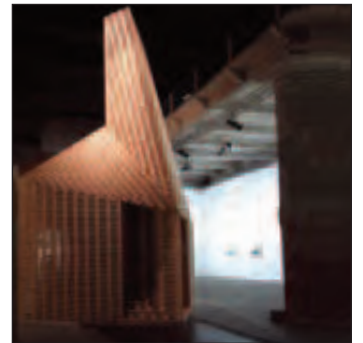
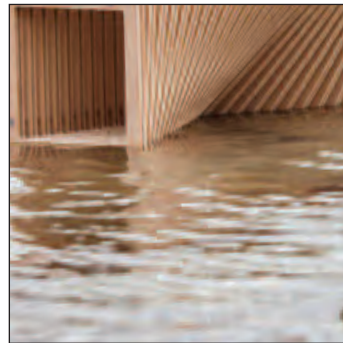


## National Forestry Conference 2018



# FORESTRY AS A CENTRAL PILLAR IN THE BIOECONOMY

# FORESTRY AS A CENTRAL PILLAR IN THE BIOECONOMY

National Forestry Conference  
Johnstown House Hotel  
Enfield, Co. Meath, Ireland  
30 May 2018

# Acknowledgements

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We are grateful for the support of the Royal Institute of the Architects of Ireland (RIAI) in particular Dr. Sandra O'Connell for her help and advice.

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May 2018

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# Agenda for the National Forestry Conference

## FORESTRY AS A CENTRAL PILLAR IN THE BIOECONOMY

- 08.15

Registration, refreshments and conference literature.
- 09.00

Introduction – Assessing the role of forestry in the bioeconomy. Donal Magner, Wood Marketing Federation, Society of Irish Foresters and Forestry Editor, *Irish Farmers Journal*.
- SESSION 1

Chairperson: Fergal Leamy, *Chief Executive, Coillte*.
- 09.10

Keynote conference address: Andrew Doyle, *Minister of State with responsibility for forestry at the Department of Agriculture, Food and the Marine*.
- 09.35

Growing the Irish Forest Bioeconomy – the next steps. Gerard Murphy, *Managing Director Coillte Forest*.
- 10.00

Recognising the role of forests in a sustainable European bioeconomy is fundamental. Prof. Pekka Leskinen, *Head of Bioeconomy Programme, European Forest Institute*.
- 10.25

Converting from black to green energy – the importance of localised wood energy solutions. Kenny McCauley, *McCauley Wood Fuels Ltd*.
- 10.50

Break – coffee, tea.

## SESSION 2

- Chairperson: Dr. Sandra O'Connell, *Director of Architecture and Communications, Royal Institute of the Architects of Ireland*.

11.15

Extending the life of wood – Exploring recent developments in the use of timber in architectural design. Karen McEvoy, *Director, Bucholz McEvoy Architects*.

11.40

Timber cities – the role of wood in sustainable high rise buildings. Markus Lager, *Kaden + Lager Architects, Berlin*.

12.25

Research and innovation in the bioeconomy – an opportunity for value creation in Ireland. Prof. Kevin O'Connor, *School Of Biomolecular & Biomedical Science in University College Dublin; founder and CEO of Bioplastech Ltd*.

12.55

Open forum and discussion.

13.30

Close of conference and lunch.
- # Foreword
- 
- Andrew Doyle TD  
Minister of State  
Department of Agriculture,  
Food and the Marine
- The focus of this year’s National Forestry Conference – ‘The Role of Irish Forestry in the Bioeconomy’ – is very relevant given recent developments and I welcome the opportunity presented by this conference for us to explore the role of our sector. To put it into context, the bioeconomy concept has emerged as a response to the global challenges of food security, energy security, climate change and the depletion of non-renewable resources, challenges which we all face. The bioeconomy cuts across a range of sectors, including agriculture, the marine, water and waste management, energy, biopharmaceuticals, and our own sector, forestry. In our case, substituting sustainably produced wood for fossil resources facilitates decarbonisation and continued economic growth. It also improves economic resilience and has a contribution to make to rural economies.
- A key development was the recent publication of the first National Policy Statement on the Bioeconomy. On foot of this, the Government has established an Implementation Group comprising relevant departments and agencies to progress the key actions identified in this statement. The Group, which is co-chaired by the Departments of Agriculture, Food and the Marine and Communications, Climate Action and Environment, is to report back to Government by end 2018.
- I believe that the forest sector is at the forefront of the emerging Irish bioeconomy and a major contributor to climate change mitigation. We must continue this momentum, advancing our sector through the use of new wood products and building systems, as well as the rapidly emerging use of wood fibre across a range of innovative products. The forest sector will continue to make a positive contribution to increased resilience, environmental sustainability, decarbonising our economy, and stimulating rural employment and development.
- The report by the COFORD Bioeconomy Working Group – *Growing the Irish Forest Bioeconomy* – makes a significant contribution to our understanding of the role forestry plays in the bioeconomy. Its examination of the issues from a range of perspectives including policy, producer, processor, and research and innovation was particularly useful. This report notes that the gross output of the Irish forest sector is set to double by 2035 against a backdrop of increasing carbon constraint and this creates a tremendous opportunity. It outlines an exciting vision of a thriving, export-led, forest bioeconomy which creates sustainable jobs in rural Ireland and supports national land-use, carbon reduction and climate adaption objectives, and makes 12 proposals for growing a vibrant forest bioeconomy in Ireland.
- Today’s conference, which brings together a wide range of expertise and guest speakers, is a step in that process and will examine the role of forestry in the bioeconomy from the forest itself to the end use. It is this cohesion and unity of purpose that will assist in the development of our sector and allow its full potential in the context of the bioeconomy to be achieved while benefiting society and the environment.
- 
- Andrew Doyle TD  
Minister of State
- 4
- 5



