National Forestry Conference



FORESTRY AS A CLIMATE CHANGE SOLUTION

The role of the Irish forestry and forest products sector in mitigating climate change

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National Forestry Conference Johnstown House Hotel Enfield, Co. Meath, Ireland 30 May 2019

Acknowledgements

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Agenda for the National Forestry Conference

FORESTRY AS A CLIMATE CHANGE SOLUTION

- Registration, refreshments and conference literature. 08.30
- Introduction by Donal Magner, Wood Marketing Federation, Society of Irish Foresters and Forestry Editor, 09.20 Irish Farmers Journal.

CHAIR: Dr. Mary Ryan, Environmental Economics researcher with Teagasc.

KEYNOTE ADDRESSES

- 09.30 Summary of Keynote address: Mairi Gougeon MSP, Minister for Rural Affairs and Natural Environment, Scotland.
- Summary of Keynote address: Andrew Doyle TD, Minister of State with responsibility for forestry. 09.55

SESSION 1:

UNLOCKING THE POTENTIAL OF FORESTS TO FIGHT CLIMATE CHANGE

- Production forestry and climate change the Scottish approach. Carbon sequestration, flood damage, energy, etc. 10.20 Stuart Goodall, Chief Executive, UK Confederation of Forest Industries - Confor.
- Production forestry and climate change the right species in the right places for the right reasons. 10.50 Marina Conway, FII, CEO Western Forestry Co-op and ITGA.
- 11.15 Coffee Break

SESSION 2:

WOOD FROM THE TREES - LOW CARBON BUILDING AND RENEWABLE FUEL RESOURCE

CHAIR: Dr. Annette Harte, Senior Lecturer in Engineering at the College of Engineering and Informatics, NUI Galway.

- Wood as a sustainable construction medium in meeting the climate change challenge. 11.45 Mike Haslam, Haslam & Co. Architects.
- **12.10** Forestry and the bioeconomy: wood as a contemporary low carbon sustainable construction, design and energy resource. Des O'Toole, President Irish Bioenergy Association and Market Development Manager, Coillte.
- 12.30 Q & A
- 12.45 Lunch

SESSION 3:

FORESTRY AND FARMING – DUAL CLIMATE CHANGE SOLUTIONS

CHAIR: Dr. Eugene Hendrick, Chair National Council for Forest Research & Development.

- Rethinking land use the contribution of forestry as a viable land use on marginal land in meeting climate 13.45 change targets. Justin McCarthy, Editor and Chief Executive, Irish Farmers Journal.
- 14.10 The actuality of climate change achieving tangible afforestation, production and non-wood targets. Professor Gerry Boyle, Director, Teagasc.
- Closing address: Michael Creed TD, Minister for Agriculture, Food and the Marine. 14.35

Foreword



Michael Creed TD Minister for Agriculture, Food and the Marine

The challenges of climate change and the global effort that is required to meet those challenges will require significant action across the whole of society. The Agriculture, Forestry and Land-use sector is part of the solution for this transition and the sector must be in position to anticipate and adapt to the challenges associated with climate change, as well as identifying potential opportunities. The Department of Agriculture, Food and the Marine and agencies are actively engaged in a number of measures and actions focused on the environment and climate mitigation. These include abatement, sequestration and displacement in the use of fossil fuels.

Higher ambition on environmental and climate action are part of the new CAP, post 2020, and it is proposed that 40% of the overall CAP budget will contribute to climate action. This will require farmers to achieve a higher level of environmental ambitions through both mandatory and incentive-based measures. To meet the challenge set out in the Paris agreement we will need farmers to actively implement abatement options to reduce agricultural emissions and enhance removals through afforestation. Forests are part of the climate change solution and will continue to provide a significant pathway to reduce greenhouse gas emissions in the land use sector, while producing low-carbon materials to support decarbonisation in other sectors.

The Irish forest estate is forecast to produce significantly increasing volumes of timber over the coming decades. This expansion will create many opportunities to increase the use of timber and wood products and to replace high-emission materials. The contribution that wood and wood products can make to new, innovative products in the bioeconomy is also significant. Virtually everything that can be made from fossil resources can also be made from biological resources. However to maximise the benefits of forestry we must continue to manage our plantations sustainably, mobilise timber from the forest and increase the store of carbon in harvested wood products. Over 22,000 farmers have planted under various grant aided schemes since the 1980s resulting in the establishment of over 300,000 ha of forests.

Forestry is an attractive land use option for many reasons and farmers should consider the option of planting part of their lands with trees as an investment for themselves, their farm and future generations. Forestry is a climate change solution and combined with emission reductions across all sectors we will continue our efforts to meet our climate change commitments.

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Michael Creed TD Minister for Agriculture, Food and the Marine

Summary of keynote address



Ms Mairi Gougeon MSP Minister for Rural Affairs and Natural Environment

Forestry in Scotland is an important land use and a growing sector. It contributes around £1 billion in gross value added to the economy, supports approximately 25,000 jobs, removes 12 million tonnes of CO₂ a year from the atmosphere, provides a home to 172 protected species, and enriches the lives of the millions of Scots and visitors who live, work and play in Scotland's woods and forests.

In February 2019, the Scottish Government published Scotland's Forestry Strategy 2019-2029. The Strategy is a keystone of the SG's ambition for forestry in Scotland, underpinned by new legislation and new organisational arrangements. The Strategy presents a 50-year vision for Scotland's forests and woodlands, and sets out a 10-year framework for action; with the principles of sustainable forest management at its core.

