

DÁIL ÉIREANN

AN COMHCHOISTE UM THALMHAÍOCHT, BIA AGUS MUIR

JOINT COMMITTEE ON AGRICULTURE, FOOD AND THE MARINE

Dé Máirt, 22 Deireadh Fómhair 2019

Tuesday, 22 October 2019

The Joint Committee met at 3.30 p.m.

Comhaltaí a bhí i láthair / Members present:

Teachtaí Dála / Deputies

Seanadóirí / Senators

Jackie Cahill,	Rose Conway-Walsh,
Marcella Corcoran Kennedy,	Tim Lombard,
Charlie McConalogue,	Michelle Mulherin.
Willie Penrose,	
Thomas Pringle,	
Brian Stanley.	

I láthair / In attendance: Deputies Michael Harty, Denis Naughten and Hildegard Naughton.

Teachta / Deputy Pat Deering sa Chathaoir / in the Chair.

Business of Joint Committee

Chairman: Apologies have been received from Senator Paul Daly. Before we commence, I remind members to turn off their mobile phones. I propose to go into private session to deal with some housekeeping matters. Is that agreed? Agreed.

The joint committee went into private session at 3.41 p.m. and resumed in public session at 5.10 p.m.

Harnessing Ireland's Ocean Wealth: Marine Co-ordination Group

Chairman: I apologise to our guests for the delay. Before we commence, I remind members, witnesses and people in the Visitors Gallery to turn off their mobile phones. From the Marine Co-ordination Group, I welcome: Mr. John Shaw, assistant secretary general at the Department of the Taoiseach; Dr. Paul Connolly, chief executive officer at the Marine Institute; Dr. Cecil Beamish, assistant secretary general at the Department Agriculture, Food and Marine; and Ms Maria Graham, assistant secretary general at the Department of Housing, Planning and Local Government. Our guests have been invited to this meeting to update the committee on the progress of the plan, Harnessing Ireland's Ocean Wealth - An Integrated Marine Plan for Ireland. The plan sets out two targets, namely, to exceed €6.4 billion per annum in turnover from the maritime sector by 2020 and to double the sector's contribution to 2.4% of GDP per annum by 2030. We have been made aware that since publication of the plan, two reports of interest were published this year. Those are Harnessing Our Ocean Wealth: A Review of Progress 2018 and Ireland's Ocean Economy. I understand that our guests will brief on these reports as well. I congratulate Dr. Connolly on his recent appointment as chief executive of the Marine Institute and I take this opportunity to wish the outgoing chief executive, Dr. Peter Heffernan, well in his retirement. Dr. Heffernan appeared before this committee regularly in the past.

Before we commence our discussion, I draw the attention of our guests to the fact that by virtue of section 17(2)(l) of the Defamation Act 2009, witnesses are protected by absolute privilege in respect of their evidence to the committee. If they are directed by the committee to cease giving evidence on a particular matter and they continue to do so, they are entitled thereafter only to a qualified privilege in respect of that evidence. They are directed that only evidence connected to the subject matter of these proceedings is to be given. 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 or her 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 of these Houses, or an official either by name or in such a way as to make him or her identifiable.

I invite Mr. John Shaw to make his opening statement.

Mr. John Shaw: I thank the Chairman and the committee for inviting the Marine Co-ordination Group, MCG, to meet it this evening. As mentioned by the Chairman, I am accompanied by Dr. Paul Connolly, the recently appointed chief executive office of the Marine Institute and colleagues from the Departments of Agriculture, Food and the Marine, Housing, Planning and Local Government and Communications, Climate Action and Environment, who represent some of the Departments who are on the MCG, which was established in 2009. Dr. Connolly

will also make some opening remarks.

The MCG is chaired by the Minister for Agriculture, Food and the Marine. However, given its cross-departmental nature, the Department of the Taoiseach has acted as convenor. In addition to the relevant Departments, the Attorney General's Office and the Marine Institute also participate on the group. The secretariat is provided by the MCG bureau in the Department of Agriculture, Food and the Marine. On the group's initiative there is also a marine affairs attaché based in Ireland's permanent representation in Brussels. The attaché attends marine policy meetings and liaises with other EU member states, the European Commission and the European Parliament to influence policy on marine matters and to keep Departments informed of EU developments. The marine attaché also partakes in MCG meetings.

The MCG provides a forum and focus for discussion and co-ordination of matters requiring interdepartmental action using a whole of Government approach. It has led to some notable achievements in relation to collaboration, research and innovation in the marine area, including through Harnessing Our Ocean Wealth - An Integrated Marine Plan for Ireland, which was approved by Government and launched by the Taoiseach and the then Minister for Agriculture, Food and the Marine in July 2012. My colleague, Dr. Connolly, will take the committee through some of the achievements since the launch in his opening statement.

Harnessing Our Ocean Wealth sets out the Government's vision, high-level goals and key enabling actions to put in place the appropriate policy, governance and business climate to enable Ireland's marine potential to be realised. It sets out ambitious targets for growing Ireland's marine economy, including as mentioned by the Chairman, to increase the turnover from our ocean economy to exceed €6.4 billion by 2020 and to double the value of our ocean wealth to 2.4% of GDP by 2030. The plan lays out a series of actions to be progressed by the relevant Departments and state agencies to help achieve these targets.

Since 2012, much of the work of the MCG at national level has been concerned with implementation of Harnessing Our Ocean Wealth by the relevant Departments and agencies. Since 2014, the group has published a review of each year of progress, action by action, in respect of the implementation of the plan. In addition, the group, through the Marine Institute, organises the Our Ocean Wealth Conference and the annual progress report which is published at the conference. The conference brings together representatives from a wide range of relevant bodies, both public and private sector, to discuss marine related matters. In tandem with the conference, the MCG has, since 2015, and again through the Marine Institute, organised SeaFest, Ireland's national annual maritime festival to involve the public more in marine matters and to showcase the extensive work that is being carried out in the sector.

The sixth annual review of progress of the plan was published in June 2019. It provides an overview of the main activities across a range of actions undertaken by Departments and bodies in relation to the marine in 2018. It also captures major deliverables for 2019. Over the past seven years the plan has led to improved cross-Government communication and engagement, facilitating the delivery of economic, environmental and societal policies and plans in the marine area. Key enabling architecture is also being put in place to further imbed this process, including, the national marine planning policy statement, the national marine planning framework, the Maritime Jurisdiction Bill 2019 and the Marine Planning Development Management Bill 2019.

This month, the Government approved the publication of the marine planning policy statement, MPPS, which outlines a vision for the future development of the marine system, setting

out overarching policies, principles and high-level priorities. The Government also approved the draft national marine planning framework, the forward planning system to manage Ireland's vast marine resource described in the policy statement. Following an ongoing consultation period to the end of the year, preparation of the final framework will begin in early 2020. It is intended that the final framework will be published in mid-2020 and it will provide strategic guidance for decision-makers across the marine space. It is an important step for Ireland in realising the vision set out by Government in *Harnessing Our Ocean Wealth*. The group also continues its cross-departmental work with a view to ensuring individual Departments and their associated agencies continue a coherent approach to policies and strategies that come within their remit in relation to the marine area.

I will hand over to Dr. Connolly of the Marine Institute, who will set out in greater detail the progress made to date in the implementation of *Harnessing Our Ocean Wealth*.

Dr. Paul Connolly: I, too, thank the Chairman and the committee for the opportunity to brief the committee on progress in regard to Ireland's integrated marine plan, *Harnessing Ireland's Ocean Wealth*. I will outline the key achievements since the launch of the Government's plan in 2012 and set the context of the plan in regard to the global ocean economy and the EU ocean economy. The plan sets two ambitious economic targets, namely, to double the value of the ocean wealth to 2.4% of GDP by 2030 - we are now at 2.1% - and to increase the turnover of the ocean economy to exceed €6.4 billion per annum by 2020, in respect of which we are now at €6.2 billion. The global ocean economy is composed of a diverse set of activities, which we have grouped into six categories. The first is bioresources and food, which includes sea fisheries, aquaculture and seafood processing; energy, which includes offshore oil and gas exploration and production, marine renewables, offshore - wind, wave and tidal; tourism, which includes tourism and leisure activities; transport, which includes shipping, maritime transport, shipbuilding and maritime commerce; marine support activities and; high-tech products.

In terms of the global and European contexts, the global ocean economy accounts for the direct employment of approximately 31 million, of which fisheries accounts for 33%, and tourism for 25%. The OECD estimates that the value of the global oceans economy is approximately US\$1.5 trillion, approximately 2.5% of global gross value added, GVA. The European Union produced its first report on the ocean economy in 2018 and the latest report produced this year reported that the most significant expansion and growth in the blue economy was in Malta and in Ireland. The consensus is that there is a bright future for the blue economy. The success is driven by many established and emerging innovative Irish businesses, facilitated by the ongoing work of the Marine Co-ordination Group. The OECD has forecast that the global ocean economy will double in size by 2030 to €3 trillion. Many marine segments are set to grow fast in the world economy, including aquaculture, fish processing, offshore wind, and port activities. Employment is set to reach 40 million, outpacing overall growth of the global labour force. The high growth across ocean industries will encounter considerable challenges in relation to climate change, regulation and diverse demands on natural resources. In terms of targets set out in *Harnessing Our Ocean Wealth*, as I stated previously, two ambitious targets were set by the Government. They were to double the value of our ocean wealth to 2.4% of GDP by 2030 and to increase the turnover from the ocean economy to exceed €6.4 billion by 2020. The 2020 target of €6.4 billion may be exceeded and we are moving in the right direction towards the 2030 target.