# Introduction

## Wood Marketing Federation



**Paul Harvey**  
Chairman  
Wood Marketing Federation  
and Business Manager, Arch Timber  
Protection, a Lonza company

The role that the forestry and the forest products sector can play in the bioeconomy is now being acknowledged in Ireland and was recently outlined in *Growing the Irish Forest Bioeconomy*. In all, twelve proposals were made which the authors claim would position forestry as a central pillar of Ireland’s national policy on the bioeconomy. This is an ambitious claim so it’s worth mentioning some of these proposals as they apply to the forest products sector and its contribution to the bioeconomy:

- Position forestry as a central pillar of Ireland’s national policy on the bioeconomy. This opening, ambitious proposal is based on Ireland’s commitment to a decarbonisation approach which involves carbon neutrality in the land-use sector without compromising food production. 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.
- Ensure a long-term, consistent and growing supply of roundwood to the processing industry by supporting and investing in the national afforestation programme.
- Urgently address constraints on the productive capacity of the existing forest estate and barriers to wood mobilisation. Existing publications by COFORD, on wood mobilisation and land availability for afforestation, identify constraints that need to be addressed.
- Develop mechanisms to promote the use of low carbon building materials and adopt a strong ‘wood first’ public sector procurement policy, which is why we have a strong architectural content at this conference.
- Review national building standards to support and promote the use of wood as a construction material. Research is being carried in NUI Galway on CLT, (cross laminated timber), based on home-grown spruce. Engineered wood such as CLT (cross laminated timber), has major economic and environmental benefits in construction, providing Irish building regulations are addressed.
- Establish a well-resourced forest bioeconomy centre of excellence in Ireland and increase public and private investment in forest bioeconomy research.
- Develop and implement payment for ecosystem services (PES) forestry schemes to support the provision of a green infrastructure.

This conference will reference *Growing the Irish Forest Bioeconomy* in an Irish and European context which is why it is an important event in the Wood Marketing Federation programme.

Forestry has also been identified in the *Project Ireland 2040: Natinal Planning Framework* which states: "The afforestation of agricultural land, supported by Government incentives, aims to increase long-term timber supply to support the development of a sustainable processing sector and offers significant carbon sequestration potential, thereby contributing to national greenhouse gas mitigation targets and the bioeconomy. The Wood Marketing Federation supports this approach to creating a wood based bioeconomy, which is compatible with our mission *to promote wood as a renewable, sustainable and versatile natural material*.

Paul Harvey  
Chairman  
Wood Marketing Federation

# Introduction

## Society of Irish Foresters



**Gerry Murphy**  
President  
Society of Irish Foresters

When the Society of Irish Foresters was founded in 1942, its primary objective was to spread knowledge of forestry in all its aspects. Today, 76 years later, this objective remains to the fore. This conference is a useful vehicle to inform people about current thinking on forestry. However, our efforts to maximise the role of forestry in Ireland’s bioeconomy must begin in the forest, where growing the right trees on the right sites and for the right reasons is the key to a successful outcome.

Endorsing the remarkable foresight of these early foresters, the ‘right reasons’ now includes not only wood production but also an ever increasing suite of wood and non-wood products and services. However, the primary role of the forest is to produce the raw material for a vibrant wood processing sector which today encompasses sawmill and panelboard mill processing, wood energy and biofuel, textiles and even food in the more advanced wood cultures. The forest is a multi-purpose resource which can satisfy this wide range of demands and is well capable of providing an impressive range of non-wood products and services which are central to the bio-economic debate. These include:

- **Carbon sequestration and its impact on climate change:** Sustainable forestry contributes positively to carbon sequestration and is an important management tool in combating climate change.
- **Recreation, health and wellbeing:** The contribution of forests to human well-being is being increasingly recognised by health experts and institutions.
- **Water quality improvement and flood control:** Forests can retain excess rainwater, prevent extreme run-offs and reduce damage from flooding. In addition, forests can soak up excess rainwater, thereby reducing run-offs and damage from flooding.
- **Wildlife habitats:** Managed commercial forests provide important habitats for populations of forest specialists such as pine marten, red squirrel and lesser horseshoe bat.
- **Landscape values:** It is widely recognised that forestry, when managed sensitively, plays an important role in landscape planning and design. In addition, enhancement of our rural landscape has a positive impact on tourism and visitor numbers in rural areas.

The Society of Irish Foresters fully supports the recent Department of Agriculture, Food and the Marine document *Growing the Irish Forest Bioeconomy*, including the following proposals that refer directly to the role of the forest:

- Develop an integrated carbon and land-use policy that recognises the significant sequestration and storage potential of the forest sector in Ireland.
- Develop and implement a plan to improve the overall resilience of the national forest estate and mitigate against the biotic and abiotic risks associated with climate change.
- Promote a deeper understanding of the economic, social and environmental benefits of the forest sector among the general public through a well-resourced and sustained communications campaign.

Gerry Murphy  
President  
Society of Irish Foresters





**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 *Forestry & Forest Products 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 and has completed his term as member of the group which produced *Growing the Irish Forest Bioeconomy* and as Irish representative on the Advisory Board of SIMWOOD, the EU body addressing timber mobilisation in Europe.

