have a sense of how Ireland is influencing the negotiations on the CAP in order that we can ensure the transfers will be such that we will be able to maximise research output, provide for the remuneration of farmers and those involved in agriculture in order that the targets to be reached can be reduced to manageable levels while maintaining outputs.

Mr. Brendan Gleeson: The Deputy has mentioned a phrase I would not use. We do not want to pay farmers to go out of business. For the moment, that is not public policy.

Deputy Sean Sherlock: It is land management

Mr. Brendan Gleeson: Yes. In the CAP negotiations there is ongoing discussion of the regulations. The current proposals require a 40% spend on environmental measures, something we have accepted. Some member states, including some of our traditional allies, are resistant to the idea of conditionality, on which they have their own views, but Ireland has embraced the idea.

The discussion that is of more relevance to the considerations the Deputy has mentioned is on the defining of a national plan, or phase 2. Phase 1 involves agreeing to the regulations which will give us discretion to do certain things. They will require us to spend 40% of the budget on climate change and environmental measures. They will also give us discretion to configure policy in a way that will suit our national conditions. One of the big features of the new CAP will be more discretion for member states. It is at the time when we define our national plan that we will get into the real hard discussion on what should be done with the funding. That will be the subject of further engagement. I am sure I will meet various committees of the Houses when it comes to consideration of the development plan.

Deputy Sean Sherlock: Mr. Gleeson has done very well today considering that it is his first outing as Secretary General.

Deputy Martin Kenny: I welcome all of the delegates and congratulate Mr. Gleeson on being appointed Secretary General.

Many of the questions I wanted to ask have been asked. Also, many of the issues I wanted to raise have been mentioned. I want to ask questions about the type of land in the north west where I live. It is marginal and results in low impact grazing, particularly on mountain land. Has the impact been measured? It is not intensive farming. The biodiversity aspect clearly is much higher. Farmers believe they already do an awful lot for the environment without the existence of a scheme or anything else. Unfortunately, they have received very little recognition for doing so. Has a comparison been made between low-impact grazing and intensive farming practices in the context of carbon sequestration?

There has been much talk about finding alternatives. In a field not far from where I live there is an empty pit that was used for the production of flax. Seventy or 80 years ago flax was grown as a crop in this country to support the production of linen. Latterly, carbon or oil based synthetic products took over and the flax industry disappeared. Should we consider the reintroduction of such industries that worked in the past and that may now have a future? Another such crop is hemp, which can be grown extremely well in our climate but which has not been. There are issues in this regard which need to be dealt with.

I come from a part of the country where we have a problem with the forestry because it represents a permanent change of land use. It takes over entire townlands and parishes where very few people live and kills off communities. We can say there are reasons for this and so on.

Furthermore, as for the biodiversity nature of forestry, it is generally monoculture. It is all Sitka spruce, and a few evergreen trees are grown on the edges. This is not working for communities and it is not what we want to achieve. There needs to be a re-examination of the policy in this regard and we need to come up with alternative models of forestry, such as continuous-cover forestry.

Mr. Brendan Gleeson: I am not sure whether we have metrics for the climate impact of the kind of farming the Deputy has described, which is very common in the west of Ireland.

Dr. Frank O'Mara: One thing we have been doing in recent years is using the national farm survey, which is a survey of 1,000 farmers. Probably about 600 or 700 beef farms of all descriptions, including some of the intensive ones the Deputy has described, are surveyed. The survey is primarily set up to track farm incomes, but we have been matching or boarding onto it the measurement of various sustainability indicators, including carbon footprint. We have done this first for the dairy sector so we can produce a report on carbon footprint in the dairy sector. This is the kind of information to which I referred earlier when I spoke of the carbon footprint of milk production having decreased by about 1% a year. We are now also doing this for beef production and can stratify the data out by the intensive, high-stocked beef farmers versus the less intensive, lower-stocked ones. I do not have the figures with me now or in my head, but the possibility is there to track this. This methodology then gets rolled out into the Origin Green quality assurance scheme, so all farmers, once they are in the scheme, will have a carbon audit figure eventually, every 18 months, put on their farms. As a result, we can see the carbon footprint range from this type of farm versus the more intensive type. I will not speculate as to precise figures in this regard. We will do similar work for sheep next year.