Detailed figures on Ireland's ocean economy are available in the Socio-Economic Marine Research Unit, SEMRU, report. SEMRU is based in NUI Galway. It produces a detailed re-

port every year on the figures relating to the blue economy. The latest report was published in June 2019 at SeaFest, which was held in Cork, and showed turnover to be €6.23 billion, which is very close to our target for 2020 of €6.4 billion. In terms of trends from 2016 to 2018, we have had a 13% increase in turnover, an 11% increase in GVA and national growth is estimated at 10%. There has been a 13% increase in employment. The national employment growth rate is 3%, which means the marine sector is outpacing national employment growth. Established sectors in the marine economy account for 93% of the ocean economy. These sectors increased turnover by 12%. In emerging sectors the turnover increased by 20%, which is 12% direct GVA.

I will go into a bit more detail from the SEMRU report on Ireland's ocean economy in relation to the general economy. While growth in the Irish economy from 2014 to 2016 was approximately 16%, the ocean economy grew by 33%. GVA growth rates in Ireland's ocean economy was 11%, while it was 10% in the normal economy in the same period. In terms of the indirect impact, there is an indirect GVA of €1.96 billion in 2018, giving a total GVA, direct and indirect, of €4.19 billion, which represents 2% of GDP. The next two figures really show what has been happening. In terms of turnover, for every €100 turnover in Ireland's ocean economy, a further €78 is created in other sectors as a knock-on effect. In terms of employment, for every 100 marine jobs a further 75 jobs are created indirectly in other parts of the Irish economy. Established industries in Ireland's ocean economy account for 93% of total marine turnover. This category is dominated by shipping and maritime transport, as well as tourism and leisure in marine and coastal areas. Shipping and maritime transport continue to be the largest contributor in terms of turnover and value added. Tourism and leisure is the largest contributor with regard to employment.

In emerging industries, marine advanced technology and marine commerce make the largest contribution in terms of turnover and value added. Marine advanced technology products and services, along with the marine biotechnology sector, are also important players. Full details of the trends and economic outlook for all the figures I have given, and additional detail, are provided in the NUI Galway report published in June 2019.

I will now move to another few important topics that are outlined in the document that was circulated. The rural and regional significance of Ireland's ocean and coastal communities is well known. Further research is under way in NUI Galway, funded by the Marine Institute. We are looking further into the figures in that regard. BIM has highlighted the importance of fishing and aquaculture to coastal fishing communities. It will be an important aspect of marine planning into the future.

I will now refer to key cross-Government announcements and progress since the launch of Harnessing Our Ocean Wealth. As mentioned in the opening statement, the implementation of Harnessing Our Ocean Wealth requires an integrated approach across the Government. While individual Departments and agencies continue to implement and develop new policies and strategies that often transverse the marine, a number of specific integrated and cross-Government actions were identified in the plan. Ms Maria Graham from the Department of Housing, Planning and Local Government can respond to any questions on the marine planning framework for Ireland.

I wish to pick three specific areas relating to the past seven years of Harnessing Our Ocean Wealth where there have been great strides forward. The first is marine research and innovation. Ireland's national marine research and innovation strategy was launched by the Minister for Agriculture, Food and the Marine, Deputy Creed, in June 2017. The strategy provides a

framework for the funding of marine research that can be targeted most effectively to areas of strategic importance. Key to implementation of the strategy is the establishment of cross-Government implementation structures. All the agencies involved in funding the marine are coming together to discuss the strategic direction under the auspices of the marine research funders forum. There is also the marine infrastructure providers forum. All the available marine infrastructure in this country in the various universities and agencies is now discussed and catalogued. That is very important for future marine research in terms of identifying gap areas. Those fora, which were established in 2018 are facilitating co-operation and enhanced co-ordination between the national and regional research funding agencies. Recent analysis on investment by the State and the EU that are aligned to the marine research and innovation strategy show that more than €210 million has been awarded or won by the Irish marine research community. That includes more than €84 million from the EU research budgets, Horizon 2020 and INTERREG funding. The State continues to invest in key national marine infrastructural investments. Science Foundation Ireland, SFI, has invested in the MaREI research centre in Cork. The national research vessel fleet will be augmented by a new vessel. SFI has also invested in the national test facilities for marine renewable energy and seafood innovation as well as building capacity and capability in climate and ocean forecasting. Following the publication of the marine co-ordination group development task force report in 2015, a number of targeted business development activities and cross-sectoral events and activities are being progressed. These include promoting marine capabilities in Irish small and medium size enterprises, SMEs, as well as attracting new marine businesses to Ireland. Páirc na Mara, a new marine innovation park under development in Cill Chiaráin in the Connemara Gaeltacht of County Galway, is an important multi-agency initiative led by Údarás na Gaeltachta. The master plan for Páirc na Mara will enable Údarás na Gaeltachta and its partners to develop an internationally recognised development facility that will act as a catalyst to co-ordinate and drive the growth of the marine sector and attract public and private sector investment in support of marine technology, innovation, commercialisation and business development. Specifically, it will deliver infrastructure and services which will translate research, technology, development and innovation potential into new products and services, targeting new international markets, increasing levels of innovation, research, commercialisation and new enterprise formation.

On international collaboration, Ireland continues to be a strong influence in the development and implementation of EU maritime policy, strategies and programmes building on the existing relationships with the EU institutions such as the European Parliament, the European Committee of the Regions, the European Economic and Social Committee and European Commission services across a range of Directorates General. Key to this work is the permanent diplomatic post dedicated to maritime affairs within Ireland's Permanent Representation to the European Union in Brussels. The Brussels-based maritime attaché role, working on behalf of the marine co-ordination group, ensures that Ireland is centrally placed to influence the development and implementation of maritime policy as well as promote and champion its national marine sector.

In recent years, Ireland has been central to the development and implementation of the EU Atlantic strategy and the associated action plan. This includes the implementation of the Galway statement, which sees Ireland via the Marine Institute in a central co-ordinating role in supporting the Atlantic Ocean Research Alliance, which an alliance between the EU, US and Canada.

The United Nations Decade of Ocean Science for Sustainable Development 2021-2030 will provide a common framework to ensure that ocean science can fully support countries' actions to sustainably manage the oceans and, more particularly, to achieve the agenda for sustainable

development by 2030. Planning and implementation of the decade is being co-ordinated by the Intergovernmental Oceanographic Commission of UNESCO, on which Ireland is represented by the Marine Institute. The UN decade of the ocean, which will start in 2021, will look at the science for sustainable oceans. It is a once-in-a-lifetime opportunity to deliver scientific knowledge, foster technological innovation and build capacity to achieve the 2030 agenda and reverse the decline in ocean health. That concludes my remarks on the statement on progress made on harnessing our ocean wealth and ancillary items relating to harnessing our ocean wealth.

Deputy Thomas Pringle: I thank the witnesses for their very detailed presentation regarding our ocean wealth and the work done with regard to it. There was very little mention of climate change in it. It was only mentioned three times. Surely climate change will be a major factor in terms of what we do with our ocean wealth. Where are the figures in the meetings and discussions? How do the witnesses believe they can work as part of an overall Government plan? Harnessing Our Ocean Wealth seems to be working and the climate change agenda could do with the same set-up that works so well with Harnessing Our Ocean Wealth. How do the witnesses see this working? It seems a bit tiresome to say this at this stage but what happens to our oceans will bring about a substantial change for the rest of the country and the rest of the world, regardless of what we do. For this reason, we need to address it and factor it in to all aspects of government and everything government does.

Mr. Shaw spoke referred to the Marine Planning and Development Management Bill. How is that working in co-ordination? In terms of developing offshore wind energy in the Irish Sea, we need the foreshore development Bill to be passed. It has been recognised for years that this legislation is needed. What is happening with that? What can the marine co-ordination group do to move it forward?

Dr. Beamish probably knows that a large number of Killybegs-based fishermen working in countries such as Germany and the UK on offshore facilities because they are highly qualified. When the boats are tied up in Killybegs, they are away working in Europe, yet there is nowhere in Ireland for them to work. We cannot harness our own expertise, including our boat-building expertise. We cannot build our own boats that would facilitate these offshore wind energy developments. This is something that could be done in Ireland because we have information, technology and boat-building facilities. We should be gearing up for it. We have the personnel, who are highly sought after in Europe, but there is no work for them here. That is something we could gear up for.

Where is the fishing community factored in with regard to the overall wealth the witnesses say is generated? How do the growth and wealth figures break down in terms of fishing and the marine? I imagine a significant part of that is probably sea transport. How does that break down?

Mr. John Shaw: I will start before handing over to colleagues. Now that the Government has a new climate action plan, many of the actions in it will probably feature more prominently in Harnessing Our Ocean Wealth. It will be necessary to produce a new or updated plan because the existing one finishes in 2020. I expect that climate action will feature prominently in the next round, perhaps more prominently than it features in the current version. There are objectives in the forthcoming national marine planning framework that relate specifically to climate action. Ms Graham can talk more about that planning framework and the Marine Planning and Development Management Bill. Some of the heads of this Bill have been published while other heads to facilitate offshore wind energy will be published very shortly. That work is well advanced and involves very intensive cross-departmental work to try to get the legislation

over the line as quickly as possible. My colleagues will discuss fishing and how it features in the figures.