The Scottish Government aims that forestry in Scotland will play a significant role in driving forward the rural economy, and also the ambition to make Scotland a low carbon economy and a world leader in dealing with the threat of climate change. Crucially, Scotland's forests and woodlands can also deliver health and social benefits for future generations and communities.

Collaboration is critical to achieving these forestry ambitions, and this will require continued work across all sectors in Scotland and with partners in other countries.

Ms Mairi Gougeon MSP Minister for Rural Affairs and Natural Environment, Scotland



Summary of keynote address



Andrew Doyle TD Minister of State for Food, Forestry and Horticulture

Forests and wood products are part of the climate change solution as Ireland transitions to a low carbon economy and strives to reduce greenhouse gas emissions across all sectors in society.

The world's forests play an important role in maintaining the delicate natural cycles that exist on our planet. Over 30 % of the land surface of the earth is forest and they sequester over 2 billion tonnes of carbon dioxide per year. Forests not only sequester carbon dioxide from the atmosphere they also act as a long-term store of carbon in the soils, leaves and the living trees themselves. Wood products are also a store of carbon and, in addition, help us to avoid using non-renewable materials with larger carbon footprints.

Climate change is happening and we can see in Ireland that temperature, rainfall and the occurrence of storms have increased over the last 100 years. We know that the growing season is now occurring more than a week earlier than it did in the 1970s, mainly due to a rise in spring air temperatures.

Irish forests are a significant sink and store of carbon. The most recent National Forest Inventory published by DAFM estimates that the national forest estate is an important and expanding store of carbon at just over 300 million tonnes. The forest data from the inventory also estimates that Ireland's forests have removed an average of 3.8 million tonnes of carbon dioxide equivalents per year from the atmosphere over the period 2007 to 2016. During the period 2021 to 2030 recently planted forests will sequester up to 2 million tonnes of carbon dioxide per year and will make a significant contribution to meeting our emissions reduction target. The significant, ongoing financial investment by the state in grant aiding forestry since the 1980s recognises the importance of forests and the ecosystem services they provide to our society and the environment.

Forest owners and the State must be vigilant in order to protect our forest resource from the threats of pests, diseases and to avoid losing what we have planted through deforestation. Climate change and increased disturbances can result in population epidemics and disease outbreaks. It is important that our existing forests and the new forests we plant are managed to ensure we maximise their adaptation to climate change.

Forestry does have an important role to play as we transition and decarbonise our economy. Our climate is changing and we need to mobilise all measures to ensure that we reduce our emissions and forestry is part of that transition.

Andrew Doyle TD Minister of State with responsibility for forestry

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at the Department of Agriculture, Food and the Marine

Introduction Wood Marketing Federation



Paul Harvey Chairman Wood Marketing Federation

Paul Harvey is Business Manager, Arch Timber Protection, a Lonza company. He provides commercial and technical support for the company's customer base in Ireland. He holds a B.Agr. Sc (Forestry) and a Masters in Environment Protection.

The role that forestry plays in climate change mitigation and decarbonising the economy has been acknowledged for decades in countries with strong wood and forestry cultures. Ireland has been slow to recognise the benefits of forestry in this regard but we are changing. Last year's conference explored the role of forestry in the bioeconomy, a subject that is close to today's topic.

It is worth reminding ourselves about the strategic plan devised last year in the National Council for Forest Research and Development (COFORD) strategy Growing the Irish Forest Bioeconomy. This document outlined twelve proposals which would position forestry as a central pillar of Ireland's national policy on the bioeconomy and, by extension, climate change mitigation.

This central objective is ambitious but not unrealistic. Because Ireland can increase its forest cover by 60% without negatively affecting agricultural production, afforestation is Ireland's most cost effective carbon land-use action.

As I outlined last year, a bioeconomy plan will need a long-term, consistent commitment to wood supply which means supporting and investing in the national afforestation programme which has sadly fallen to an unacceptably low level since the turn of the century.

A viable afforestation programme will require a change in the mindset of landowners, farmers and investors towards forestry but it will also need to address a number of other issues that impact negatively on the forestry and forest products sector. It will need to address constraints which are inhibiting the afforestation programme as well as the productive capacity of the existing forest estate including barriers to wood mobilisation.

As chairman of the Wood Marketing Federation, I passionately believe in developing programmes to promote the use of low carbon building materials. We are seeing examples of this around the world. Countries such as Canada, Norway, Germany and England are now building high-rise apartments and office blocks in engineered wood from mid-rise to 50 metres and over. An 80-metre tall building is currently under construction in Vienna. It is time to review national building standards to support and promote the use of wood as a construction material, beginning with mid-rise buildings. These could be built in home-grown softwoods as research results from NUI Galway for Sitka spruce and Douglas fir are extremely positive.

However, maximising the benefits of forestry in climate change mitigation will require political will to achieve major afforestation programmes as envisaged in Wood Wise 2025 and a visionary approach to wood in all its aspects from construction to wood biomass in renewable energy.

Paul Harvey Chairman Wood Marketing Federation

Introduction



Ken Bucke President Society of Irish Foresters

Ken Bucke is a Forestry Inspector in the Environment Section of the Department of Agriculture, Food and the Marine - Forest Service. He is a Professional Member of the Institute of Environmental Sciences.

A 2018 Intergovernmental Panel on Climate Change (IPPC) special report states that human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, and this is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. The Intergovernmental Panel on Climate Change (IPPC) believes forests have a key role to play in climate change mitigation, and we welcome the topic of today's conference "Forestry as a Climate Change Solution".

When the long rotation of forests is considered however, it can be seen that forests will also be affected by climate change, and already in Europe some countries are moving away from traditional species choices or changing their management practices as a result of climate change, and we saw this during a recent Society of Irish Foresters study tour to Poland.