I will respond to the Deputy's other question about flax while I have the floor. We have just recently appointed a new researcher to look at alternative crops for the tillage sector. I can certainly take the Deputy's comment about flax and hemp back to her. She will be looking at things like soya bean meal. Apparently, 4,000 ha of soya bean meal has been grown in south Wales and south England this year. I do not know how it fared, but we need to be constantly looking at the other alternative crops that are there.

Mr. Brendan Gleeson: I will make a linked point. Regarding marginal land and the configuration of the new Common Agricultural Policy, one thing we must do is pay for additionality. That is one of the constraints under which we find ourselves. When we are considering how to provide recognition for that, we must consider what kind of scheme can deliver some kind of additionality as well.

Regarding afforestation, I know the Deputy's part of the country so I understand the issues there. There is an acceptance that we need to do more in respect of broadleaf trees. This is why we changed our policy this year to require at least 15% broadleaf planting and to provide higher incentives for deciduous trees. I understand the Deputy's perspective on this, but it is important that those concerns do not feed into-----

Deputy Martin Kenny: Yes, of course.

Mr. Brendan Gleeson: -----a wider negative narrative about forestry. That is really important for all of us.

Mr. Fergus Moore: I think one or two Deputies mentioned continuous-cover forestry. In its most recent mid-term review, the Department put in place the beginnings of a new scheme

for continuous-cover forestry to consider the matter in the context of a number of pilot projects whereby we can look at alternatives to the existing forestry methods we are practising in certain localised areas where we think it would work. Again, we are looking at different ways of doing things to try to address some of the issues people have raised in the past.

Chairman: I ask Deputy Martin Kenny to be very brief.

Deputy Martin Kenny: Tillage was mentioned. I am very conscious that a very significant amount of our inputs in our dairy and beef production are imported. This needs to be borne in mind in the context of Origin Green and so on. If we are talking about closing the circle, we need to understand that everyone in the country - every farmer in every sector - is dependent on another sector. As the tillage sector went a way down, it had an impact in this regard. If we are dependent on Latin America and elsewhere in importing many of these inputs, this is part of a carbon footprint we may not be measuring. Are we measuring it? Does that come into it?

Dr. Frank O'Mara: Specifically on that point, when we measure the carbon footprint, we do take into account the feed. Whether it was imported or homegrown, we still count the carbon emissions associated with its production, so we are not ignoring the fact that this feed might have been brought in from another country. It is a full measurement of the carbon footprint.

The Deputy is right about the value of the tillage sector. We cannot have only one system of farming in the country, and this very much was borne out this year with the simple matter of the availability of straw, which brought it home to many people that we do need a tillage sector. Unfortunately, however, the market dictates to farmers where they can make a profit. We have seen a significant enough decline - I do not know precisely by how much, but perhaps 12% or 15% - in the acreage of tillage crops. Much of this has gone into dairying because of the difference in profit margins. I fully accept the Deputy's point, though, that the value of having a range of systems at a national level is very significant.

Chairman: Do we have figures for all our agricultural imports and the associated carbon footprint?

Mr. Bill Callanan: We have figures on our meal usage, etc. We use about 5 million tonnes of meal a year, and about 2 billion tonnes is produced nationally. That has decreased this year. We were at about 2.3 million tonnes but we are at about 1.75 million tonnes this year. We have all the figures on our fertiliser usage. They all contribute towards our inventories in doing all that work.

A comment that was made about hemp, etc., on which a bit of work has been done. We have asked quite often about it. I understand there are challenges in bringing it to market, but we are quite open to new opportunities. By way of example, the cultivation of hops for the brewing industry had died out in Ireland but we have included it in the past two years in our horticulture grant aid scheme as an establishment grant, should someone wish to avail of it. It is niche but we are certainly open to alternative enterprise development.