Ms Maria Graham: We have done a lot of work on the concept of marine planning, which lags behind terrestrial planning, in terms of having a framework that looks at forward planning, development management and our future in that regard, and also supports the Harnessing Our Ocean Wealth policy.

In June, we published a marine planning policy statement which sets out several commitments. As Mr. Shaw stated, it was recently finalised by the Government and will be published shortly. One of the aspects of the statement is that marine planning will facilitate Ireland's transition to a low-carbon, climate-resilient economy. That is now one of our principles of marine planning. The national marine planning framework is a way of bringing together everyone involved in the marine area to allow for the particular context in which planning happens in this area. It is largely around co-existence. It is not like land planning because there can be multiple uses in the same area. One needs a framework for that collaboration. We will publish it for consultation shortly. A baseline report was produced and a marine advisory group established. Its membership is quite diverse, with representation of energy, offshore and fishing interests, including the Killybegs Fishermens Organisation, such that we get the views of environmentalists and the tourism industry. We are getting widespread input into the many uses of our marine resources.

The next level of implementation is having a planning system that works for consent within the marine area and that is where the replacement of the current foreshore arrangement comes into play. As Mr. Shaw stated, we have been working intensively on that and have a legislative group chaired by the Department of the Taoiseach. The consents largely fall between us and the Minister for Communications, Climate Action and the Environment. In addition to giving consent for people to seek leave to undertake development activities, the anticipated regime will move the issue of consent to local authorities and An Bord Pleanála. Local authorities, particularly those in coastal areas, have very much embraced it because, as Dr. Connolly stated, the marine economy is very important for rural and coastal locations.

As Mr. Shaw pointed out, the general scheme of the Bill, to the extent that it has been developed so far, is available on the website of the Department. It is expected to undergo scrutiny at the Joint Committee on Housing, Planning and Local Government in the near future. There are several policy areas we are trying to conclude in order to have a fully formed discussion at that stage. We are moving on apace with the Bill. Its development also forms part of the climate action plan referred to by Mr. Shaw, particularly in terms of facilitating offshore renewable energy industry.

Deputy Thomas Pringle: It will probably be the end of next year before the Bill is enacted.

Ms Maria Graham: The drafting process is in train on the sections that have been published. There are certain policy areas we are trying to conclude. Our target is to have the Bill produced by quarter 4 under the climate action plan.

Deputy Thomas Pringle: It will be published in quarter 4 of this year.

Ms Maria Graham: This year, yes.

Dr. Paul Connolly: I will address the Deputy's questions on climate change. It will throw up considerable challenges. For example, on seafood, we are witnessing changes in the dis-

tribution of fish stocks. It could represent opportunities for new fish stocks coming in, but we do not know. In that regard, we have set up new research to look at this more deeply, working closely with the industry. Climate change is pivotal for the seafood sector.

We need to do more work in the context of climate action. We need to look at the impacts of ocean acidification and temperature rises. A far bigger issue is the prevalence of storm events and the impact that will have on coastal communities. The ability of inshore fishermen to get out on the water will be reduced by storms. We are doing is working with coastal communities on what they understand by climate change. We have a project which links art and science because we found that coastal communities do not understand the concepts of climate change or adaptation. They are confused by it all. We went into coastal communities with an artist and a scientist. The role of the artist was to explain what will happen and what is on the minds of coastal communities. This was used in the climate adaptation public consultation. We need to explain what will happen, the impacts of climate change and how we adapt to climate.

Deputy Thomas Pringle: Are we not beyond that stage?

Dr. Paul Connolly: We are certainly not beyond having to consider how we adapt to climate.

Deputy Thomas Pringle: We are not beyond considering how we adapt, but we are beyond explaining it.

Dr. Paul Connolly: We are not beyond explaining it. We have found that when one gets into the nitty-gritty of things, some people are confused by adaptation and change and the difference between them. There was no lecturing when we went into coastal communities; we just listened to them. They outlined how valuable the ocean is in terms of their jobs and livelihood. They are worried about the future and asked us to explain what will happen. For instance, one big issue that keeps coming up is storm damage to piers on the west coast. The communities wanted to know whether we will keep repairing such damage. They are concerned that such repair might cease at some point. All of these are big issues for coastal communities. Our focus in the coastal communities with which we have been working has been on adaptation, change and showing the difference between the two. We alerted the communities to work done by the Office of Public Works on sea level rise and its impact. That research is freely available on the OPW website but nobody knows about it. We alerted the communities to it and they can look at the potential impacts predicted by the models. It is about listening, discussing and relaying information. There are challenges and opportunities in that regard.

Dr. Cecil Beamish: The Deputy is correct that when the marine co-ordination group was set up in 2009 and decided to create the first national integrated marine development plan, national, international and global discussion was much less focused on climate change. It was not an issue in the way it now is. However, sustainability was, and always has been, a matter of concern. Even the title of the integrated plan, Harnessing Our Ocean Wealth, shows it is underpinned by sustainability. It was recognised that we were working towards Ireland trying to get more in terms of the marine, our understanding of marine resources, how we can manage them and what we can or cannot do. That will be achieved by pulling together the various parts across the Government such that the whole adds up to more than the sum of the parts. One of the underpinnings of the review of Harnessing Our Ocean Wealth was an attempt to better understand what we have. The major integrated mapping for the sustainable development of Ireland's marine resource, INFOMAR, project which is mapping the seabed has been going on for many years and continues to receive funding. A world-leading map has been developed of

our resources. That did not exist before this project, which ran in parallel with the harnessing our ocean wealth review. We have carried out a variety of research projects to better understand our marine resources and how the marine functions because we cannot do anything on climate change unless we understand how it is going.

We developed the Atlantic Ocean Research Alliance because we cannot understand the Atlantic on our own. Alliances were built with Canada, the United States and other EU member states in order to try to improve the total understanding of the mechanism of the Atlantic, which is vital to everything on this island. The language was not about climate change but, rather, sustainability and researching and understanding the resource and its dynamics. All of the fisheries research that has been done through the years has helped us to understand how to sustainably harvest that resource, but it has also given us indicators of climate change - canaries in the mine - which can be used to see how things are changing in the ocean as well as for managing the fisheries resources. We have biological indicators of what is changing. All of that provides a very strong bedrock for moving to climate action. The work that has been done will provide a very strong foundation for the next phase of climate action and sustainable management of the resource.

Deputy Thomas Pringle: Can we expect to see the language changing in the next plan?

Mr. Martin Finucane: I want to add a specific piece to the response. The Deputy specifically asked about offshore wind energy. In the climate action plan, a number of actions directly point towards the development of this by 2030. We have upped our renewable electricity target to 70% of renewable electricity from renewable sources by 2030. This specifically targets approximately 3,500 MW of offshore wind capacity. There is a real awareness and requirement with regard to developing our offshore wind resource.

Deputy Thomas Pringle: The key to making any of this happen is planning.

Mr. Martin Finucane: Absolutely. It is completely dependent on that.

Deputy Thomas Pringle: It will not happen without it.

Deputy Charlie McConalogue: I thank the officials for appearing before the committee. With regard to the overall strategy so far, I ask them to pick out some of the key items on which we have made the most progress. I appreciate we have heard a presentation but I ask them to pick out three or four items that have been very much impacted and significantly developed as a result of the plan. What are the key disappointments of the strategy on which further progress needs to be made or which have not lived up to expectations so far?

With regard to the backdrop of Brexit over the past year or two, the threat has mitigated somewhat but what impact has it had on the work of the Department?

I want to focus on aquaculture and the significant frustration among people in the sector regarding the capacity to develop and expand it. What is the position in that regard? What is the Department's perspective on it? There is significant frustration at the time it takes to obtain a new licence. The industry is not developing in the way it could. Does the Department agree? Considerable energy and resources have gone into dealing with lapsed licenses and getting through the backlog. There is a significant aquaculture sector in County Donegal and those involved in it believe it could do much better but that it is not being supported. I ask the witnesses to comment on this.

With regard to harbours and ports, we have six national fishery harbours. I would like to ask about local authority owned harbour resources and the funding allocation for them, which is very minor and impedes their capacity to be maintained and developed. I would like to hear the Department's perspective on this because it is something that needs to be addressed.

There is a need for a second marine training sea pool. There is one in the south of the country. An application is on hold with regard to Greencastle fisheries school. Significant investment was made in applying for planning permission for a sea training pool in Greencastle and I would like an update on this. I would like to hear the Department's perspective on it and its plans to move forward with it.

Dr. Paul Connolly: I will kick off with the first question about three successes. I will put aside the targets because they have been a real success. Marine spatial planning, which is the second action in harnessing our ocean wealth, has been a great success. The co-ordination of all marine matters throughout Departments and agencies by the marine co-ordination group has been a great success. One of the greatest successes has been SeaFest, which was in Galway and is now in Cork. It attracts more than 100,000 people who come to learn about the marine and are excited about the ocean. If I had to name one outstanding action, it would be SeaFest.

Deputy Charlie McConalogue: What about the challenges and disappointments?

Dr. Paul Connolly: We have just discussed them. They are climate change and adaptation and how the sectors respond to climate change and continue to achieve the targets.

Deputy Charlie McConalogue: What about disappointments and areas where expectations have not been met and the Department believes more progress could have been made?

Mr. John Shaw: We must acknowledge that progress on the new foreshore marine planning framework has been a lot slower than we would have liked and the framework ran into a lot of legal difficulties. We are nearly there now but it has probably taken longer to put in place than we would have liked.

Chairman: A question was asked about harbours and ports.