Speaking of last summer's drought and recent damaging storms, the Director of Met Eireann said that storms Desmond, Ophelia, and Emma were all "part of the trend of more frequent high impact weather events" influenced by climate change.

The professional forester has a key role to play in planning and facilitating how our forest estate adapts to climate change. The wide range of site and climate conditions that exist in Ireland facilitates the growing of an impressive range of tree species, and species selection is one of the forester's core professional competencies. The resultant diversity will endow our forests with increased resilience to the risks posed by disease, drought, windthrow and changes in rainfall patterns.

The Society of Irish Foresters endorses the recent Department of Agriculture, Food and the Marine publication - Growing the Irish Forest Bioeconomy, particularly the following proposals which relate directly to the role of the forest:

Ken Bucke President Society of Irish Foresters

Society of Irish Foresters

• To develop an integrated carbon and land-use policy that recognises the significant sequestration and storage potential of the forest sector in Ireland.

• To develop and implement a plan to improve the overall resilience of the national forest estate and mitigate the biotic and abiotic risks associated with climate change.



Donal Magner Secretary Wood Marketing Federation

Donal Magner, editor, forester and forest owner is Forestry Editor with the Irish Farmers Journal and Secretary of the Wood Marketing Federation. Author of Stopping by Woods: A Guide to the Forest and Woodlands of Ireland, and Why Forests? Why Wood? he is editor of the Irish Timber Growers Association Forestry & *Timber Yearbook* and is a recipient of the RDS - Forest Service Judges' Special Award for his contribution to Irish forestry. He serves on a number of forestry bodies including the Teagasc Forestry Stakeholders Partnership.

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Compared with most other EU Member States, Ireland has the greatest potential to expand its forest resource.

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But on their own natural forests can't provide all the wood that we need. So we also have to farm trees, just like we do other crops and create a new generation of plantations; plantations that allow wildlife to pass through natural forest corridors, that benefit local communities and economies and that are planted on existing cleared land so they don't replace natural forests.

- Sir David Attenborough

When the topic for the national forestry conference was agreed between the Society of Irish Foresters and the Wood Marketing Federation last year, two important State initiatives dominated the climate change debate. The Citizen's Assembly report How the State can make Ireland a Leader in Tackling Climate Change had been published and the Oireachtas Committee on Climate Action was taking submissions before delivering its final report - Climate Change: A Cross-Party Consensus for Action - on April 16th this year. One of the surprising elements of this report is the absence of input by most stakeholders directly involved in the forestry and forest products sector. Input is missing from tree nursery and forest owners, foresters and forestry companies responsible for forest planning, management, production and research. Missing also is dialogue with timber processors, manufacturers, renewable wood energy producers and architects who are designing and building in wood along with researchers who are exploring the possibilities of engineering wood to create the sustainable multistorey buildings of the future. These all have one thing in common: they are dependent on the sustainable management of commercial, productive forests and woodlands.

The forest

These are the forests that Sir David Attenborough says we need, not only in Ireland but around the world. Compared with most other EU Member States, Ireland has the greatest potential to expand its forest resource. In this regard, forestry provides a major opportunity to ensure that Ireland achieves its greenhouse gas (GHG) emission targets. It can assist industry by shifting from fossil based materials to sustainable wood construction and renewable wood energy.

Its single biggest contribution is in helping Irish agriculture meet its GHG targets. In this regard, Ireland is the only country in the EU that can increase forest cover substantially - from 11% of the land area at present to 17% by 2050 - without negatively impacting on agriculture and food security. This target will require a 15,000 ha annual afforestation programme as recommended in Wood Wise 2025. Yet, this goal - less than half the EU forest average - won't be achieved until the next century based on current annual afforestation levels, which dropped last year to approximately 4,000 ha.

Ambitious afforestation programmes of the scale envisaged in *Food Wise 2025* require vision and the political will to match. It also requires a deep understanding of trees and forests and their ability to sequester carbon as well as providing a wide range of wood and non-wood benefits. These were missed by the Oireachtas committee. The report acknowledges that it "was not in a position to examine afforestation in any level of adequate detail," but yet it went on to make a number of statements that either disregard or underplay the role of forestry in the bioeconomy and current forestry practices in achieving a multipurpose forestry programme in Ireland. For example the



Innovative architects, engineers and designers regard wood as a contemporary medium and are now using engineered wood from softwood species such as Norway spruce and Douglas fir as the main building material

committee claims that broadleaf forests have a "greater carbon storage and sequestration role" without any scientific data to back up this assertion. In this regard, committee members might have heeded the advice of Lord Deben, chair of the UK Committee on Climate Change (CCC) when they invited him to make a presentation last December. He stressed the need for independence and to establish " a reputation for being accurate and scientifically based and not be a campaigning group". He outlined that in a number of instances such as flood control, the best species are conifers. The CCC relies on scientific data from organisations such as Confor - the independent UK body representing sustainable forestry and wood industry. No similar advocacy body exists in Ireland even though the forestry sector has been calling for an independent forestry development agency for over a decade. The views of our conference speaker Stuart Goodall while accepted in most European countries need to be restated in countries like Ireland which lack a forest culture. The Confor CEO says: "As well as trees soaking up carbon, they can mitigate the effects of climate change by reducing flood risks and stabilising soils. Later, the timber harvested can be made into everyday products which store carbon."

The wood from the trees

Wood and wood products receive no more than a cursory reference in *Climate Change*: A Cross-Party Consensus for Action, which is a major disappointment in an otherwise ambitious document. Chairperson Hildegarde Naughton deserves credit for producing a document which she says "marks the beginning of a new era for climate policy in Ireland". However, the combined role of forests and wood from the forest in sustainable construction, wood energy and other applications in climate change mitigation is absent. As a result the connection between carbon sequestration in the forests and carbon storage in wood products is missed as is the role of wood as a renewable energy resource.