*Despite enjoying the best climatic and growing conditions in Europe to maximise renewable biomass production, Ireland will fall well short of meeting its 16% target for renewable energy generation by 2020.*

## ASSESSING THE ROLE OF FORESTRY IN THE BIOECONOMY

Ireland is uniquely placed to position forestry at the centre of the bioeconomy without compromising food security

The burgeoning bioeconomy represents a significant shift from fossil fuels to renewable resources in most EU member states. The post-industrial revolution era is being replaced by a global bioeconomic revolution led by the Nordic countries, which aim to be practically fossil free by 2050. The industrial revolution largely bypassed Ireland, due to an absence of large-scale commercial coal and iron mining, but despite remaining largely agrarian over the two centuries of industrial pressure elsewhere, Ireland has not emerged unscathed environmentally. Today, Ireland has the third highest greenhouse gas emissions per capita for residential energy use in the EU, mainly because of our heavy reliance on fossil fuels especially in sectors such as agriculture, energy and transport.

Despite having the best climatic and growing conditions in Europe to maximise renewable biomass production, Ireland will fall well short of meeting a 16% target for renewable energy generation by 2020 and will also struggle to decarbonise its economy by 2050 according to the Climate Change Advisory Council. This is in contrast with Denmark which will achieve 33% of its energy generation from renewables by 2020, exceeding the target of 30% sought by the EU. Other member states now either equal or exceed EU renewable energy targets, including Austria (34%), Sweden (49%), Finland (38%) and Latvia (40%) These all have viable forestry and forest products sectors. Forestry has played a central role in their bioeconomies, since the major oil crisis in the 1970s when energy security rather than climate change was the main objective in developing a viable bioeconomy.



*Ireland has the highest yielding forests in northern and central Europe and unlike virtually all other member states, we have the potential to increase forest cover from 10.7% of the land area to 17% by 2050 without negatively affecting agricultural production and food security.*



While Ireland has some distance to travel before achieving a forest and wood culture comparable with our European neighbours, we have a number of inherent advantages in placing forestry at the centre of the bioeconomy. Ireland has the highest yielding forests in northern and central Europe and unlike virtually all other member states, we have the potential to increase forest cover from 10.7% of the land area to 17% by 2050 without negatively affecting agricultural production and food security. And we already have the indigenous forest industries in place to process the increased volumes of timber reaching the market. Despite heavy international competition, volatile exchange rates and recessions, including the 2008 economic collapse, not one Irish timber processing mill has gone out of business. Instead, these have tripled production from 1980 to 2015 including increasing exports to over 70% since 2008.

The forestry and forest products sector is emerging as a force in the bioeconomy but it is only a beginning. Much more will be required if the sector is to position itself at the heart of the bioeconomy by reducing our dependency on non-renewable resources. The sector will be required to continue to manage our forests sustainably and to add value to our wood resource which is forecast to increase from 3.9 million m<sup>3</sup> at present to 8.1 million m<sup>3</sup> annually by 2035.

Based on the performance of the wood industry, we now have evidence of the potential role forestry can play in the bioeconomy as outlined in the COFORD report *Growing the Irish Forest Bioeconomy* and endorsed in *Project Ireland 2040: National Planning Framework* which states: “Irish forestry is a major carbon sink and afforestation is the most significant [climate] mitigation option that is available to Ireland’s land use sector.”

In addition to producing sawn and reconstituted wood products for an export led market, *Growing the Irish Forest Bioeconomy* maintains that "the Irish forest estate’s high growth rates and carbon sequestration produce high scores for mitigating and adapting to climate change".

Conference speakers will take the forestry and forest products sector outside its comfort zone in exploring new outputs such as bioenergy and biofuels for transport along with biobased chemicals, plastics, food, feed and textiles. However, we also provide a platform for architects as traditional uses such as construction are likely to play a key role in the transition from a fossil-based to a bio-based economy. For example,



## FORESTRY AND THE CIRCULAR BIOECONOMY

The bioeconomy refers to economic activity derived from the use of biological resources from forestry, agriculture and marine. These produce food, feed, fibre and fuel. The circular economy refers to economic activity based on the use, reuse and recycling of resources and materials. In a circular economy the value of material is preserved for as long as possible with the overarching aim of minimising the use of non-renewable resources which is where forestry and the forest products sector is most efficient and renewable. The bioeconomy and the circular economy can overlap as concepts with similar objectives. *Growing the Irish Forest Bioeconomy* outlines how sustainable forest management links these two concepts by providing renewable materials which continuously sequester carbon as they grow and store it when the timber is used, reused and recycled. *Growing the Irish Forest Bioeconomy* outlines how forestry has a triple carbon benefit throughout the growing and production cycle:

- In the forest – Carbon sequestration as forests grow, with resultant climate change mitigation and benefits for agriculture.
- Outside the forest – Carbon storage in wood products which displace materials with high embedded carbon such as steel, aluminium and concrete, as well as generating energy which displaces fossil fuels.
- End of life – at the end of its useful life, wood can be recycled into new products or into carbon neutral thermal energy and used for heating and/or electricity.

engineered wood allows architects to build higher, faster and more sustainably for the first time in over 1,000 year; since the great monumental structures of China and Japan, some of which still survive. While wood utilisation in construction dates to the first buildings, timber is a minor component in contemporary architecture but this is changing.

Engineered or cross laminated timber (CLT) is now the main medium used by a number of innovative international architects in designing bigger sustainable wood-based buildings.

In this regard *Growing the Irish Forest Bioeconomy* proposes a review of national building standards to support and promote the use of wood as a construction material. The COFORD report *Timber in Multi-storey Construction* identifies over 40 timber buildings between five and 14 storeys tall built around the world using cross laminated timber (CLT). Research is being carried in NUI Galway on CLT based on home-grown spruce and the findings are positive. Engineered wood such as CLT has major economic and environmental benefits in construction, providing Irish building regulations are addressed. The regulations currently limit the maximum height of a timber building to three storeys.