Dr. Cecil Beamish: There is a variety of issues. The issue with aquaculture is that the European Court of Justice ruled against Ireland. Most aquaculture takes place in Natura 2000 sites and Ireland had a broad negative judgment against it regarding licensed activities in Natura 2000 sites that covered aquaculture. The challenge was that no future licences could issue until a mechanism could be built to allow for compliant licensing with the Natura directives. This required the gathering of data sets in a variety of environmental factors, such as mapping and the identification of scientific interest in Natura 2000 sites. In many cases, this involves multi-year data on birds, mammals and other migratory elements operating in Natura 2000 sites. No further licences could issue. Detailed negotiations with the Commission went on for a long time on retaining the aquaculture in those Natura 2000 sites while the machinery and data were built up. National legislation was put in place to allow the continuation on the existing licences of the aquaculture activities in those areas, pending a determination on future licence obligations.

A major data gathering exercise went on over three or four years in all of those areas and the National Parks and Wildlife Service identified the specific scientific interests in those Natura 2000 areas that were to be protected. In 2012 and 2013, the first of the licences began to be produced in a way that met the compliance requirements for the Natura 2000 directives. At that point the Minister committed, following a review of aquaculture licensing, to clear the back-

log on the bulk of aquaculture licensing by the end of this year. At this point, approximately 900 ministerial licence determinations have been made. Last year, the Minister committed to making 300 licence determinations and he delivered these. This is also the target for this year. By the end of this year, all of the backlog on shellfish aquaculture licensing should be cleared. There will always be new licences coming in but the backlog has built up as a result of the European Court of Justice judgment will be effectively cleared.

With regard to salmon farming, the salmon farming operators, who are much smaller in number, are working on environmental impact statements, which are an EU legal requirement before the licensing process can be advanced. The main operators have asked for more time to complete these statements. The main operators wanted the original deadlines to be extended so that they could get the environmental impact statements, EISs, completed. It has been a long story. It has meant that those who were operating could continue to operate within the terms of their licences. However, the shellfish operators have now been determined, and their applications have been granted, not granted or amended. By the end of this year, we hope that this will be a historical discussion.

The Department produced a national strategic plan for sustainable aquaculture development, setting targets out to 2023. There is a seafood development programme in which there is a whole series of schemes to assist aquaculture development, and elements of shellfish aquaculture have been developing quite quickly. It has to be done in a sustainable way, however, taking account of all the other users and interested parties because it is State property that is being provided to these farms. The finfish part of the industry is developing its EISs, and this is the last remaining element.

Deputy Charlie McConalogue: Is Dr. Beamish talking about existing licences for finfish?

Dr. Cecil Beamish: I am talking about EISs for existing or new licences.

Deputy Charlie McConalogue: Are there any cases where EISs are complete but waiting in the Department?

Dr. Cecil Beamish: One or two are in process. A couple of licences that the Minister has granted are subject to appeal.

Deputy Charlie McConalogue: What is the timeline for new finfish applications, from commencement to decision?

Dr. Cecil Beamish: There is not a fixed timeline, because the legislation requires public and statutory consultation and any issues have to go back to advisers and to the parties involved. We cannot fix a timeline but have to work through the issues that arise. Some licence applications have between 2,000 and 3,000 objectors, which have to be worked through independently and assessed. It depends on the inputs during the licensing process. By and large, the aquaculture backlog is moving towards total resolution and will be resolved for all shellfish operators by the end of this year.

Deputy Charlie McConalogue: Given that, what does Dr. Beamish expect in terms of the potential for the development of the aquaculture sector in coming times? Is it fair to say that, as a result of the backlog, its development has not happened as it could have?

Dr. Cecil Beamish: It could not have happened without going through the process because European law determined what needed to be done and there was no option to do it in any other

way. Aquaculture is an evolving thing and we have only been engaged in it for a couple of generations, compared with farming in which we have been engaged for 2,500 years. It is rapidly evolving globally, and the future will probably not look like aquaculture looks today. There will be new species and new technologies and at the moment we are seeing significant interest in seaweed farming, which is evolving for a variety of uses. The species that will be farmed in the future will vary. The industry started with salmon, mussels and oysters, but it will evolve significantly from that, especially in the context of food security requirements. Globally, aquaculture provides about 50% of what wild capture fish provide at the moment and the projections are for this figure to go higher than 50%. Ireland has a role to play in that.

Deputy Charlie McConalogue: What are the plans in the strategy for value growth in coming years?

Dr. Cecil Beamish: The strategic plan for sustainable aquaculture development set a target of a twofold increase in production by 2023. Oyster farming has been growing quite well and there has been significant investment in it, while mussel farming has been quite static. Salmon farming has gone up and down and has been hit quite hard by various climatic and disease challenges over the past five or six years, not uniquely in Ireland. In the context of climate change, there may be question marks about the viability of salmon farming in some areas in the future, but that does not mean other species will not be farmed.

Deputy Charlie McConalogue: Will Dr. Beamish elaborate on the point about the viability of salmon farming?

Dr. Cecil Beamish: It is speculative but if sea temperatures rise and there are hot summer patches, it can impact on the health and survivability of salmon farms. Ireland is at the southern end of the range of salmon farming but the technology is well developed and salmon farmers tend to respond well to challenges. It has been quite profitable so it could still develop. Many of the challenges have been met but they can knock the industry back when they arise. The future will probably be about other species, some of which we do not even see yet, and this is where research comes in.

Deputy Charlie McConalogue: How is the target of a twofold increase in aquaculture by 2023 looking?

Dr. Cecil Beamish: The shellfish side is growing but the salmon side goes up and down depending on the year and the various hits it has had to face. It is too early to say if the target will be met or not.

Deputy Charlie McConalogue: Did the target start in 2014?

Dr. Cecil Beamish: Yes.

Deputy Charlie McConalogue: Are we at roughly the same level as 2014?

Dr. Cecil Beamish: I do not have the figure with me but there has been growth on the shellfish side. Salmon has grown from a low point of seven or eight years ago, but it has gone back down again more recently. The challenges it has faced are nothing to do with licences but are biological challenges.

Deputy Charlie McConalogue: The Scottish salmon sector has developed much more quickly than ours and their production is about ten times ours. Why are we lagging so far be-

hind?

Dr. Cecil Beamish: In the mid-2000s, Norwegian salmon expanded very rapidly with a lot of support. There was a downturn in supply and Norway supplied the European market with below-cost salmon, which wiped out a lot of our indigenous salmon farmers. Eventually, a lot of work was done with the Commission and anti-dumping measures were taken against Norway, with a base price being set. A lot of the first-generation salmon farmers did not make it through the period. This led to a turnaround in production and since then the strategy for Irish salmon has tended to follow the organic model, with lower density and higher prices. Ireland has been the largest organic farming country and we have been able to get a premium for that. Scotland and Norway have now plateaued. Scotland has a lot more sheltered water than we have and the Norwegian coast is enormous and incomparable with ours. While it has varied a little over the years, they have been tending to cap production of late, and Denmark has just decided to cap production. It is not just a story of unqualified onward development and it needs to be more careful than that. We are not going to be a salmon producer on the scale of Norway or Scotland at this stage.

Deputy Charlie McConalogue: Are there any steps the Department can take to develop and assist the salmon sector?

Dr. Cecil Beamish: It is working with the sector all the time. There is a development programme and there is research. BIM is working with the industry in terms of the development of the environmental impact statements and whatever else was required. Most of the licences we are talking about are licences which are in renewal, where the people are continuing to operate, so there are very few new licences and only perhaps one or two new licence applications on hand.

Deputy Charlie McConalogue: Since we are discussing the expansion of the sector, much of the salmon that is farmed across the country is processed in north Donegal at the Marine Harvest plant in Fanad. However, it operates at less than 50% of its processing capacity because it does not have enough raw material to keep the plant going. It is tremendous for employment and is perhaps the only significant employer in the Fanad area. Like other public representatives, I attended the company's 40th anniversary dinner last Saturday night. The frustration among many of the workers is palpable in regard to the failure of the sector to develop and expand in regard to new licences and new capacity. I was talking to some long-standing employees who have been there over 30 years and they recalled that, back in the late 1980s and early 1990s, when they started working, some 6,000 tonnes of produce from the north Donegal area was being exported per year, whereas the figure nationally this year is around 6,000 tonnes. While my figures may be a little off, there was an equivalence between the current national figure and what came from north Donegal alone in that period. I make the point there are complex issues involved.

In terms of the capacity of the sector to expand and the benefit it has for employment in north Donegal, there needs to be an additional effort to develop that sector and move it on. As Dr. Beamish indicated, while there may be some biological issues, it has not been increasing in the last number of years while the sector feels there is a lot more capacity, given the correct support and resource backup to develop it.

Dr. Cecil Beamish: In 2009, turnover from marine aquaculture was €100 million. In 2017, it was over €200 million.

Deputy Charlie McConalogue: Is that aquaculture in general?

Dr. Cecil Beamish: Marine aquaculture. That is the overall picture. The issue on salmon farming is more complex. It is not that we have a whole host of new licence applications waiting to be determined. It is a matter for the industry, which is a private industry, to make new applications. There are two applications awaiting decision, so it is not that there is a large volume of people out there putting in new salmon farming applications which are awaiting determination. The ones awaiting determination are existing licences that are still operating, and operating as they were in 2009 and any previous year.