Wood biomass is a vital aspect of renewable energy programmes in countries such as Finland, Denmark, Austria, Latvia and Sweden. Even Austria, which has the added green energy advantage of hydropower, relies on wood. The country's "Bioenergy policies and status of implementation" states: "The largest potential [in renewable energy] is seen as wood." All the above countries are on course to achieve or surpass EU renewable energy targets of between 30 and 50% by 2020 while Ireland will at best achieve 13% of its energy requirements from renewables.

The report makes no reference to the benefits of commercial conifer - softwood forestry in this regard. The use of softwood in construction has major environmental advantages in energy efficiency and carbon emission reduction, which is acknowledged throughout Europe, but not in the Oireachtas report. This is the main difference between the role played by wood in the bioeconomy in Ireland and other developed countries with ambitious programmes for wood usage and design. For example, Canada, Norway, Germany and Austria now view softwoods as a major medium in large-scale construction. Innovative architects, engineers and designers regard wood as a contemporary medium and are now using engineered wood from softwood species such as Norway spruce and Douglas fir as the main building material.

At the moment Rüdiger Lainer and Partner (RLP) are building the world's tallest wooden skyscraper in the Seestadt Aspern area of Vienna. This 84-metre, 24-storey twin tower project comprises 76% wood and according to RLP "will save a phenomenal 2,800 tonnes of CO₂ emissions over similar structures built out of steel and concrete".



The Rüdiger Lainer and Partner (RLP building in Vienna is the world's tallest wooden skyscraper. This 84-metre, twin tower comprises 76% wood and "will save a phenomenal 2,800 tonnes of CO₂ emissions over similar structures built out of steel and concrete".

Preliminary research carried out by NUI Galway shows that engineered Sitka spruce cross laminated timber (CLT) could offer similar benefits in multi-storey construction in Ireland. It is probably unfair to blame Deputy Naughton and her committee for missing this ambitious role for home-grown wood as the various Government departments that made submissions to the committee failed to bring this and other aspects of forestry to their attention.

The committee also missed the advantages of Ireland's vibrant forest products sector. This ensures that there is no waste in wood throughout the growing and manufacturing cycle. Wood allows architects, engineers, designers and woodworkers to build and design, safe in the knowledge that what they take will be replaced, given the renewable nature of wood.

Wood is a remarkable renewable material, regardless of species, which the newly appointed Climate Change Advisory Council (CCAC) needs to acknowledge. It grows in abundance in a wide range of soils, sites and climatic conditions and we are fortunate in Ireland to have the ideal growing conditions to produce high yielding forests and woodlands.

We have the capability of maximising this resource if we plant the right trees in the right places and the current ratio of 30% broadleaves and 70% conifers is achieving a balanced, environmental, social and economic forestry programme.

This conference addresses these and other aspects of forestry but it's important that the contributions presented are not lost. We propose that they are summarised and presented to the CCAC. The Oireachtas Committee on Climate Action states, that in relation to "afforestation and forest management":

• The Council should undertake a comprehensive review of the climate mitigation potential of our forests to be completed by December 2019.

• The Department of Agriculture, Food and the Marine's (DAFM) preparation of the National Forestry Programme (2021-2027), should also consider the forestry recommendations set out in this report. The Department should bring forward a draft of the forestry programme no later than 2020.

The views of the forestry and forest products sector need to be heard at DAFM level and directly to CCAC to ensure that sustainable forestry plays a central role of Ireland's programme in climate change mitigation and decarbonising the economy. This is the forestry that Sir David Attenborough has in mind when he says: "It's a fact that our growing global population will need to use more wood and that could be a good thing. Wood is an extraordinary renewable resource and taking it from well-managed sources benefits forests and the planet."

" Wood allows architects, engineers, designers and woodworkers to build and design, safe in the knowledge that what they take will be replaced, given the renewable nature of wood. "

Donal Magner Secretary Wood Marketing Federation



National Forestry Conference 2019 SESSION 1 Chaired by: Dr. Mary Ryan Environmental Economics researcher with Teagasc

Scotland will aim to reduce emissions by 70% by 2030 and 90% by 2040 – the most ambitious statutory targets in the world for these years. We must now increase our ambition to tackle climate change. The science demands it; the evidence is before you; we must start at once; there is no time to lose. The world needs wood, the human population is on the increase having doubled in the last 50 years, global trade has grown tenfold driving the demand for energy and materials. In 2018 the EU agreed a capped amount of net removals from land use, land use change and forestry (LULUCF) set at 26.8 million tonnes of CO₂ over the ten year period 2021-2030. Production forests can meet this target by increasing forest cover nationally. This will include both commercial production forests of conifers and broadleaves and native woodland.

Dr Mary Ryan is an Environmental Economics researcher with Teagasc and leads the Teagasc Rural Development Unit. Her background is in forest management and forest knowledge transfer, having also undertaken a Masters in Environmental Management (UCD). An Adjunct Lecturer at NUIG where she has a PhD in economics, Mary has a wide range of experience of multi-disciplinary projects on the adoption of environmental measures in relation to water quality, carbon sequestration, biodiversity and agro-ecological approaches to farming, as well as in the bio-economy and circular economy.





Stuart Goodall. *Chief Executive* Confor: Promoting forestry and wood

Stuart Goodall has over 30 years' experience in the forestry sector, the first 17 with the Forestry Commission where his roles included briefing ministers and representing UK interests at European level. He joined Confor when it was established in 2004 as head of policy. He was appointed CEO in 2007 where his role is to provide leadership and management for the organisation which represents forestry, wood processing and related businesses throughout the UK.