Irish sawmills have dramatically increased the quantity and quality of their sawn wood over the past two decades and our panel board mills have added value to what is essentially waste wood while our underrated wood energy sector is beginning to make its presence felt in generating renewable energy which displaces fossil fuels.

Reducing green house gas emissions and displacing fossil energy imports with renewable wood is the first step in creating an indigenous bioeconomy and in Ireland we have both the growing conditions and the land bank to maximise our wood resource and to make the shift from a fossil-based economy to a bio-based economy. The next step is to believe and act on the core philosophy of *Growing the Irish Forest Bioeconomy*, which is: "Anything that can be made from fossil fuels can be made from wood."



The COFORD report *Timber in Multi-storey Construction* identified over 40 large scale buildings around the world using cross laminated timber (CLT) such as the 18-storey Brock Commons student residence in Vancouver, Canada.



## National Forestry Conference 2018 SESSION 1

Chaired by: Fergal Leamy  
*Chief Executive, Coillte*

Forest biomass has a triple carbon benefit: Carbon is sequestered as forests grow; forest biomass can be used to make products which displace materials with high embedded carbon; at the end of its useful life, forest based biomass products can be converted into carbon neutral thermal energy – Gerard Murphy. Our forest resources are crucial to build a climate-smart and resilient society that prospers within a circular bioeconomy – Pekka Leskinen. Wood biomass is essentially a localised renewable energy source with major benefits for regions such as Leitrim, where we see huge promise in terms of biomass and wood fuel supply – Kenny McCauley. The European forests are our most important biological infrastructure, playing a key role in the resilience of our continent, regions and cities...

Fergal Leamy was appointed to the role of Chief Executive of Coillte in April 2015. He has more than 17 years food and agriculture experience at the highest level. Fergal began his career at McKinsey & Company where he worked with many leading food and agriculture clients. He moved from McKinsey to establish and run Greencore's US operations. Before joining Coillte, he worked for Terra Firma, a leading Private Equity house in London where he was responsible for running a number of international companies.





**Gerard Murphy,**  
*Managing Director Coillte Forest*

Before taking on his current role as Managing Director of Coillte Forest, Gerard worked in a variety of positions in forestry including research, inventory, sales and marketing, harvesting and overseas consulting, as well as leading change management for the Coillte Group. He is responsible for the commercial performance of the Group's forestry businesses which have a turnover of over €100m. The provision of social and environmental values from the estate is also a key responsibility. Gerard has a B.Agr.Sc. (Forestry) and an MBA from University College Dublin as well as a Grad Dip. in Science from the Australian National University. He is a Director of the Wood Marketing Federation, a member of COFORD and is on the executive committee of EUSTAFOR (European State Forest Organisations Association). He was also the chairman of the COFORD Working Group that published the document *Growing the Irish Forest Bioeconomy*.



*Médite Tricoya Extreme, an acetylated wood panel which contributes to the bioeconomy along with other engineered and wood based products.*

## GROWING THE IRISH FOREST BIOECONOMY – THE NEXT STEPS

The concept of a bioeconomy has emerged in response to the challenges of food security, energy security, climate change and the depletion of non-renewable resources. Virtually everything that can be made from fossil resources can also be made from biological resources. Substituting sustainably produced biomass for fossil resources facilitates decarbonisation and continued economic growth. A shift from fossil resources toward biomass also improves resilience and has strong potential for revitalising rural economies.

Forest biomass has a triple carbon benefit. Carbon is sequestered as forests grow. Forest biomass can be used to make products which displace materials with high embedded carbon such as steel, aluminium and concrete. At the end of its useful life sustainably sourced forest based biomass products can be converted into carbon neutral thermal energy and used for heating and/or electricity.

The forest sector in Ireland comprises a range of industries that form a complete supply chain from farmers and forest owners, forest management to sawmills and processors and the manufacturers of forest products. The forest sector is long established in Ireland and its output is growing fast. The sector is technologically advanced and has diversified in recent years and developed significant export markets.

The forest sector already is making a sizeable and sustainable contribution to the national economy while at the same time providing important non-timber ecosystem services such as carbon sequestration, flood mitigation, wildlife habitat and a venue for outdoor recreation for our increasingly urbanised citizens.

Ireland's forests already make a significant contribution to the economy and society but due to our relatively low forest cover, the age structure of our forest estate and the emergence of new scientific and technological developments, there is potential to substantially increase this contribution in the years to come. The gross output of the sector is set to double by 2035 against a backdrop of increasing carbon constraint and this creates a tremendous opportunity. Ireland's forest sector is ideally positioned to become one of Ireland's leading long-term sustainable industries.

This presentation will explore the future development of the forest bioeconomy in Ireland. It will argue that the principles guiding development should be:

- maximisation of economic value;
- maximisation of carbon storage;
- adoption of a cascading use approach.

The presentation will discuss the implications of these principles and explore what a vibrant forest bioeconomy in Ireland might look like in 2040. The presentation will conclude by presenting key proposals for enabling the development of a vibrant forest bioeconomy and will discuss the challenges which we must overcome.





**Prof. Pekka Leskinen**  
*Head of Bioeconomy Programme,  
European Forest Institute.*

Pekka Leskinen is Head of the Bioeconomy Programme and Professor at the European Forest Institute (EFI). Among others, the Bioeconomy Programme will advance knowledge on sustainable bioeconomy and bioeconomy markets. Prof. Leskinen has broad research experience in the fields of sustainable use of natural resources, life cycle assessment and multi-criteria decision analysis. Before EFI, he has worked as a Research Professor at the Finnish Environment Institute, and for joint professor position of Finnish Environment Institute and University of Eastern Finland, School of Forest Sciences.