I was asked about the idea of developing a further sea survival training centre in the BIM training college in Greencastle. At the moment, the position is there is a state-of-the-art sea survival training centre at the maritime training college in Ringaskiddy, Cork, which requires a lot of equipment and also ongoing costs in terms of providing trained personnel. On the issue of whether or not to build a further one in Greencastle, the Minister has answered a number of parliamentary questions and it is probably best if I forward the Deputy a copy of one of those replies.

Deputy Charlie McConalogue: Where does it stand at present? I believe there was significant funding to go as far as the planning permission stage and significant design funds were put into it. What is the Department's view in regard to the need for that second centre, from a policy point of view? What is the background as to how it got this far? What is the Department's position?

Dr. Cecil Beamish: The Department's position is not any different from the Minister's position, and that is set out in the responses to the parliamentary questions. I will forward those to the Deputy.

Deputy Charlie McConalogue: What can Dr. Beamish say about it today? We do not often get the opportunity to engage in a public forum on the matter.

Dr. Cecil Beamish: It is the same as set out in the response to the parliamentary questions. Nothing has changed.

Deputy Charlie McConalogue: What is that position?

Dr. Cecil Beamish: I am sorry. I do not have the replies in front of me so I need to be careful what I say. Effectively, the projected costs of this centre increased very dramatically, by a multiple, from when it was originally mooted, and that question of the project's viability and the viability of the ongoing running costs were matters which had to be addressed. The Minister set out that position in his parliamentary responses.

Deputy Charlie McConalogue: The Department has not decided what to do but it is under consideration. Is that the case?

Dr. Cecil Beamish: I think that is what the Minister said in his response.

Deputy Charlie McConalogue: I would make the point that it is very necessary and significant funding has already been spent. It could be of great value and I would advocate that it is pushed on.

The final point related to fishery harbours, on which spending is very low. There are large local authority piers and harbours, the national centres, which get significant funding. How-

ever, coastal county councils have local harbours and piers which need upkeep and I ask Dr. Beamish to address the issue in regard to their funding.

Dr. Cecil Beamish: The Department owns and operates six fishery harbour centres around the country at Killybegs, Rossaveale, Dingle, Castletownbere, Dunmore East and Howth. Almost 90% of commercial fish stocks are landed at those six harbours and they were designed to facilitate the offshore fishing fleet. At the moment, as the Deputy will be aware, significant investment is going into Killybegs which will almost double the landing space and there is significant development in Castletownbere which is responding to the very rapid growth of landings of seafood into Castletownbere in the last five or six years, or more. There is also a project which is to take place next year in Howth.

The Department is engaged directly in those projects. It also runs a programme to assist smaller works at the local authority harbours around the coast, of which there are very many, as the Deputy said. The primary responsibility for those harbours rests with the local authorities, in the first instance, and with the parent Department in the second instance. The local authorities are asked each year to advertise the projects they want to develop in their county, and grants are awarded on the basis of the available funding. There is always more demand than there is available funding, which is a constant. However, that is only to assist in the development of those works and the councils themselves will have to deal with some of the works. Works are sometimes actually coastal protection works or relate to coastal erosion issues, which do not fall within the remit of our Department.

Deputy Charlie McConalogue: Does Dr. Beamish accept that, by and large, the vast majority of funding that goes to those is grant-aided by the Department and that has traditionally been the case? Therefore, the Department's funding very much dictates what can be done and it has been very insufficient, given the potential of many of those smaller piers and harbours to contribute. They may be small in the wider scheme of things but they have potential, yet they are being starved of the funding that would be required to keep them up to standard.

Dr. Cecil Beamish: The level of funding has been more or less constant for many years. I do not think it has gone down dramatically. It is reasonably constant, but I accept that demand is much higher.

Senator Rose Conway-Walsh: I thank the delegates for their presentation. A lot of good and necessary work is being done in mapping, evidence and information that we need. The key to it is not so much the figure of €6.23 billion but where it goes and the policies we have in place to make sure it is going to the right places. When I say "the right places," I mean the communities most affected by marine issues - coastal communities. What is the percentage breakdown of the figure €6.23 billion? How much of it will stay within coastal communities and how much will go outside? Are the 34,130 employees all based within the State or do we count those outside it? I have several questions, but the delegates might first address what is in place to make sure the share will go to the right communities.

Dr. Paul Connolly: The sum of €6.2 billion goes into the economy. As a scientist, I would not be able to answer the question of where it ends up. It is probably a question for the socio-economic marine research unit, SEMRU, in NUI Galway that produces the report and all of the figures. I could certainly find out from it, but I do not have the answer to hand.

Senator Rose Conway-Walsh: I would not want items such as the Corrib gas project to be included. There is minimal benefit to the community from the employment created and Dr.

Connolly knows that there are enormous tax concessions for the project that enable no corporation tax to be paid for 20 to 25 years. Are there specific studies outside of Ireland's Ocean Economy of where the benefits are and the costs involved, taking into account the tax breaks given? Does it cover what is being made by supertrawlers and the problems they cause for local communities? What is Dr. Connolly's opinion on them and how does he see the problem being addressed? It is obviously one for coastal communities which are having resources being taken away.

Mr. John Shaw: We will talk to the economists who produce the figures to get more information. Dr. Beamish might address the supertrawlers issue.

Dr. Cecil Beamish: It depends on what the Senator means by supertrawler since everybody has a different concept of what it is.

Senator Rose Conway-Walsh: What is Dr. Beamish's concept of a supertrawler?

Dr. Cecil Beamish: I am not sure what the Senator has in mind. Sometimes people are talking about freezer factories, fishing vessels that freeze product on board. There is quite a number of them in our prawn fisheries, but they are of a smaller scale and I do not think they are what the Senator has in mind. She possibly has in mind non-Irish, EU vessels.

Senator Rose Conway-Walsh: That is correct.

Dr. Cecil Beamish: It is largely the Dutch-owned pelagic fleet which is fishing legally to avail of the entitlements it holds to shares of particular pelagic species. Whether they freeze fish on board or take them as a fresh catch to a port does not make much difference since they will probably not be landed in Ireland. They are very visible because they are processing on board, rather than bringing the catch ashore to be processed. They have been a feature of the landscape for many years. Provided they operate legally within the limits which is a matter for the control authorities to ensure, they have a legal entitlement to catch fish and a share of the stocks, although the entitlements are not transparent.

Senator Rose Conway-Walsh: I understand that. Is Dr. Beamish concerned about the impact on sustainability of the supertrawlers, given the dredging in which they engage?

Dr. Cecil Beamish: Supertrawlers should not be dredging. They should not touch the seabed. What they are fishing for is not on the seabed. They fish pelagic species which, by definition, are high up the water column; therefore, they use mid-water trawls. It would not make any sense for them to touch the seabed.

Senator Rose Conway-Walsh: Is Dr. Beamish content that they operate in an ecologically friendly matter?

Dr. Cecil Beamish: No, that is a different matter. The Senator referred to dredging, but as the trawlers do not touch the seabed, they should not be dredging. They operate mid-water trawls with the same type of fishing gear the Killybegs fleet and our larger pelagic vessels around the coast use to catch the same stocks. The issue with any fishing operation is whether it is done legally and a vessel is taking the quantity it is entitled to take under the sustainable management arrangements. There is the same challenge whatever the nationality; therefore, it is a question of the out-take relative to entitlement in the sustainable management of the stock. A fish does not know whether it is being killed by a Dutch vessel, an Irish vessel or anything else. That is a challenge for the control authorities. Ireland has a control responsibility in re-

spect of any and all fleets operating in our zone. It is a challenge for the Sea-Fisheries Protection Authority and the Naval Service.

Senator Rose Conway-Walsh: Does Dr. Beamish think we are fulfilling that control responsibility?

Dr. Cecil Beamish: It is a permanent challenge in every country. The control authorities would have to answer that question. They have the legal, statutory responsibility to perform those functions.

Senator Rose Conway-Walsh: I have a question about the economic impact of Brexit, especially in the context of the landbridge, aquaculture and the problems that might present. The report explains the matters related to the bands of less than 20 hours, up to 40 hours and 60 hours, with the impact they will have on the small shellfish exporter in Ballina. I also want to ask about the assessment of whether there will be UK tariffs on Irish fish, seaweed or any other marine produce.

Dr. Cecil Beamish: The landbridge is a significant issue for Ireland in the context of Brexit, not just for seafood or shellfish but also equally for agricultural and agrifood products. It is challenging in respect of any perishable seafood product. Thankfully, the UK market is not our biggest for seafood. Many Irish shellfish go to the European market. The Senator is correct that the produce would be exported via the landbridge. Discussions have been taking place on how the landbridge and entry points into the Single Market would function and how it would be certified and sealed as intra-Community transit product. As late as yesterday, we discussed some aspects of the matter with our French colleagues. If a scenario were to develop where there were large traffic blockages in the south east of the United Kingdom, even with the best documentary arrangements in the world, we would get caught up in them. There is a question as to whether alternative routes would be used and developed. The market may come up with solutions to that problem. It is an issue in respect of fresh produce. Shelf-life is important in that regard. We also have product going to the UK and this will require new certification if the UK becomes a third country. It would require illegal, unreported and unregulated, IUU, certificates to prove that the fish was caught legally and sustainably. Each export consignment will require that because it would be the same as sending it to China or any other such third country. We have been making arrangements and putting in place systems to enable that to happen so the product can be certified for export if it is going to the UK market.

Tariffs on the seafood side are relatively low. It is a highly traded commodity globally and, therefore, the tariffs tend to be low.

Senator Rose Conway-Walsh: What are the tariffs?