PRODUCTION FORESTRY AND CLIMATE CHANGE -THE SCOTTISH APPROACH

In the UK, in recent weeks, the issue of climate change and the specific demand for governments to declare a "climate emergency" has been high on the political and media agendas. While attention is now turning again to other matters, not least Brexit, unseating the Prime Minister and a possible general election, governments across the UK have felt and responded to the pressure to be more ambitious in their efforts to reduce atmospheric greenhouse gas emissions.

This renewed determination to establish (and meet) a more demanding target is echoed most strongly in Scotland where amendments have been lodged to the Scottish Parliament's Climate Change Bill to set a legally binding target of net-zero greenhouse gas emissions by 2045, at the latest, with Scotland becoming carbon neutral by 2040.

This follows a report on 2nd May by the UK (and Scottish) Government's adviser to the Committee on Climate Change (CCC) Net Zero: The UK's contribution to stopping global warming.

If the Bill changes are agreed, Scotland will aim to reduce emissions by 70% by 2030 and 90% by 2040 – the most ambitious statutory targets in the world for these years.

increase tree planting.

This presentation will examine how Scotland has increased tree planting and forestry activity generally, in part to help meet the challenge of climate change, and the wider benefits that the industry provides to mitigating the impacts of climate change, including low-carbon construction, flood prevention and biodiversity.

In the foreword to the CCC report, its chair Lord Deben wrote "We must now increase our ambition to tackle climate change. The science demands it; the evidence is before you; we must start at once; there is no time to lose."

Scotland is seeking to take a global lead and the forestry and timber sector is keen to play a key role in helping the Scottish Government meet its ambitious new targets.

Stuart Goodall Chief Executive Confor: Promoting forestry and wood

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sector is keen to play a key role in helping the Scottish Government meet its ambitious new targets.

The CCC report highlighted that Scotland could go faster and do more than the rest of the UK as it had more land per population and in particular, the opportunity to



Marina Conway Western Forestry Co-operative

Marina graduated from UCD with a degree in Agricultural Science (Forestry) in 1996 and a Masters in Agricultural Science by Research in 2006. After graduation Marina worked with Western Forestry Co-op for 10 years. After this she worked in New Zealand on forestry in the New Zealand Emissions Trading Scheme. Marina has worked in the public sector, private sector and ran her own company. Her experience ranges from afforestation, reforestation, harvesting, sustainable forest management to climate change policy, forest carbon projects, emissions trading schemes, wind farm projects, training and public procurement. She has also been awarded qualifications in Environmental Auditing, Training and Water Pollution Control. Marina is a Technical Member of the Society of Irish Foresters.

PRODUCTION FORESTRY AND CLIMATE CHANGE The right trees in the right places for the right reasons

The role of forests has become increasingly important due to the urgent need to mitigate the impacts of climate change. Globally forests represent the largest store of terrestrial carbon. Natural forests need to be protected in order to maintain their carbon and biodiversity, but they will not assist in reducing the current impact of climate change.

The world needs wood, the human population is on the increase having doubled in the last 50 years, global trade has grown tenfold driving the demand for energy and materials. Production forests are an important part of the solution by allowing us to preserve ancient natural forests by planting new forests on bare land and managing these forests sustainably. In production forests, young trees will grow fast and sequester large amounts of carbon, production forests will harvest larger amounts of timber in shorter time frames providing long term carbon storage in wood products as well as displacing more energy intensive materials such as concrete or steel and wood fuel will displace traditional fossil fuels.

Production forests can play a key role in meeting Ireland's challenge in reducing emissions in the non emission trading scheme (ETS) sector, a target set at 30% which includes agriculture, transport and buildings. In 2018 the EU agreed a capped amount of net removals from land use, land use change and forestry (LULUCF) set at 26.8 million tonnes of CO₂ over the ten year period 2021-2030. Production forests can meet this target by increasing forest cover nationally. This will include both commercial production forests of conifers and broadleaves and native woodland. The forest owner, who dedicates their land in perpetuity to forests will ascertain the best forest enterprise for their circumstances, in accordance with regulation, land suitability and departmental guidelines.

This presentation will ask how can we increase forest cover, examine if production forests with high yields are better for carbon sequestration, the long term storage of carbon in harvested wood products and the potential for wood fuel to displace fossil fuels.

We tend to refer to climate change as a global issue and a worldwide challenge, which it is. But it will only be tackled by exploring forestry at local farming level, by communities and farmers, especially in counties that do not have a strong forestry and wood culture but have the potential to provide major forestry programmes to decarbonise their economies and play a major role in climate change mitigation. We in the Western Forestry Co-operative, have seen how forestry can positively impact on rural communities in energy generation, timber processing and manufacture. These are all sustainable aspects of the forestry and forest products sector, because the ability of wood to renew itself is the key to climate change mitigation.

Marina Conway Western Forestry Co-operative



Our interest is in a systems approach to design, in the circular economy – a cradle to cradle approach where waste equals resource. A fundamental part of this is an interest in low embodied energy building and extending from this is our interest in designing buildings as carbon sinks. Cross laminated timber (CLT) as an integral part of tall building construction – 30 storey towers planned for Stockholm. The realisation of a successful bio-economy hinges on strong wood fibre availability, further investment by our forest products industry and the development and innovation of new wood derived products. Our forests provide crucial services for human well-being. Promoting afforestation and greater use of timber in place of less sustainable materials will provide long term positive benefits for society.