## RECOGNISING THE ROLE OF FORESTS IN A SUSTAINABLE EUROPEAN BIOECONOMY IS FUNDAMENTAL

### Aim

This presentation aims to reflect and discuss the transformational role of a sustainable bioeconomy and European forests in responding to global challenges such as climate change mitigation by moving from the existing linear fossil-based economy towards a climate-smart circular bioeconomy that prospers within the planetary boundaries. The presentation will end by reflecting on the new European Forest Institute’s (EFI) strategy aiming at connecting scientific knowledge to action around a new thematic framework related to bioeconomy, governance and resilience, and establishing new structures and instruments for its implementation such as research programmes, policy support measures, network funding, and capacity building.

### Background

For the last 200 years we have relied on a fossil-based economy that has enabled huge economic growth, population growth, technological development and social prosperity. However, at the same time this fossil-based economy has also created major environmental challenges such as overconsumption of natural resources, global warming and biodiversity loss. These major threats have also negative effects on other globally important issues such as food and water security, poverty, migration and human health. Currently, we need urgent transformation of our fossil-based economy to enable sustainable development for our future generations. We need to move from a linear, fossil-based economy towards a circular, bio-based economy.

### European forests

At the same time with major scale global challenges, we have good possibilities to tackle the global problems. The forest sector and European forests can be central to this transformation. Among other things, the European forests are our most important biological infrastructure, playing a key role in the resilience of our continent, regions and cities. But our forests have other significant roles as well. They are a source of biological, renewable resources that can be utilized to mitigate climate change as carbon sinks, but at the same time to substitute fossil-based products in wood construction, textile industries, and plastics industries, for example.

With recent advances in science and technology, forest resources can be transformed into materials as soft as cotton or as resistant as steel. New bio-based solutions and innovations provide new, major scale opportunities to replace fossil-based and non-renewable raw materials and products. Our forest resources are crucial to building a climate-smart and resilient society that prospers within a circular bioeconomy.



**Kenny McCauley**  
*McCauley Wood Fuels Ltd.*

Kenny McCauley started a wood fuel supply business with his father Brian on their family farm in 2007, producing firewood for the local domestic solid fuel market. This operation has since been developed to being capable of supplying large volumes of wood chip for commercial and industrial biomass heating. A Mechanical Engineering graduate of Dublin Institute of Technology, Kenny sees wood energy as the crossover between his interests in local development, agriculture, forest products and engineering. Kenny is an active supporter of the forestry, forest products and wood energy sector. He is a member of the Institute of Engineers of Ireland, a member of Irish BioEnergy Association (IrBEA) and sits on the oversight committee for the Wood Fuel Quality Assurance scheme.

*The newly installed Keslan C645T-2 chipper at McCauley Wood Fuels Ltd., Mohill, Co. Leitrim providing wood chips to local enterprises such as Arigna Fuels, Masonite, piggeries, nursing homes, leisure centres and other businesses which have converted to renewable energy.*

## CONVERTING FROM BLACK TO GREEN ENERGY The importance of localised wood energy solutions

McCauley Wood Fuels is a family-run business. We started out in wood fuels in 2007, producing firewood in the winter months for the local domestic solid fuel market. We saw the new venture as an opportunity to complement our existing landscaping business, levelling a variable incoming workload and utilising existing equipment and labour.

With on-going investment in specialist machines to increase capacity and improve the quality of the supply chain, the operation has continued to develop to where we can now process and supply large volumes of wood chip for commercial and industrial biomass users.

From our site located near Mohill in Co. Leitrim, we produce firewood logs and wood chip, certified under the Wood Fuel Quality Assurance scheme, for the North-West & Midlands of Ireland. Our customer base ranges from the small scale domestic users with small solid fuel stoves to larger commercial and industrial users such as hotels, leisure centres and processing plants.

There are currently two full-time and two part-time personnel directly involved in our operation, however, much of the activity is subcontracted out. For example, as transport of the material is one of the larger tasks, the services of four haulage subcontractors are used, depending on delivery type and location of supplier or customer.