Dr. Cecil Beamish: They vary but there are approximately 100 different categories. They tend to be in the 5%, 10% or 12% category, which is the lower end of the tariff scale. They are not similar to milk or beef, which is much higher. The tariff element would probably not be the crucial concern; it is about enabling trade to continue.

Equally, we import quite a lot of seafood product from the UK. This would also require new certification in the event of the UK becoming a third country and arrangements are also being put in place to enable that trade to continue.

Senator Rose Conway-Walsh: Is Dr. Beamish satisfied that we are prepared enough to protect that trade with regard to where we are now with Brexit?

Dr. Cecil Beamish: Everybody is working as hard as they can to put in place as many arrangements and to foresee as many situations as they can with regard to Brexit, but nobody has been here before and we have to be flexible and address any additional challenges as they emerge.

Senator Rose Conway-Walsh: There is a lot of concern, especially in respect of the land-bridge and how people are going to get from A to B with such a perishable product. This report is very good but Brexit could throw it out the window along with the 2030 projections. That is my concern.

On the co-ordination role and the national grid and wave energy, and specifically the wave energy project off the coast of Belmullet, are we where we need to be with regard to the national grid and getting the electricity where we want it to be? Perhaps the witnesses could give us a timescale on that project.

Mr. Martin Finucane: With grid planning in general, EirGrid, as the transmission system operator, publishes an annual five to six-year grid development plan that shows what will happen over that period. I do not have specific information to hand on the Belmullet project but I can look it up and come back to the committee with that information.

Senator Rose Conway-Walsh: If he could, I would thank Mr. Finucane for that. Reference was made to the local authorities' responsibility for funding of coastal erosion measures. Severe damage that was done in the major floods in 2013 have not yet been repaired and there is not nearly enough funding for this. There are two issues. One is the funding that is allocated to it and the other is consultation with local communities. An unacceptable amount of funding is wasted. I am glad the witnesses referred to consultation with communities. I do not believe that people are confused about it in coastal communities. They know the sea and the changes within the sea and the environment and so on. These are the people to work with. The local authorities end up building a wall, for example such as the one near me. Some €250,000 has been spent on half a wall that does not serve anybody or anything. Crazy decisions are being made but they need to be made in line with those who know about the marine and about the sea.

The witness spoke on the compatibility with climate change, yet the report on the economic impact refers to the PricewaterhouseCoopers' report and the changes in legislation around the oil and gas industry.

Chairman: I am sorry but I must advise the Senator that there is a vote in the Seanad.

Senator Rose Conway-Walsh: This is more important, but I thank the Chairman.

Chairman: I am just informing the Senator; it is up to her.

Senator Rose Conway-Walsh: How can the witnesses reconcile the changes, and do they support the changes, in the oil and gas industry with regard to fossil fuels being one of the major contributors to emissions?

Chairman: We are going slightly off point.

Senator Rose Conway-Walsh: I am trying to fit it all in together. I cannot reconcile the fact that is front and centre of this issue; how the witnesses' organisations perceive the future of fossil fuels and the oil and gas industry. Do they agree with the changes proposed by the gas and oil industry to not have new licences?

Mr. John Shaw: I am not sure I can add a lot to what the Taoiseach said at the UN last month. There was an announcement on future oil versus gas exploration. I believe a memorandum will be brought to Government shortly from the Minister setting out in detail how this will be applied based on the advice from the Climate Change Advisory Council. I imagine there will be further communication at that side. The Government's position, however, was stated very clearly at the UN.

Senator Rose Conway-Walsh: That is significant. It is important that all of this is compatible with Government policy on the oil and gas industry.

I will conclude on seaweed. To date, we have not exploited the seaweed industry in the way we need to on behalf of coastal communities. This is why in 2012 I disagreed so much with the sell-off by Údarás na Gaeltachta of Arramara Teoranta. I thought it was a mistake. Instead of selling it off, the organisation should have been building cottage and indigenous businesses in coastal areas to process seaweed, which is a valuable resource. Perhaps the witnesses will speak to where they see the industry going in the context of licensing and benefits for coastal communities.

Dr. Cecil Beamish: There are a couple of elements to seaweed. BIM, as the development agency, is working on how to develop a seaweed farming industry for seaweed harvesting. It can be selective in terms of the species and the conditions in which they are grown to have a higher quality product. Seaweed farming is an emerging sector, along with multi-trophic aquaculture where there are some aquaculture species growing side by side with seaweed farming so benefits can be had from both. A big part of the future is emerging there. So far, the environmental challenges of that are relatively limited, but it is a new activity and something may emerge. Currently, it appears to be quite benign in environmental impact.

Wild seaweed harvesting is a different matter and will be governed by the new licensing framework. It will be a different type of decision-making process for foreshore extraction, which is a different type of activity from that of farming seaweed in controlled conditions at licensed sites, which has emerged as a new activity.

Chairman: Does Ms Graham want to add to that?

Ms Maria Graham: Yes. We have done quite a bit of work on wild seaweed, which is the traditional harvesting of seaweed. Currently we have applications coming in, including for commercial harvesting of wild seaweed under the Foreshore Acts. We have had to do quite an amount of work to deal with that wider commercial issue to examine the rights to harvest. We have done considerable work with both the Office of the Attorney General and the Property Registration Authority to determine that people have traditional rights associated with that.

Then it is a question of commercial activities. There are either pre-existing rights and they will have to engage with people who have those rights if they wish to go to a commercial level of activity. Our framework allows those activities to be consented. We deal with the planning framework which will move into the new planning Bill, however, we are not in the promotional area. We do not have responsibility for that; our role is to provide a planning framework in the marine area to ensure that for all sectors in which the Government wants to engage, from energy to things such as seaweed, a consent regime is in place which is efficient in order to facilitate that and which considers all appropriate dimensions namely social, environmental and economic. That is why the marine spatial plan will mention all the different aspects of the activity in the area.

Senator Rose Conway-Walsh: Have the licences been granted for the west coast?

Ms Maria Graham: We have done some licensing on the west coast. I think it is for kelp, but I can get more detail on that. All our foreshore licences are on the website but if the Senator requires more detail I can provide that.

Senator Rose Conway-Walsh: I would appreciate it if Ms Graham could do so, please. I know what she is saying around ownership and so on. We have been following that for some years but the challenge is that we would not have one company with a monopoly over large stretches of our seashores and seafronts. We want to avoid that and we all have a responsibility to do that so that we do not give the benefits of that to companies which do ----

Chairman: I ask that the committee be sent an update of that information please.

Deputy Denis Naughten: I thank the Chair for the opportunity to contribute to this debate. I apologise to Mr. Shaw and Mr. Finucane who have heard this rant before.

I will specifically focus on the issue of offshore renewable energy and the potential off our coast. Ireland has about 900,000 km² of territorial waters, ten times the size of the island of Ireland. In that territory, we have some of the best offshore renewable energy resources in the world. The current Minister for Communications, Climate Action and Environment has set a target of achieving 70% renewable electricity on our grid by 2030 which is a phenomenal ask. The practical reality of that is that we have two options. We either double the size of every single wind turbine in the country and double the number of wind farms on the island which covers about 0.3% of the total territory of Ireland and shoehorn massive wind farms and turbines into a very small area, particularly across the middle of the country, or we fully exploit the renewable energy we have off our coast.

I ask Ms Graham where we are on putting a planning structure in place. She says that she expects to have the legislation published by the end of the year. Is that the maritime area and foreshore amendment Bill? How confident is Ms Graham that we will have that? The difficulty is that we have heard for the last five or six years that this was imminent, it would happen shortly, publication was moving along, yet here we are. We are still waiting for a consent process to be put in place. Until we have a consent process, it will be very hard to exploit the potential.

For context, the potential of renewable energy off our coast, according to the Sustainable Energy Authority of Ireland is 50GW. That is enough to supply France and Austria combined, let alone this small island. There are great opportunities to reduce our carbon impact dramatically while also significantly reducing the cost of electricity to Irish consumers. Unlike land-based wind turbines, the Irish taxpayers fully own the resource off our coast. By optioning that we have the opportunity to fully exploit it in the interest of the country as a whole. Does it not make more sense to establish an offshore renewable development authority which would drive this whole area in a fully co-ordinated national plan that would range in responsibility from research and development through to supply chain development and the commercial deployment of floating wind turbines off the coast? That would have an impact on climate and the environment but would also put infrastructure in place and ensure that Ireland becomes the focal point for innovation and job creation in this sector, rather than importing constructed wind turbines from another part of Europe. We have a golden opportunity to exploit that now. We have some very fine ports. My colleague, Deputy Harty, will discuss the opportunity in the Shannon estuary. Unless we are prepared to fully exploit it, I am concerned that all we are doing is putting in place a planning authorisation mechanism which will facilitate international companies com-

ing here and offshoring profits that should be held by the Irish taxpayer. That is a big concern which many communities in my part of the country have about wind farms, leaving aside their appearance and the noise factor. It is a fact that the profits are leaving the country and are not remaining in the communities.

In her presentation, Ms Graham said the planning consent process will move the decision making to local authorities and An Bord Pleanála. I have great concerns about that. Are we asking, say, Leitrim County Council to take responsibility for the offshore renewable resources it will have planning authorisation for while Donegal will have a significant amount, as will Mayo, Sligo and down along the coast? One cannot have an inconsistency from Cork County Council to Leitrim County Council in terms of fully exploiting this. There must be a standard position across the country. It cannot be down to the particular view taken by a planner in Mayo County Council compared to one in Clare County Council. That cannot be allowed to happen if we are going to fully exploit this. A single authority must make the approval on this, whether it is An Bord Pleanála or some other body, not the individual local authorities. We have already seen the difficulties in consistency across the country and we cannot have that in our offshore process. I ask Ms Graham to comment on that.