National Forestry Conference 2019 SESSION 2

Chaired by: Dr. Annette Harte Senior Lecturer in Engineering at the College of Engineering and Informatics, NUI Galway

> Dr Annette Harte is a Senior Lecturer in Engineering at the National University of Ireland Galway. She is a Chartered Engineer and Fellow of the Engineers Ireland. Dr Harte is the Founding Director and has been a Principal Investigator in the Timber Engineering Research Group since 2005. This is a large, productive, multidisciplinary research group investigating highly engineered bio-based materials for sustainable construction. Since 2011, Dr Harte's group has been developing models to quantify the impact of forest management and climate change scenarios on the microstructure and quality of wood.



Mike Haslam Director Haslam & Co Architects

Mike is the director at Haslam & Co Architects and formerly co-director at Solearth Architecture for 15 years. He is a graduate of the Universities of Edinburgh and Bath, UK and is a registered architect and member of the RIAI, RIBA and Easca. Mike has extensive experience in the UK, Germany and Spain. As director in Solearth he was responsible for major projects including the award winning Castle Espie visitors centre, Co. Down, a green prototype factory in Co. Wicklow and the transformation of the Airfield Estate in Dublin. He has published many papers on architecture and green design in Ireland and the UK. He lectures in the Dublin School of Architecture, UCD and has been a guest lecturer at University of Bath, Technische Hochschule Aachen and University of West of England. His research has included applications of roundwood structures, the development of theory on Slow Architecture, on Building Health (bau-biologie) and an ongoing MPhil into Natural Ventilation strategies as part of the Nearly Zero Energy Building (NZEB) standard.

GIY HQ in Waterford - glulam post and beam construction sitting on concrete base in a productive landscape.

LOW EMBODIED ENERGY SUSTAINABLE BUILDING

As an architectural practice our interest is in a systems approach to design, in the circular economy - a cradle to cradle approach where waste equals resource. A fundamental part of this is an interest in low embodied energy building and extending from this is our interest in designing buildings as carbon sinks.

1 tonne of CO₂ locked in per cubic metre of timber – locked for life-time of the product.

Round wood construction, as one of the lowest embodied energy construction materials appears as one answer to this. Working firstly at Hooke Park, Dorset following the experimentation of Buro Happold; then at the Rehan factory, Wicklow, which brought up issues of timber sourcing and of scale; and lastly at Castle Espie, Comber where local materials were exclusively used. At the same time we were constructing the Daintree Building - then, perhaps the tallest domestic timber building in Ireland - using timber panel construction which also facilitated depths of insulation beyond the building regulations with timber fibre within the walls and cladding from Donegal.

Our exploits in timber moved onto post and beam construction at the Airfield Estate in Dundrum using glulam supplied by Cederlan in Cork. Glulam is of interest not only due to the carbon sink but also its strength to weight ratio being better than steel and its embodied energy 5 times less than steel equivalent. The use of glulam, facilitated our details and became an expression of the buildings.

At Airfield we also used Accoya board for external cladding. For wood products to make a difference in carbon sequestration, enabling quick growing wood species from temperate regions to substitute for hardwoods is important. In this manner the non toxic modification of temperate board through acetylation is interesting hydrophobic acetyl groups prevent water bonding onto cell wall and in the process gives the timber Class 1 durability.



And what of the next normals?

• Cross Laminated Timber construction (CLT) - dimensionally stable, stiff and strong both in-plane and out-of-plane: CLT has structural capabilities similar to that of concrete, and can be used for similar applications, including bearing walls, shear walls, floors, roofs, or deep beams. Beyond its climate change benefits CLT has shown significant reductions on substructure works and the superstructure programme the faster construction process reduces the cost to the contractor, which lowers the cost for the end client.

Stockholm.

acoustic mass.

Practice profile

Haslam and Co Architects, a Dublin based practice, is led by Mike Haslam, former director at Solearth Architecture for 15 years and prior to that with FCB-Studios in the UK. We are an architectural and master-planning practice with wide experience in both domestic and public buildings centred on a design philosophy which is steered by a strong environmental understanding.

We believe design is the realisation of a process of listening to our clients, understanding and respecting our site and working collaboratively, creatively and methodically to find the best solution. Our architecture is based on shared values about how to live, work, play and be at one with the environment. We believe passionately that sustainable buildings improve society and can be both uplifting and valuable to people and society. A selection of some of our public building designs:

on the site.

• Airfield Estate, Dundrum, Dublin; the creation of new visitor facilities including education, restaurant, farm buildings and the renovation of the existing house within an environmentally based master-plan for the Estate.

Mike Haslam Director Haslam & Co Architects



Interior of GIY HQ cafe - serving food grown in the adjacent gardens.

Overleaf: 'Cafe interior' - Airfield Estate, Dublin - variations on glulam post and beam construction creating a series of landscape pavilions.

• CLT as an integral part of tall building construction – 30 storey towers planned for

• More sophisticated forms of construction such as timber hybrid: the use of concrete bonded with CLT for thermal mass to control temperature or utilised to improve

 GIY (Grow It Yourself) HQ in Waterford places the glazed garden café pavilion, beneath a sedum roof, within the masonry supporting structure that defines its place





Des O'Toole President of IrBEA.

Des O'Toole is Marketing Development Manager, Coillte. An engineer and senior business development professional he has a passion for renewable energy. His career spans a range of technical, business development, operational, sales and marketing roles over 25 years in the construction, wood panel board and renewable energy sectors.