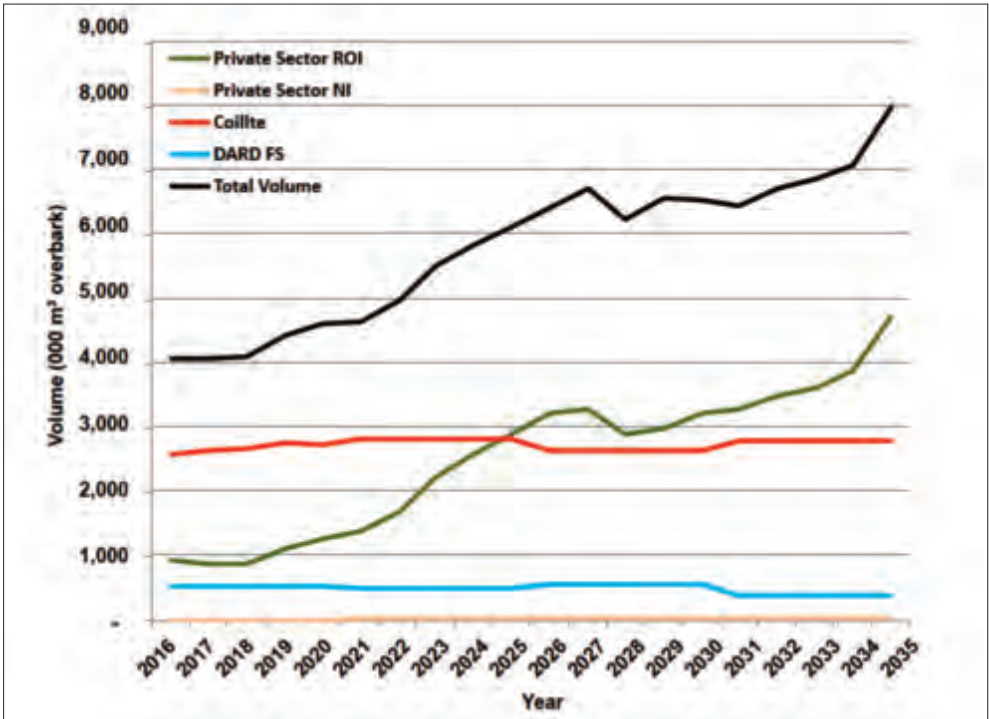


We have noticed growing interest in the biomass and wood energy sector in recent years and believe that there is a lot of potential for wood energy to contribute towards meeting our renewable energy targets and climate change commitments. While there has been considerable stagnation in developments in the sector, hindered by recession and more recently by holding off in anticipation of the renewable heat incentive, once the incentive is in place, it is hoped to create a surge in wood fuel installations.



In Ireland we have a long tradition of burning solid fuels such as peat, but we are still relatively new to wood fuel technologies and in a lot of senses, are effectively first generation users of wood fuel. This creates many challenges in developing a wood fuel industry in Ireland. One of the main challenges being for end users to access reliable supply chains that provide wood fuel of sufficient quality to meet their needs. With wood production forecast to double to eight million cubic metres by 2035, (Figure 1), Ireland will have an ample supply of raw material for sawmilling, panel board production and energy.

Figure 1: Timber production forecast for the island of Ireland (2016-2035).



While there may be substantial forest resources in some regions and certainly significant potential for forestry, there still needs to be plenty of development and a deeper understanding of wood fuel supply chains to ensure a robust wood fuel supply network in Ireland.

Wood biomass is essentially a localised renewable energy source with major benefits for regions such as Leitrim, where we see huge promise in terms of biomass and wood fuel supply. Apart from just a suitability for forestry, factors such as access to mains gas network come into play and have a major bearing on the success of biomass.

The wood fuel processor forms an important part of the supply chain between the forestry sector and the wood fuel customer; they are primarily responsible for the quality of the wood fuel through their stock management, processing methods and quality control measures. This heavily dictates the resulting level of reliability of the wood fuel system for the end user, which in itself will ultimately dictate the level of successful deployment of a wood fuel industry in Ireland.



National Forestry Conference 2018  
SESSION 2

Chaired by: Dr. Sandra O'Connell

*Editor and RIAI Director of Communications*

Substituting wood for non-renewable building materials that consume large amounts of energy derived from fossil fuels offers a viable strategy for mitigating climate change – Karen McEvoy. Our goal is to bring the timber back into the European city centres, where it was dislodged in the middle ages – Markus Lager. The finite nature of fossil resources combined with their contribution to greenhouse gases means that society needs to go back to nature and apply modern thinking ... to innovate for the substitution of existing products and the creation of new products – Kevin O'Connor. Further to the growing awareness of creating more energy efficient sustainable buildings, attention has now turned to reducing their embodied energy...

Dr. Sandra O'Connell is Director of Communications at RIAI and Editor of its magazines *Architecture Ireland* and *house + design*. She has edited seven volumes of *The RIAI Annual Review* and is currently co-editing a new book on Dublin's urban design history. Sandra is a regular contributor to the *Irish Arts Review* and to the Austrian architecture magazine, *Architektur Aktuell*. She curated the inaugural Open House Dublin weekend for the Irish Architecture Foundation in 2006 and five further editions. She is a founding board member of Dublin's architecture gallery *darc space* and a jury member of the WMF Wood Awards Ireland. Together with Irish architect Angela Brady, Sandra co-wrote and co-presented the landmark RTE TV series *Designing Ireland*.





**Karen McEvoy**  
*Director, Bucholz McEvoy Architects*

Karen McEvoy (B.Arch. MRIAI, AIA) is a Director of Bucholz McEvoy Architects in Dublin, Ireland. Having studied Architecture at University College Dublin, Karen worked in New York, Paris and London before returning to Dublin in 1996 where she co-founded Bucholz McEvoy Architects with Merritt Bucholz (following a competition win for the design of Fingal County Council's HQ). The design-led practice has completed award-winning projects of various scales, in Ireland and elsewhere, employing an integrated user-focused design approach. With an emphasis on site specific, environmentally attuned, sustainable design solutions and high quality craftsmanship, the practice increasingly seeks to celebrate the character and properties of wood, and the unique tectonic language it offers.

## EXTENDING THE LIFE OF WOOD

### Exploring recent developments in the use of timber in architectural design.

Timber is a light, versatile, renewable and beautiful material with which to design and build - a material that offers rich complexity and diversity, echoing the interdependent patterns of Nature. Architectural applications of timber have traditionally sought to benefit from the unique qualities, characteristics and properties of different species (acoustical qualities, lightness, tactility etc), creating more humane, carefully crafted, healthy internal environments benefitting from the warmth, colour and aroma of this living material.

The availability of sustainably grown local hardwood species (oak, beech, walnut, sycamore, ash etc) for interior fittings, furniture and other applications offers architects and designers the advantage of locally grown and contextually attuned materials with which to work. However further to the emergence of mass-produced building components made of steel, concrete, glass during the 20th century, the use of wood for larger scale construction elements was marginalized. relegated mostly to domestic applications. Recently, fast growing interest globally in the use of timber in construction is due partly to the potential for timber to simultaneously address larger challenges – Climate Change and the need for Densification of our Cities to accommodate growing populations in sustainable ways.