My next question is for Mr. Finucane. Where is the Atlantic marine energy test site off the Mayo coast at currently? There were plans to look at installing floating wind turbines at that test site. Has any progress been made? To my knowledge, the only commercial deployment of floating wind turbines to date has been in Highwind in Scotland. We have great opportunity here. There have been some preliminary discussions about deployment off the west coast but are there any plans for this at the test site in Belmullet to see what opportunity we have with this? Are there any plans to deploy them off the west coast at that test site in Belmullet to see what opportunity we have there?

On climate action, there are some things we can do well and there are others we will struggle with. We are a small island off the coast of Europe. Transport will be challenging and we are technology takers in that area. Agriculture is another area. The green agenda is trying to sacrifice the most carbon-efficient exporting country in Europe for beef, because beef farming makes up a big proportion of our overall emissions in Ireland. We are probably one of the most carbon-efficient beef exporters in the world, and yet we are trying to sacrifice that industry, where we can offset a lot of our emissions with renewable energy. We could supply that renewable energy to meet the targets and needs of Ireland as well as supplying a substantial amount of that energy into the European Union to reduce the overall carbon footprint right across Europe. The potential is there but we must get the planning process in place quickly. It has taken us six to seven years to get this far. We need to see movements in months and weeks rather than in another six or seven years because the horse will have bolted at that stage.

Ms Maria Graham: The Deputy mentioned that when legislation was originally conceived of in this area, it was called the maritime area and foreshore (amendment) Bill. It had a long and torturous process of development in terms of the legislative process within the planning framework. A lot of planning and housing legislation had to be developed at the time and that also probably coincided with a period where the offshore renewable energy market was not developing in technological and financial capacity. While we were taking applications within the foreshore current regime, they were not really being progressed. We got to a stage of having a near final text around 2017. That was subject to considerable legal scrutiny that brought up a number of issues.

At this standpoint looking back at it, I mention the complexities of developing in the marine

space. There are three different zones, namely, the foreshore - the 12 mile limit, the exclusive economic zone, and the continental shelf, all of which have different rules under the law of the sea. One must look at legislation that dates from 1933 and at the raft of environmental legislation and other legislation that has developed in the interim. In essence, the legal advice said we need to go back to first principles and see what we need to do. That is what we have done and in so doing, our initial aim was to look at a level of streamlining within the maritime area and foreshore (amendment) Bill that involved coastal local authorities and An Bord Pleanála and eliminated the duplication of environmental assessments.

Our ambition in streamlining is now much stronger. We are looking at ensuring that, for the customers of this planning regime, there is a single common and consistent form of consent for dealing with offshore renewable energy or with other forms of development in the area. That should be plan led rather than development led because we found, particularly with offshore developments, that we would have applications for an area which essentially froze that area if they did not go ahead. It stopped other people who had the finances and the capacity to do it from looking from the same area.

A number of things are important in that context. The work we have done has been a joint enterprise that is driven by the immediacy of needing to deal with offshore renewable energy in a climate action perspective. That work has been done in conjunction with the Department of Communications, Climate Action and Environment and with the benefit of the Department of An Taoiseach taking a strong role with the legislation. In framing this and working on it, we have the advantage of looking at the marine spatial planning directive that has come out in the meantime, and we are implementing that through the national marine planning framework. We have produced a planning policy statement that talks about the need to have a forward planning aspect and a development management aspect to our marine planning framework. There have been revisions to the environmental impact assessment, EIA, directive and there is a recast renewable energy directive. We have had to take all of those things on board.

The Bill is now called the marine planning and development management Bill. It has a section in it that covers the planning framework, similar to what we have on land with the national planning framework, NPF. That section deals with how that forward planning aspect is done and then it deals with the issue of consent, of which the central piece is that central government will say, whether the development is for offshore renewable energy or otherwise, that it consents to the application to the development body, be that to the local authorities or to An Bord Pleanála. I will come back to that element of it. That consent to apply for planning permission is time-bound. Then it comes back to the contracts because for any foreshore consent to apply, there are finances that come back to the State associated with giving out the leases involved.

That is the concept. Drafting is ongoing and the general scheme has been published. There are a number of policy areas we are working on and finalising. Our target within the climate action plan is to have that Bill published by the end of the year. The general scheme is available on our website. We have to time the different pieces of the Bill around the pre-legislative scrutiny and then we will finalise the drafting.

The Deputy makes important points on the implementation of it and on the role of local authorities. On larger components, we would see it as strategic infrastructure. The board would directly deal with larger infrastructure projects. Even with the other components, many of these things are in a new area, even marine spatial planning. We have been talking to some of the universities because it is a developing skill as well. We need to make sure there are shared resources. Not only is consistency an issue, but there must be an availability of the appropriate

resources within local authorities and within the board to roll out this regime. Local authorities would look to share resources on a regional level.

The other component within the legislation is that we can produce statutory planning guidance in the same ways we can do on the terrestrial side. For particular sectors, that would allow us to put in guidance, by which local authorities would have to be involved if necessary. We would imagine the larger infrastructure projects would go the board.

I refer to enforcement. Clearly, there is a loop that has to come in terms of ensuring we have a capacity to enforce it. That is also dealt with in our planning policy statement in terms of the need for stronger enforcement within the marine area.

Mr. Martin Finucane: On the climate action plan, as the Deputy said, it sets out a target for decarbonising our renewable electricity by aiming at achieving 70% renewable electricity by 2030. While the plan looks at increasing the amount of wind capacity onshore, it also includes a significant offshore target. There would be a minimum of 3.5 GW, which is 3,500 MW, of offshore development required to deliver that 2030 figure. As the Deputy pointed out, it is getting more difficult to get planning consents and public community support for onshore projects. As we find it increasingly difficult to deliver significant megawatts onshore, the amount of capacity we generate offshore is likely to go ahead at that target. I think we are going to see a minimum of 3,500 MW delivered offshore by 2030.

Offshore projects require extensive economies of scale. By their nature, they are big projects. As Ms Graham pointed out, they are strategic infrastructure developments. The minimum figure for a commercial offshore wind farm is likely to be several hundred megawatts. An investment profile of 3,500 MW in the sea by 2030 envisages an overall minimum investment, including in the grid, of probably €8 billion to €10 billion by the time it is built. This is a significant overall investment in Irish waters over a decade.

What are we likely to see in local communities? Projects of this scale are big developments. Typically, they tend to be too big, even for the big European infrastructure companies to build on their own. Typically, we see such projects being built by a consortium of two or three companies. Developments in the Irish market typically involve big European partners coming in as partners of Irish development companies. We are likely to see a mix of developers. Given the scale of investment, the expertise involved and the technical challenge in delivering, these big companies bring considerable experience. Some have been involved in the offshore wind energy industry for a decade. Considerable experience has been gained in markets throughout Europe.

We are working closely with the Department of Housing, Planning and Local Government to ensure offshore renewable energy will feature front and centre in the planning structures in place. It is a key cornerstone of freeing up that investment profile and allowing the projects to proceed.

We are also conscious of the fact that decarbonising our electricity supply means coming off coal at Moneypoint by 2025. We will be coming off peat in the coming years too. As a result, all of that capacity has to be dealt with. The big offshore projects are important for us in the light of our ambitions. We are keen to have them at scale and as quickly as possible.

Deputy Denis Naughten: I have a number of supplementary questions. It is important to acknowledge that the work is being spearheaded by the Department of the Taoiseach.

My first question is related to offshore renewable energy resources. Will Mr. Shaw assure the committee that these resources will be auctioned in the interests of the people and not given away to private consortia? That is vital to ensure they will benefit the economy.

Ms Graham made the point that in the past certain areas were frozen because development had not taken place. Is Ms Graham concerned that we are still giving out exploration licences for areas off the coast and that it could have an impact in the development of renewable energy resources in the future? We may find ourselves in the bizarre position of having to buy back these licences in order that we will not impede the development of potential offshore renewable resources.

Ms Graham made reference to planning guidance. She might take back to the Department that it approved, with the Department of Communications, Climate Action and Environment, in May 2017 the onshore renewable energy regulations for wind turbines. The guidelines have yet to be published or circulated to local authorities two years after they were agreed to.

Mr. Finucane referred to the challenge presented. It is a challenge to achieve a figure of 2.5 gigawatts for offshore renewables. If we do not achieve it, it will leave communities throughout the country that already have wind farms at a serious disadvantage. They are likely to see a doubling in size of existing wind turbines. It is unfair that they should have to carry the can for the failure to develop offshore renewable resources. Is Mr. Finucane satisfied that the figure of 3.5 gigawatts off the coast will be sufficient to meet the 70% target we have set ourselves in the light of the ongoing demand from data centres which soak up vast amounts of renewable energy?

Mr. Martin Finucane: The figure of 3.5 gigawatts targeted for offshore renewables will play a critical role in reaching our 70% decarbonisation target for renewable electricity. There will be a major concentrated push at the centre of government to ensure it is delivered. I do not think there is any plan B that would put it back on onshore communities. Seven or eight member states have shown that it is possible to develop offshore wind farms. There is no valid reason, in the coming decade, we cannot proceed with that level of growth. It is something we are confident we can do.