FORESTRY AND THE BIO-ECONOMY Wood as a contemporary low carbon construction, design and energy resource

The realisation of a successful bio-economy hinges on strong wood fibre availability, further investment by our forest products industry and the development and innovation of new wood derived products. Our supply is forecast to double by 2035 and this positive supply situation will not only drive a large and sustained growth in timber processing and valuable Irish exports, it will also pay dividends as Ireland strives to meet its climate change commitments.

Social and environmental challenges are growing, timelines for addressing them are contracting and companies are scrambling to adapt. The best are embracing these challenges as a source of competitive advantage as whole industries transform. The presentation will cover how Irish forestry and the bio-economy is set to become a crucial component of sustainable growth and one of the key building blocks to address Ireland's climate emergency.

Because trees capture and store carbon, forests are the most powerful natural lever we have to mitigate climate change. Forests contribute through carbon sequestration as forests grow, this carbon is stored in harvested wood products, these wood products can substitute for functionally equivalent but usually less sustainable materials and at end of life, woody biomass can then be substituted for other sources of fossil based energy and converted into thermal energy or electricity.

The focus of the presentation will be around the use of wood as a carbon store and the 'substitution impact'. We define substitution as any use of wood that replaces other inputs of production in providing equivalent service or function. A number of quantitative examples of the benefits it can provide will be presented covering the use of wood in construction and bioenergy.

Increasing general wood use through 'substitution' is not capitalised or promoted enough by the sector and it should be more widely recognised as one of the key drivers in our battle against global warming. These benefits are often overlooked or not accounted for in the carbon balance equation and this presentation aims to highlight them more effectively for the conference attendees, our policymakers and the wider public.

In terms of the future, the benefits are clear, there is great potential to leverage the substitution benefits of wood along with the energy savings and carbon emissions reductions from our forest resource. Our forests provide crucial services for human well-being and economic development. Promoting afforestation and greater use of timber in place of less sustainable materials will provide many long term positive benefits for society.

Des O'Toole President of IrBEA



The IPCC recommends that up to 700m habe converted from food production to energy crops in a bid to tackle climate change. Ireland is the only country in the EU that can increase forest cover substantially without negatively impacting on agriculture and food security. This target will require a 15,000 ha annual afforestation programme. Dairy farms, while having a low carbon footprint, show the largest emissions, due to the greater production intensity on these farms. Those farms with the best economic performance also have the lowest emissions intensity per litre of milk produced. Our vision focusses on the range of environmental as well as economic and social benefits that an internationally competitive and sustainable forest sector can provide.

National Forestry Conference 2019 **SESSION 3** Chaired by: Dr. Eugene Hendrick Chairperson COFORD

Dr.Eugene Hendrick, Chairperson, COFORD, graduated in forestry from UCD in 1975. He went on to complete a year's postgraduate work before joining the Forest and Wildlife Service in 1976 and Coillte in 1989. In 1993 he joined COFORD, the National Council for Forest Research and Development at its establishment and was appointed Director in 1999. He rejoined the Forest Service in 2010 when his areas of responsibility included the COFORD Council, forest genetic resources and forests and climate change mitigation. He has a PhD in forest establishment and stability.





Justin McCarthy CEO and Editor of the Irish Farmers Journal.

Having graduated with an Hons Degree in Agricultural Science in 2000, he spent two years with Anglo Beef Processors (ABP) in Shrewsbury learning all aspects of the red meat processing sector. In 2004 he was awarded a Nuffield Farming Scholarship and travelled throughout Europe and New Zealand researching profitable beef production from the suckler herd. He coordinated the Teagasc/Dawn Meats Partnership in the West of Ireland during his time with Teagasc. He has travelled extensively throughout Europe, New Zealand and South America. His reports on Brazilian beef production have been well documented in Ireland and Europe and have received national and international awards. Justin still plays an active role in the management of the family suckler beef farm in Co Down.

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Exploiting the potential of forestry on marginal land types will be central if Irish agriculture is to achieve the optimum production/ environmental balance.

THE NEED TO PUT EVERY ACRE OF LAND TO WORK IN DELIVERING PUBLIC GOODS

"One more cow, one more sow one more acre under the plough" was the mantra under which Irish agriculture developed in the 1940s and 1950s. It developed the foundation that today sees Ireland, with a population of 4.7 million, producing enough beef and dairy products to feed the equivalent of 35 million Europeans.

However, with the scares of food shortages having faded from today's society some would rather portray Ireland's ability to contribute to global food production as a blight on our environment.

This of course ignores the fragility of the global food production model. A model which according to the United Nations Food and Agricultural Organisation (FAO), has just 90-100 days of food reserves. At the same time the FAO is forecasting a 60% increase in food demand by 2050.

The challenge of meeting these demands needs to be considered in the context that1) the Intergovernmental Panel on Climate Change (IPCC) recommends that up to700m ha (80 times the size of Ireland) be converted from food production to energy crops in a bid to tackle climate change.2) An estimated 12m ha per annum (33,000 ha per day) are lost from agriculture due to desertification and urbanisation.

The challenge facing global food production is clearly one where more will have to be produced from less. In this environment Irish agriculture needs a land use policy that puts every acre of land to work in delivering a public good – whether this be in the form of food production or delivering an environmental dividend.

Exploiting the potential of forestry on marginal land types will be central if Irish agriculture is to achieve this production /environmental balance. Ireland is the only country in the EU that can increase forest cover substantially – from 11% of the land area at present to 17% by 2050 – without negatively impacting on agriculture and food security.

This target will require a 15,000 ha annual afforestation programme as recommended in *Wood Wise* 2025. At current annual afforestation levels (approx 5,000ha) forest cover of 17% – half the EU average – won't be achieved until 2100. Now is the time for agriculture and forestry to meet this challenge together.