Chairman: Would it be possible to get the figures on our imports and the associated carbon footprint? That would be valuable information for our work and would help the farmer. It would also help the Deputy's case on our home industry.

Dr. Frank O'Mara: I will make a brief point on that. Many people have said today that Ireland has the lowest carbon footprint for milk production. One of the reasons we do is the fact that we do not feed much concentrates into the diet here. The typical concentrate level for

dairy cows in Ireland is about a tonne a year. In the Netherlands, it is probably 3.5 tonnes per year. There is a carbon footprint associated with those concentrates, and when one counts it the intensive, indoor-type system must carry the cost of that production of grain in some other country when one measures fully the carbon footprint. This is where we gain because we do not have a lot of the carbon footprint associated with grain production.

Deputy Brid Smith: I thank our guests for their presentations. I specifically thank Mr. Gleeson for his. I missed most of the proceedings as I have been in and out of another committee.

I had wanted to ask three questions but I will ask just two. The first concerns a just transition for low-income farmers. No other member mentioned this. I was looking at the Teagasc survey for last year for farmer income, and there is a surprisingly high level of economic vulnerability, 30%, among farmers. The figures are quite startling. Something like 5% of that 30% earned less than €10,000 in that year and 21% reported an income of between €10,000 and €20,000. Let us go back to the recommendations of the committee for the Citizens' Assembly on climate change. Ancillary recommendation No. III states:

The agriculture sector ... requires ongoing support to make a transition towards models of production which give rise to lower GHG emissions. Cognisance must be taken of the impact which the sector has on the economy, particularly the rural economy.

Have the witnesses done an audit on the negative outcomes that might follow a transition in the lower income brackets of farm producers in agriculture? Many supports will be needed.

I have another question about carbon footprints that has come into my head just in the past few minutes. Can we get an understanding of the carbon footprint that comes from the cohort I have just spoken about and how it compares to the footprint from the cohort of multimillionaire ranchers who produce loads of dairy and loads of beef? Do the delegates have a scale or measurement to compare the carbon footprint of very wealthy farmers with that of more marginalised and lower income farmers? It would be interesting to see it. We produce far too many cattle and do so to satisfy the markets of Saudi Arabia, China, Egypt and so forth. It has been shown in all of our exports recently. It is obscene and does not serve the planet very well. However, as was said, the market dictates. Part of the problem with climate change is that it is the market that dictates, rather than a sensible approach to production and economics.

My second question is about Coillte. About a year ago at this committee representatives of the environmental pillar argued that there should be an independent review of Coillte and that it should be reformed to ensure a long-standing focus on native trees, which create a longer term benefit for biodiversity and the climate, was part of the policy. That is not happening. Mixed native woodlands are being sidelined for Sitka spruce and all of the problems that go with it. Do the delegates agree that there is a need for a review? Do they hope an outcome of that review would be a reversal of the policy of using a fast growing cash crop such as Sitka spruce and eliminating it for the benefit of the longer term, more environmentally and ecologically friendly broadleaf, from which there is much to be gained? In addition, I agree with the comments made on looking at alternative crops such as hemp which is a good absorber of carbon. If it is possible to get over the legal stuff connected with the growth of cannabis and eliminate the illegality and that complication, it could be used for many things, from the production of clothes to fences.

On Deputy Martin Kenny's contribution, while on holiday recently I met many farmers in his area who were very concerned about the impact of forestry and Coillte's policy on the Bor-

der, in the west and the north. The farming community and the population of the region have been badly harmed by overproduction and the policies of Coillte.

Mr. Brendan Gleeson: The Deputy referred to the number of farmers on vulnerable incomes. She is absolutely right, which is why we need public support for farming under the Common Agricultural Policy. There is an issue with the share-out of that support. Under the last CAP we embarked on a programme of what was called “convergence”. We brought people who were below 60% of the average national payment per hectare up to 60%. That moved approximately €100 million from the highest paid farmers to the lowest paid farmers. There is a new Common Agricultural Policy proposal that the lowest paid farmers be brought up to 75% of the average national payment. That is a mandatory provision in the new proposal.