The Deputy asked about demand targets. He is correct in saying there is growth in demand forecast from economic factors such as data centres but also from demographics. The Project 2040 demographic growth projections show that there will be an extra 1 million people, more or less, by 2040. Several factors are pushing growth in electricity demand. Certainly, it has been built into our calculations. We are looking at demand.

The Deputy asked about data centres. They also provide a valuable service. They constitute a baseload requirement for electricity at night-time. It is typically at night-time that much of our wind energy is produced and we have challenges in curtailing and constraining it. The data centres provide a valuable service in balancing demand. The challenge for us in taking on big amounts in terms of intermittency is really at evening peak time. It is in the three hours between 4 p.m. and 7 p.m. that the demand for electricity is at its highest. That is when the challenge presents. There are pluses, as well as minuses.

Deputy Denis Naughten: There are two plants in the midlands that could help in addressing that issue.

Mr. Martin Finucane: Indeed.

Ms Maria Graham: There are two aspects to the legislation, one of which I did not clarify. I was talking about initial planning consent and leave to apply. It is called maritime area consent. It will fall to the Minister for Communications, Climate Action and Environment to give consent in the functional areas included within his policy remit, including offshore renewable energy. Obviously, that allows for consistency of approach in these elements. The Minister for Housing, Planning and Local Government will give consent in respect of the other aspects, but aquaculture is not covered. Responsibility for it remains with the Minister for Agriculture, Food and the Marine. The other aspect is strategic marine activity zones. The idea is we can zone areas for a particular activity such as offshore renewables. Certainly, there are the elements which allow for priority to be given to certain activities. Clearly, the concept of co-existence is within overall marine spatial planning and includes looking at whether areas need to be zoned for particular activities or where activities can co-exist. That issue will have to be played out.

I was aware that the question of planning guidance was probably to the fore of Deputy Naughten's mind. I also have responsibility for it. I can tell the Deputy that we are very close to publication based on that agreement, to which we have remained true. The World Health Organization then came out with new noise guidelines.

Deputy Denis Naughten: They were published a long time ago.

Ms Maria Graham: In December. However, as the Deputy fully appreciates, they are highly technical. Those guidelines have been imminent for a long time. Communities are very anxious. The programme for Government commits to doing that within 90 days. It has been much longer than that now.

Ms Maria Graham: There is a draft on my desk which is nearly the final draft.

Deputy Denis Naughten: I am looking forward to seeing it. Mr. Shaw is going to tell me about auctioning.

Mr. John Shaw: No, I am not. I bow to the technical expertise on either side of me.

Deputy Denis Naughten: I know some of the officials from the Department of Public Expenditure and Reform will be very anxious to be assured that this renewable resource will be auctioned off to benefit the Exchequer and not simply handed over. This is not just about renewable energy to meet our domestic needs in the short term. In the long term, there will probably be an interconnector bypassing the island of Ireland and going straight to the Continent.

Mr. John Shaw: The whole point of the new regime is to implement a plan-led consent system that will operate effectively, help us meet our targets and secure our national public interest.

Deputy Michael Harty: I thank the Chairman for the opportunity to ask questions and I thank the witnesses from the marine co-ordination group for coming in. Following Deputy Naughten's questions, my question concerns offshore marine renewable energy development, particularly at Moneypoint power station. As we know, Moneypoint must cease operating by 2025. It has already almost ceased electricity production except in exceptional circumstances. There will be job losses at Moneypoint. The workforce is being reduced by 50% as we speak. A €5 million just transition proposal has been included in this year's budget. It targets the peat-burning stations in the midlands. The Taoiseach confirmed to me this afternoon that there will be a similar fund for Moneypoint, hopefully in the near future. Given our target of 70% dependence on renewable energy by 2030, the potential for that offshore wind development in Moneypoint is substantial. It has two things going for it. It has one of the deepest seaports in

Europe and it also has the transmission infrastructure with two 400 MW lines radiating across the country.

Ms Graham mentioned strategic marine activity zones. Does she see Moneypoint as one such potential zone? It combines potential wind energy generation off the coast of Clare, tidal potential in the River Shannon, wave energy potential and the necessary infrastructure. It also has the port. The port would be very important if Moneypoint was designated as a centre for wind energy research and development. There is great potential for Moneypoint to be used as a place to manufacture wind turbines rather than importing them. As it is a port, it could also be used as to service wind turbines off the west coast. As I say, the transmission potential is already there. I think Moneypoint produces 900 MW per year. Where does Ms Graham see Moneypoint fitting into the strategic development of offshore wind?

Ms Maria Graham: To clarify, I am dealing with the planning framework that facilitates that. The zones I referred to will be designated by Government order. That will be based on a proposal in compliance with energy policy. I will yield to my colleague on that.

Mr. Martin Finucane: I can confirm that Moneypoint is due to cease operation by 2025. It is already suffering from reduced running in the market, largely due to the price of carbon and the emissions trading system, ETS, which is making coal uncompetitive in the wholesale market. There are just transition proposals in place. As the Deputy notes, the budget outlined one for the midlands. Ireland was accepted as a member of the European coal transition platform earlier this summer. We are in the process of engaging actively with several Directorates General of the European Commission to set up the EU country team which will engage with different Departments and local authorities in Ireland to assist with planning the just transition process.

The target is 70% dependence on renewable energy by 2030. There is certainly potential for future generation at the Moneypoint site. The company is looking at options for the future development of the site. It has huge advantages. The two 400 MW lines are by far the biggest lines crossing the country. They are very valuable.

The existing offshore fixed-pile turbine technology is likely to develop on the east coast because of the depth of the water. They are traditionally the most competitive technologies. At present they are typically deployed in waters of up to 50 m in depth. The west coast is likely to see the next wave of offshore technology, the floating turbines Deputy Naughten referred to earlier. They can operate in deeper waters and with much larger individual turbines.

Deputy Harty asked about the capacity to develop a manufacturing centre for turbines. The necessary land is certainly there, but whether to do so would be a commercial decision for a company. I should point out that turbine manufacturers have struggled to find the scale to operate even in bigger markets such as the UK. It would be economically challenging to manufacture turbines at Moneypoint. There are certainly terrific research and development opportunities there given the range of opportunities for tidal technology, particularly wave energy and floating offshore platforms on the west coast. Using the capacity there for research is certainly one option. The ESB, which currently operates Moneypoint, operated WestWave, a big wave energy research project in that area until several years ago. There is some relevant experience on the site or very near to it.

Deputy Michael Harty: What capacity issues emerged in the UK?

Mr. Martin Finucane: They concerned the economies of scale required to keep a turbine blade factory going 365 days a year, even with a market as large as the UK. There are several suppliers in Europe. Turbines of different sizes are needed depending on the waters in which they are deployed. It is difficult for a single manufacturer to supply the entire market. The choice of supplier is a commercial decision for development companies. These are very large machines. The diameter of the blades is longer than the pitch in Croke Park. Given their scale, these turbines are not manufactured or moved easily.

Deputy Denis Naughten: They definitely cannot be moved easily.

Mr. Martin Finucane: They are big pieces of equipment. Manufacturing them and moving them internationally is challenging. There are certainly opportunities for research but the economies of scale involved in manufacturing turbine blades would be a challenge, no more than trying to establish a car manufacturing facility there. We do not have the necessary economies of scale and it is difficult to see how a manufacturing facility would survive in an open market. If such a project worked out for a commercial developer, so be it, but that would be decision for that developer.

Deputy Michael Harty: If Ireland became a leader in offshore wind generation, could tax incentives attract outside actors to carry out research and development here, particularly at Moneypoint?

Deputy Michael Harty: If Ireland was to become a leader in the context of offshore wind energy, are there tax incentives that could be introduced to attract people to come here and start looking at research and development opportunities, particularly at Moneypoint?

Mr. Martin Finucane: There is engagement from both Enterprise Ireland and IDA Ireland in terms of looking at these new technologies. I have had several meetings with them recently to look at new technologies. We are also very engaged with the industry associations in examining ways to ensure that we are maximising Irish input into this new and emerging sector. I outlined earlier the scale of investment over the course of a decade. Even if we could capture relatively small percentages of that overall figure, there are still potentially enormous amounts of income to be earned for Irish companies and particularly Irish ports that would be close to where wind farms will develop. It is a big and growing market in which there is a lot of interest and we are fully aware of that.

Deputy Michael Harty: Moneypoint is to cease burning coal in 2025 but infrastructure is already in place. What are the alternatives to wind energy? From my limited knowledge, offshore wind is the most obvious source of energy to be channelled through Moneypoint. What would be Mr. Finucane's view on that?

Mr. Martin Finucane: It is certainly one of the options that the company is probably looking at but I think it is a commercial decision for the company, to a certain extent, because of the way the electricity market operates. Competitive bids have to be made to an annual auction system that is run by the regulator so, basically, every year the regulator now holds an auction towards the end of the year signalling the type and amount of electricity generation that it would require to be built about four years hence. Any proposals by the company to develop at the Moneypoint site would have to go through that auction process in what is an open market.

Chairman: Would Mr. Shaw like to make any concluding comments or is he happy enough?

Mr. John Shaw: I thank the committee for its time.

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Chairman: I thank Mr. Shaw, Ms Graham, Dr. Connolly, Dr. Beamish and Mr. Finucane for their contributions. It has been an interesting debate here today. I also thank members for their contributions.

The joint committee adjourned at 7.20 p.m. until 3.30 p.m. on Tuesday, 5 November 2019.