It will need a realistic approach by Government in reducing barriers to afforestation, returning to planting land in Munster counties and depressurising forest expansion in other counties as well as removing the replanting obligation.

Justin McCarthy CEO and Editor of the Irish Farmers Journal





Professor Gerry Boyle *Director, Teagasc*

Since Professor Gerry Boyle was appointed Director of Teagasc in 2007, he has overseen the organisation's integration of advisory, education and research functions into a unique integrated model of research and knowledge transfer. A member of the Climate Change Advisory Council, he is Emeritus Professor of Economics at the National University of Ireland and has served as Head of the Economics Department at NUI Maynooth and as an economist with the Central Bank of Ireland. He qualified with a BA from UCD in 1977 where he went on to obtain an MA and PhD.

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The next iteration of the Teagasc/Bord Bia Carbon Navigator will provide an indication of the potential sequestration capacity of different tree species and planting categories and should help increase awareness of the potential of forestry at farm level.

CLIMATE MITIGATION PATHWAY TO 2030

Agriculture is the principal land use in Ireland and environmental sustainability in agriculture is central to achieving multiple national level objectives. The sector faces significant challenges including in the context of internationally binding greenhouse gas (GHG) emission reduction targets. To feed a growing global population, agricultural output must be sustainably increased without impacting on the capacity for future production or compromising our environment.

The Teagasc National Farm Survey 2017 Sustainability Report uses the IPCC (Intergovernmental Panel on Climate Change) methodology to estimate GHG emission indicators across different farm systems. On a per hectare basis, dairy farms, while having a low carbon footprint, show the largest emissions, significantly greater than other systems, due to the greater production intensity on these farms. Those farms with the best economic performance also have the lowest emissions intensity per litre of milk produced.

Teagasc operates ambitious research and knowledge transfer programmes on gaseous emissions, with a focus on developing cost-effective abatement strategies for Irish agriculture. The second iteration of the Greenhouse Gas Marginal Abatement Cost Curve (GHG MACC) for Irish Agriculture in 2018 uses the FAPRI-Ireland model to provide a baseline projection of the future level of activity in Irish agriculture. It also visualises and quantifies the abatement potential of GHG mitigation measures deemed as applicable to farming systems common in Ireland and their associated cost/ benefit. Forestry is a strong component in this analysis.

Mitigation pathways to 2030 and beyond include agricultural mitigation, land use strategies and relevant energy measures. The GHG MACC analysis identifies that the sustainable expansion of farm forestry has a very significant cost-effective contribution to make to the national abatement challenge. A further critical issue is that forestry is measured using a 20 year window. In this regard current levels of planting will have significant impact in the post-2030 commitment period. While the mitigation potential of our farm forests is highly significant, there is a challenge in terms of adoption and a concerted and industry-wide effort is required to raise awareness of the huge mitigation potential that farm forests offer.

Our vision for our forest resource focusses on the range of environmental as well as economic and social benefits that an internationally competitive and sustainable forest sector can provide. Teagasc, in conjunction with the forestry sector, promotes farm forestry as a complementary and valuable land use that provides significant benefits for the owner if well planned and sustainably managed. The Teagasc Forestry Development Department collaborates with many stakeholders in delivering research based knowledge to the agriculture and land based sectors. Initiatives currently being developed include the incorporation of forestry in the next iteration of the Teagasc/Bord Bia Carbon Navigator. This measure will provide landowners with an indication of the potential sequestration capacity of different tree species and planting categories and should help increase awareness of the potential of forestry at farm level.

Professor Gerry Boyle Director, Teagasc

Society of Irish Foresters



Information: Wood Marketing Federation and Society of Irish Foresters

The Society of Irish Foresters

The Society of Irish Foresters is an all-island organisation which was founded in September 1942. Its main aims are to spread knowledge of forestry and to improve professional standards in the Irish forest industry. To that end the Society publishes an annual scientific journal, organises four field days, two public lectures, conferences and an international study tour each year.

The Society regularly makes submissions to government on policy initiatives which are likely to impact on the forest industry and it is represented on several interdepartmental working parties. Our Continuous Professional Development (CDP) programme provides an opportunity for members to engage in the lifelong acquisition of knowledge and skills.

The Society currently has 746 members, most of whom are professional foresters who work across the whole spectrum of Ireland's forest industry. There are five categories of membership: Technical, Retired Technical, Associate, Student and Honorary.

Further information m + 353 (0)86 2582240 e info@soif.ie www.societyofirishforesters.ie

The Wood Marketing Federation

The Wood Marketing Federation (WMF) was founded in 1989 to promote wood and wood products providing they are sourced in sustainably managed forests. Membership and supporters include sawmills and other timber processors, State agencies and stakeholders involved in wood promotion and research. Our promotional programme covers wood processing, manufacture, design, preservation and usage from traditional applications to product development and innovation.

Our audience includes architects, engineers, designers, specifiers, timber processors and manufacturers, researchers, preservation companies, State agencies and educational bodies. The WMF's mission is *to promote wood as a renewable, sustainable and versatile natural material*.

Projects include:

- Wood Awards Ireland aimed at architects, engineers, designers and timber conservationists.
- Publication of Woodspec A Guide to Designing, Detailing and Specifying Timber in Ireland.
- All-Ireland Third Level Student Wood Awards for students of architecture, engineering and design.
- Educational and promotional factsheets and booklets including *Why Forests? Why Wood?* and *Pride in the Product.*
- Organising conferences and symposiums.

Further information m + 353 (0)86 2607883

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An Roinn Talmhaíochta, Bía agus Mara Department of Agriculture, Food and the Marine



Society of Irish Foresters