The advantages of the increased use of timber are many – from mitigating climate change, to cleaner, safer construction sites and higher quality control due to state of the art manufacturing techniques to which timber lends itself. Further to the growing awareness of the impact of construction on the global environment, and the creation of more energy efficient buildings, attention has turned to reducing the embodied energy of buildings, since it makes up a considerable portion of the building's total energy over its life cycle.

Substituting wood for non-renewable building materials that consume large amounts of energy derived from fossil fuels offers a viable strategy for mitigating climate change - as timber sequesters atmospheric carbon for generations to come, it is also being sought due to the increasing demand for buildings to meet requirements of environmental certification systems (LEED etc) for which locally harvested wood from sustainably managed forests is sought, in turn offering support to local economies.

Innovations in timber design leading to the emergence of engineered wood products, reducing the variability associated with sawn lumber (Glue Laminated Timber, Laminated Veneer Lumber, Laminated Strand Lumber, Parallel Strand Lumber, etc) have facilitated the use of timber in large scale framed structures.

More recent developments include the emergence of contemporary mass timber construction, an entirely new form of building system - individual wood members are combined to fulfill both load-bearing and spatial enclosure requirements, for the construction of walls, floors and roofs, often in combination with other materials in hybrid construction. Solid timber components exhibit exceptional strength and with the benefits of industrialized manufacturing methods, high levels of prefabrication and rapid on-site assembly are becoming increasingly cost effective.



*CLT was the main engineered wood used by Bucholz McEvoy Architects in the winning entries for the 2014 and 2016 Wood Awards Ireland in Ballyogan Maintenance Centre and Samuel Beckett Timber Civic Campus (above) in south County Dublin.*

Multiple ply panels consist of timber members that are glued, dowelled or nailed together yielding products that include cross-laminated timber (CLT), dowel-laminated timber (DLT) and nail-laminated timber (NLT). Architecturally these products offer the potential to expose the structural wood material as a finish in the interior spaces, resulting in a unique spatial quality and more efficient use of materials. CLT in particular is emerging as an important material partly due to its potential in urban infill and mid-rise construction.

The main species used in engineered wood cross laminated timber (CLT) construction in Europe is Norway spruce while Douglas fir is the most prominent species in western North America including Oregon and Washington in the US and British Columbia in Canada.

Both species grow well in Ireland on suitable sites while Sitka spruce Ireland's most widely planted softwood has potential for CLT. Dr. Annette Harte, Senior Lecturer, Dept. of Civil Engineering, NUI Galway says: The Timber Engineering Research Group at NUIG has examined the feasibility of producing CLT from Irish-grown timber under two Department of Agriculture, Food and the Marine – funded projects. In the project "Innovation in Irish timber Usage", the potential to use Irish-grown Sitka spruce in the manufacture of CLT panels was demonstrated. Further testing carried out in the recently-completed project "Commercialisation of Irish Cross Laminated Timber" has led to the establishment of design values of the structural properties of these panels. The DAFM-funded "WoodProps" Programme at NUI Galway is now focussed on industry engagement and dissemination of expertise related to the use of mass-timber engineered wood products in modern timber construction. ([www.nuigalway.ie/terg](http://www.nuigalway.ie/terg)).

Ireland needs to look at a focused broadleaf planting programme to produce a sustainable hardwood industry in the future. Since the demise of ash due to the ash dieback disease, species such as native oak, alder and birch along with European naturalised species such as beech, sweet chestnut and sycamore have merit in Ireland and are species that architects here are familiar with.

NUI Galway and Teagasc are investigating the structural properties of a range of Irish hardwood species in the project 'Exploitation and Realisation of Thinnings from Hardwoods (EARTH)'.



*Meath County Council Headquarters, designed by Bucholz McEvoy Architects. Meeting space and hub between offices and public meeting rooms featuring chestnut staircase with birch ply balustrade and walnut handrail, Douglas fir floor with inlaid walnut parquet, oak bench and oak slatted table with Connemara marble worktop.*





**Markus Lager**

*Partner, Kaden + Lager Architects, Berlin.*

Kaden + Lager, headed by Tom Kaden and Markus Lager, is widely regarded as one of Germany's foremost innovative architectural practices especially in the area of providing innovative timber housing solutions. Berlin based, Markus specialises in sustainable buildings in engineered wood and has designed several timber and timber hybrid buildings. The practice also designs hotels and offices. Markus is currently involved in designing a 10-storey building in cross-laminated timber (CLT) from PEFC-certified spruce. Falk Jaeger described Kaden + Lager as architects whose "interest lies in the pragmatic plus-points of [timber] construction material, in precise pre-fabrication and short construction times, healthy building climate control and sustainable, ecologically responsible modes of construction".

*Kaden + Lager projects, Germany: 10-storey building in cross-laminated timber (CLT) in Heilbronn, Germany by Kaden + Lager (opposite) was constructed in certified PEFC Norway spruce and pavilion design proposal for German forest office – garden exhibition, Landesgartenschau Bad Lippspring (right).*

## TIMBER CITIES

### The role of wood in sustainable high rise buildings

We are architects. Our goal is to bring the timber back into the European city centres, where it was dislodged in the middle ages. We mostly work on housing projects, further on educational buildings. Many of our houses are kept as science projects because of their advanced level of timber construction, which is not common in most areas. First of all, housing projects are a political issue. In Germany and mainly Europe we will need a lot of flats in the next years.

The goal of our clients has a huge impact on the social quality and the sustainability of the project: Do they want to earn money by selling flats. Usually yes. What might be their first premise? Of course, everything has to be as cheap as possible! This should not be the one and only way of thinking.