On carbon intensity, I am subject to Dr. O’Mara’s confirmation, but more intensive farming on grassland produces lower carbon emissions per unit of output. That is why our dairy units are so carbon efficient. They are producing milk from grass. Does Dr. O’Meara wish to elaborate on that point?

Dr. Frank O’Mara: In terms of the size of the operation - I do not have the figures in my head - I do not believe there would be much of an impact. One can be very efficient and have a small operation. Most dairy farmers are quite efficient. As regards the carbon footprint of every litre of milk produced, it will not differ much if one has 50 versus 150 cows. Obviously, one is producing more milk if one has 150 cows and the overall absolute emissions will be higher on that farm, but it will not vary that much per kilogramme of milk produced. However, I need to get the figures and refer back to the committee.

Deputy Bríd Smith: I will clarify my question because if we are going to get figures I would like to be given accurate ones. It is not so much the carbon footprint per head of cattle that matters because obviously there are economies of scale and so forth, but the income brackets of farmers and examining the output in terms of the carbon footprint, from the most vulnerable to the most well off, and what it measures. That is probably a socioeconomic question, but it relates to agriculture and the policy in how we move forward. I would be interested in seeing the figures.

Dr. Frank O’Mara: We can provide them. However, it is a question of how one looks at it and whether they are the overall emissions from the farm. The low income farms are going to be smaller farms and will have lower total emissions. One must also look at the emissions per unit of output, whether it is a litre of milk, a kilogramme of beef or a kilogramme of grain produced, and whether there is a difference in efficiency or the amount of carbon associated with each unit of food produced. That is also an important metric to examine.

Mr. Brendan Gleeson: The Deputy asked the important question of how we could recognise the environmental public good provided by small farmers on marginal land. How we provide for recognition of the environmental public good provided by them is part of the discussion we will have on shaping the new Common Agricultural Policy?

Mr. Moore will respond to the questions about forestry.

Mr. Fergus Moore: There is no general plan for Coillte and the species it plants. Every year it applies for a general felling licence for particular blocks of timber and we have many consultations with it about species choice. To summarise, the forestry industry is worth approximately €2.3 billion to Ireland and we harvest approximately 3 million km of timber. It supports

a very vibrant sawmilling sector which employs 12,000 people. Obviously, the coniferous species is fast growing and provides the raw material for the sawmilling sector. We also recognise that broadleaves have an important role to play. They also provide timber and the Department is examining ways to improve its promotion in the wider economy.

As regards the Coillte estate, one can argue about the types of tree planted, but there are 8 million visits per year to the estate which many are using quite well for recreational purposes. On diversification, Coillte is certified by the Forest Stewardship Council and makes various recommendations related to the estate. In general, there is a wide range of diverse species planted across different areas of the Coillte estate, but because many of the areas planted historically would have included poor marginal land, the capacity to grow many species would be less. Some of the coniferous species have better capacity to grow in these wet, marginal land and exposed locations. From a felling licence perspective, Coillte includes a lot of broadleaf trees along roadsides in felling licences to try to improve the quality of and the impact on the landscape in some of the larger coniferous plantations.

Mr. Brendan Gleeson: There has been a mid-term review of our forestry measures and there is now a requirement to have a plantation figure for broadleaves of at least 15%. The grant rates for broadleaves have also been increased. We are trying to incentivise their planting.

Deputy Thomas Pringle: Some farmers, especially smaller farmers, will have difficulty in shifting from beef production to forestry and other crops. There is a difficulty in gaining acceptance in rural communities of its value. How will the delegates engage with farmers to ensure they will shift? In the last couple of weeks we saw how Bord na Móna badly managed it with the people involved in bogs in the midlands.