We did a lot of housing designs for so-called cohousing - groups. Cohousing - groups build their own house to live in. So we had to develop many different flats, sometimes more than 30 floor plans for one project. This is an interesting way of doing architecture and even city planning, but it serves other problems [we will talk about]. Nowadays, we often work for cooperatives. They are stake holder and user without owning single flats. That brings lots of advantages. We always watch out for interesting ways to develop mixed project and ownership structures because it usually makes the projects more interesting.

We are concentrated on timber construction. We think and design in timber because of many advantages of the material. Some of those are already shown in the agenda of the conference. But except the ecologic points we set the focus on the architectural ones: There is the prefabrication, which grants a very high precision on construction site. Further the time on site is decreased a lot. Whole buildings could be set up during a few weeks. That decreases noise, dirt and even traffic on site, so in the inner cities. Workers could do their job in better conditions than in cold and rainy days. And the surfaces people live in are a special treat. We keep the idea of timber buildings as a better way to build houses. We think it is the only field on site deserving the title "building – industry". We are searching for ways to get simple, low-tech, comfortable and nice buildings.







**Prof. Kevin O'Connor**  
School Of Biomolecular & Biomedical  
Science in University College Dublin,  
founder and CEO of Bioplastech.

Kevin O'Connor is director of BEACON SFI bioeconomy research centre, a principal investigator in the UCD Earth Institute and a member of the School of Biomolecular and Biomedical Science at UCD. He is chairperson of the scientific committee for the public private partnership Biobased Industries Joint Undertaking (BBIJU) and a member of the EC biobased products expert group. His research interests are integrated biorefining, biobased chemicals, biodegradable polymers, biocatalysis and protein engineering. Professor O'Connor was the driver behind the development of the rural Bioeconomy campus at Lisheen, Co. Tipperary and the Irish EU Model demonstrator region for the sustainable production of chemicals. He is the founder of two UCD campus companies – Bioplastech and Nova Mentis.

## RESEARCH AND INNOVATION IN THE BIOECONOMY

### An opportunity for value creation in Ireland

The modern world is dependent upon fossil resources to produce everyday items that we consume. Since these resources are finite and depleting we need to develop alternative technologies based on biological resources. We need to build an economy that uses these biological resources sustainably (a bioeconomy) for the production of valuable goods (bioactive molecules, building block chemicals, plastics, fuels, and energy).

The European Bioeconomy strategy published in 2012 seeks solutions so that Europeans are more efficient with the resources we already use and to use well what we don't already use. Forestry, agriculture and the marine were the three biomass pillars in the original vision for the bioeconomy. However the use of wastes has become increasingly important. The processing of these natural materials gives rise to high quality products for human use and consumption. Residues from processing also arise and the conversion of these residues to higher value products will contribute to a more resource efficient world, will create new business opportunities and new value chains.

Partnership through national and international initiatives is critical for knowledge creation and sharing and building new business opportunities. One major initiative is the biobased industries joint undertaking (BBIJU), a public private partnership between a biobased industries consortium (BIC) and the European Commission. BIC and the EC have set out a strategic innovation and research agenda (SIRA) to address the challenges for development and industrial implementation of biobased industrial processes. The SIRA addresses four major strategic orientations (biomass, processing technologies, products and market) which are addressed in the BBIJU multi-billion Euro funding programme. BBIJU funds early stage research and innovation actions (RIAs), pilot and demonstration scale activities as well as flagship biorefinery activities.

The bioeconomy is an opportunity for agri-food, forestry and the marine in Ireland. It is also an opportunity for primary producers of biomass to create value and contribute to rural development. However, this will require education, training, and investment in research, innovation and infrastructure.

*The bioeconomy is thousands of years old (forestry, agriculture, marine) but has been largely overtaken by the fossil economy as a source of materials, chemicals, fuels and energy for society. However, the finite nature of fossil resources combined with their contribution to greenhouse gases means that society needs to go back to nature and apply modern thinking, research, and technology, to innovate for the substitution of existing products and the creation of new products. The challenge of developing a new bioeconomy is great but the rewards are equally so.*

Summary of proposals in *Growing the Irish Forest Bioeconomy*, published by COFORD, Department of Agriculture, Food and the Marine, Agriculture House, Kildare Street, Dublin 2, Ireland (2017).

## 12 PROPOSALS FOR GROWING A VIBRANT FOREST BIOECONOMY IN IRELAND

1. Position forestry as a central pillar of Ireland's National Policy on the Bioeconomy
2. Embed the cascade use principle for wood resource management and planning in national policy
3. Develop an integrated carbon and land-use policy that recognises the significant sequestration and storage potential of the forest sector in Ireland
4. Ensure a long-term, consistent and growing supply of roundwood to the processing industry by supporting and investing in the national afforestation programme
5. Urgently address constraints on the productive capacity of the existing forest estate and barriers to wood mobilisation
6. Develop mechanisms to promote the use of low carbon building materials and adopt a strong 'wood first' public sector procurement policy
7. Review national building standards to support and promote the use of wood as a construction material
8. Support and promote the innovative use of wood products in construction such as cross laminated timber through research, training and professional development
9. Establish a well-resourced forest bioeconomy centre of excellence in Ireland and increase public and private investment in forest bioeconomy research
10. Develop and implement payment for ecosystem services (PES) forestry schemes to support the provision of green infrastructure
11. Develop and implement a plan to improve the overall resilience of the national forest estate and mitigate against the biotic and abiotic risks associated with climate change
12. Promote a deeper understanding of the economic, social and environmental benefits of the forest sector among the general public through a well-resourced and sustained communications campaign



# Information: Wood Marketing Federation and Society of Irish Foresters



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 and a twice yearly newsletter, 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 almost 700 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

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## 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

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