According to the Heritage Council, there are three types of high nature value farming. Has the Department carried out any study to characterise each farm in Ireland in terms of how it fits within it and of the figures in that regard?

Mr. Callanan mentioned the characteristics of methane. How will the Department use that in how it deals with farming emissions? That is dangerous, particularly because methane is much more aggressive, some 40 times more, than carbon. I wonder why Mr. Gleeson raised it. Is this to suggest that farming is not as bad as it could be? I would like him to expand on that.

The timeframe for mitigation which is being discussed is out to 2030, 2040 or whatever. Is that sufficiently ambitious? Are we in a position to wait that long for these things to happen?

Mr. Brendan Gleeson: The Deputy asked about communicating the forestry part to farmers. The important message is that for most drystock farms in Ireland, including in the west and the north west, forestry and beef farming can coexist. Most beef farms have very low stocking rates. They have some marginal land that they do not need or that they under-use. They can raise the same number of beef cattle on their farms and plant trees and make a decent living from the hectare. There is an economic aspect to this. The most effective way to persuade people to do things is to persuade them that it is in their own best interests which is often their economic interest. It is a message that we have to get out there, and we must get better at doing this.

Deputy Thomas Pringle: It is important to differentiate between the Leitrim example and the large industrial plantations, and what people would do on an individual basis on their farms.

Mr. Brendan Gleeson: Yes, but we need to have a balanced narrative on this. Most plant-

ing is done by farmers. While much of the narrative is around alternative systems of planting and ownership, most planting is done by farmers. It is important to recognise that there is a commercial interest in forestry development which, apart from making farms more viable, involves the creation of downstream jobs in places such as Medite and similar processing facilities. That is an important point. It is really important that farmers understand that in many cases their current enterprise can coexist with forestry. There are different models such as the agroforestry schemes, ideas around lower density forestry of deciduous trees and there is also the potential for farmers to have commercial stands of forestry where they will get a 100% establishment grant, a very significant income per hectare over the first 15 years and then they will have the potential to make a commercial income from thinnings. We have to do more on that with farmers. It is important that farmers engage with this. Part of the negative narrative around this is that it is not farmers that are engaging with it but that does not stand up to scrutiny. There is a big forestry inventory which belongs to Coillte but demonstrably farmers are planting most forestry in Ireland.

Mr. Fergus Moore: The average size of a plantation in Ireland is 8 ha. We generally see lots of smaller side plantations being planted. As Mr. Gleeson said, it is a part farm approach, with farmers planting part rather than all their farm, so that it is just the marginal land. Our message for the next five or ten years will be to encourage people to plant the wetter fields of their farm rather than their whole farm. We have different messages that we need to get out.

Mr. Brendan Gleeson: In the context of methane, the Department is anxious to establish the facts, which will then inform its policies. We are not hiding from any facts or inventing alternative facts, we are trying to deal with them. I do not want to answer for Mr. Callanan, but he made a point about methane and there is scientific research that offered to provide to the committee for its analysis. People around the table may have different views and there may be alternative research out there.

Deputy Thomas Pringle: Methane is far more damaging than carbon dioxide. That is an alternative fact.

Mr. Bill Callanan: I do not want to try to mislead anybody. Fundamentally, everything is done with the objective of reducing the rise in temperature. That is translated into a structure which has given us targets, including national targets. The Deputy is absolutely correct that the impact of methane is substantially higher. This is all translated into a global warming potential over a 100-year period. Methane has equivalence of 25:1 for carbon dioxide. However, while it has a higher impact, it has a much shorter lifespan, where carbon dioxide remains in the atmosphere for thousands of years. The structure is the structure. The science is evolving in its knowledge of methane but it would make sense that there would be a particular focus on carbon dioxide given that once it is emitted, it remains in the atmosphere for thousands of years. In the context of methane's impact on warming, if emissions are increasing, then the ratio is much higher than 25:1 - it is up to 100:1. However, stable emissions are decreasing slightly, it is less than 0.3% and the hypothesis of the work is that it does not have the same warming potential. I want to be very clear that it is not at a point which is translating into any targets at national level. I am not advocating on that but raising awareness.

The Deputy is correct that high nature value land, HNV, as designated in Ireland, collates to our special areas of maturated lands, which is around 11% of our land area. HNV-type farming is not a designation but rather a type of farming which at an intensity level which is quite low. We already have measures which are identified in GLAS, for example, where we support that type of farming, such as low-input permanent pasture. There are approximately 47,000 farmers

involved in GLAS and they are being paid for low-input permanent pasture which is indicative of HNV-type agriculture. As the Secretary General identified, the average stocking rate in large swathes of Ireland are quite low. We commissioned some work to identify HNV-type farming. Dr. James Moran in Sligo IT has done a good bit of work in this area. It is not a designation of land type but it is a type of farming which is quite common in Ireland, particularly in the beef sector.

Chairman: There has been much attention on question of a carbon tax. If we were to set a trajectory for the next ten years, for example, how would this impact on the sector and how could we ensure that it had minimal impact on rural communities?

Mr. Brendan Gleeson: I was asked about this earlier and my response was that it is a policy question. I want to be careful that I do not bind the hands of anyone in the future. Carbon taxes are applied in some sectors. I will not comment whether or not they should but there should be reflection on some considerations if they are to be applied on the agriculture sector. Traditionally, carbon taxes are applied at the point of consumption, which would be consumers' food. That would have an impact on consumer prices but not on production practices. Then there is the question of the impact of a carbon tax being applied on the production sector in Ireland. Deputy Bríd Smith referred to the number of farmers who are in income-vulnerable positions. There are low-margin farmers. The tax would impact on farm margins and would take a chunk out of the income subsidies that come from the European Union. I am not sure whether it would lead to behavioural change because I do not know whether the technological fixes are available to adjust behaviour beyond what we are already trying to do. It is a policy option, and a tough one, but there are things that must be considered carefully, including its impact on the income of farm incomes and the socioeconomic impact on rural areas.

Deputy Eamon Ryan: One of the main objectives is that there needs to be a change in the power imbalance whereby farmers are price takers. If 2 cent were put on a litre of milk or 4 cent on a kilogram of beef, as Alan Matthews is suggesting, the assumption is always that the farmer should take the hit. That needs to change. The power imbalance in the system is the problem. If we were to add the 2 cent and the farmers did not take the hit, the revenue raised could go to other farmers. The problem is we are tolerating a system under which farmers do not have any power and the plcs have all of it.

Mr. Brendan Gleeson: I accept that there is a power imbalance in the supply chain. Wiser men than me have been trying to deal with it for a long time and trying to improve the system. One of the things we have done is encourage the establishment of producer groups in the beef sector. They have certain dispensations from competition rules under the Common Market organisation regulations and the CAP. We are conscious of this. Committee members will probably be aware of the regulations being developed in the European Commission on unfair trading practices. If the issue was easy to deal with it, we would have dealt with it a long time ago. However, I agree with the general proposition that farmers tend to be price takers, which is not ideal.

Chairman: One of the more difficult questions relates to complying with our non-emissions trading scheme targets. How is it financed? Are we purchasing compliance? Will Mr. Gleeson comment on that issue?

Mr. Brendan Gleeson: The non-ETS targets are national targets. They are not divided between sectors. We need to have a discussion on how we will meet them. We have identified the potential to meet the abatement and sequestration requirements in agriculture. We have to feed

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it into a national discussion with other sectors to determine how we will meet the targets. I am not in a position to say we intend to purchase compliance, but we are taking the issue seriously. We have done a good deal of work in the measurement of what we can do and will be playing a part in that discussion.

Chairman: On behalf of the committee, I thank Mr. Gleeson for his time and contributions. It has been a good engagement with him. I also thank all of his officials.

The joint committee adjourned at 4.55 p.m. until 2 p.m. on Tuesday, 13 November 2018.