

# Community:

Building local loops of demand  
and supply in the wood heat market



McCauley Wood Fuels | Kenny McCauley



# Presentation Outline

---

1. Introduction
2. Where We Started
3. Our Current Operation
4. Typical Biomass Systems We Serve
5. Wood Fuel Quality Assurance Scheme (WFQA)
6. Forest Resource in Ireland & Community



# McCauley Wood Fuels

---

We are a wood fuel supply business, based near Mohill, Co. Leitrim.

We produce dried WFQA certified wood fuels for the North-West & Midlands of Ireland.

Our customer base ranges from domestic households to large commercial and industrial users.





# Where We Started

---

2007 – Firewood processing started as a means to complement and diversify our existing landscaping business.

To us, it was a case of how to best utilise the resources that we already had.





# Where We Started

---

2009 – With the aid of Leader funding, we invested in a small wood chipping machine specifically capable of producing a wood chip for biomass boilers.





# Diversification

---

2011 – Diversification of farm;  
planting 30% with Birch and Alder,  
which will eventually feed into our  
wood fuel supply business.





# Firewood

- Seasoned firewood logs for the domestic solid fuel market.
- Pulpwood sourced locally and air-dried for 12-18 months.
- Processed logs are then sold in a variety of forms; net bags, bulk bags and bulk loads.
- WFQA certified.





# Wood Chip

- WFQA certified wood chip for larger biomass users.
- Can produce to a wide range of particle sizes and moisture classes according to end user requirements.

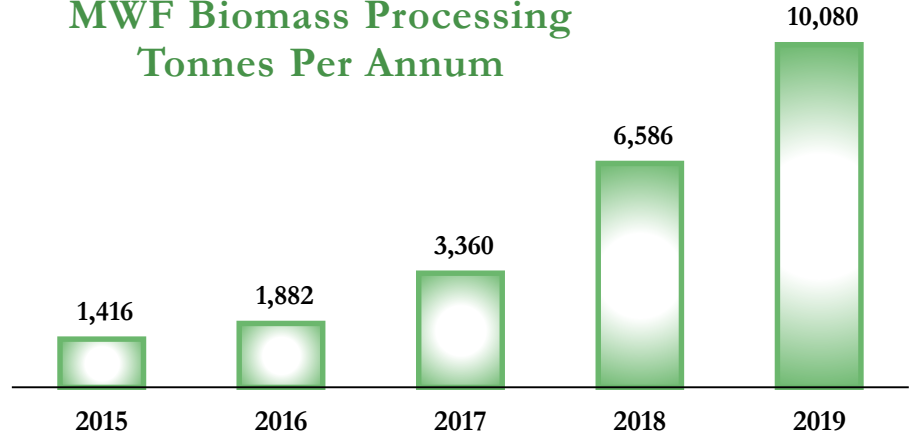




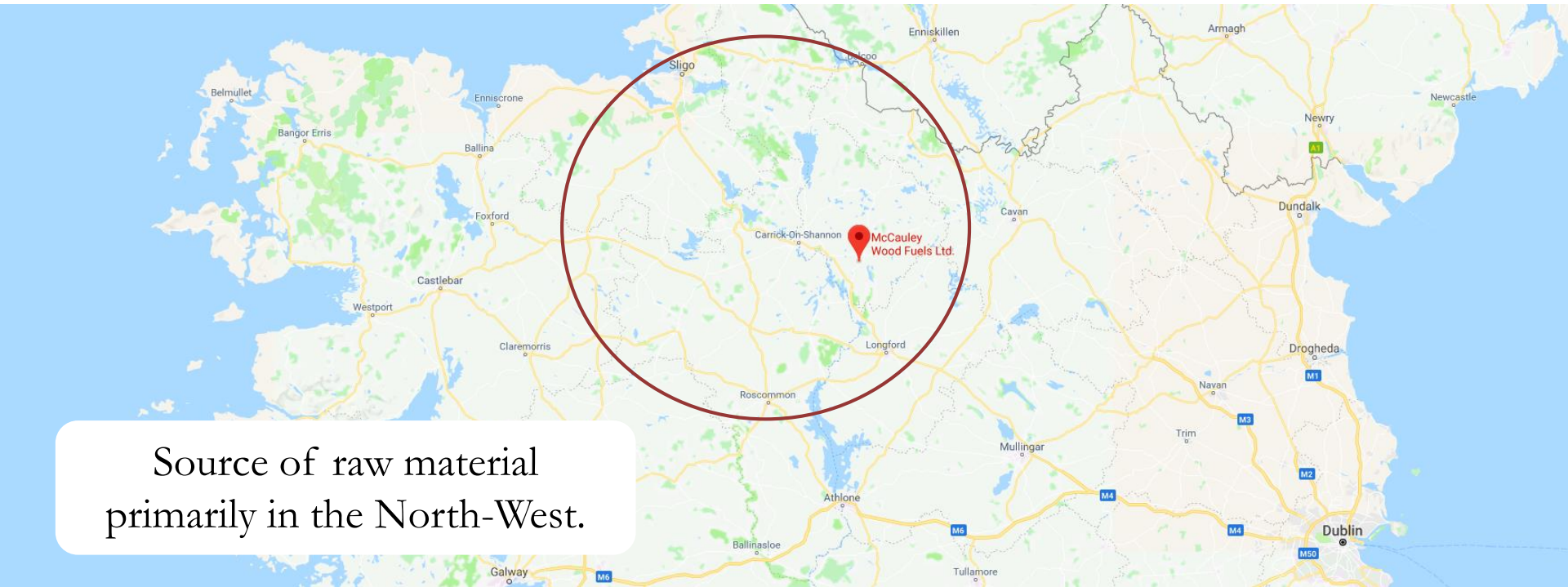
# Wood Chip

- 2019 processed over 10,000 tonnes.
- Current capacity to enable us process up to 40,000 tonnes.

MWF Biomass Processing  
Tonnes Per Annum



# Source of Raw Material

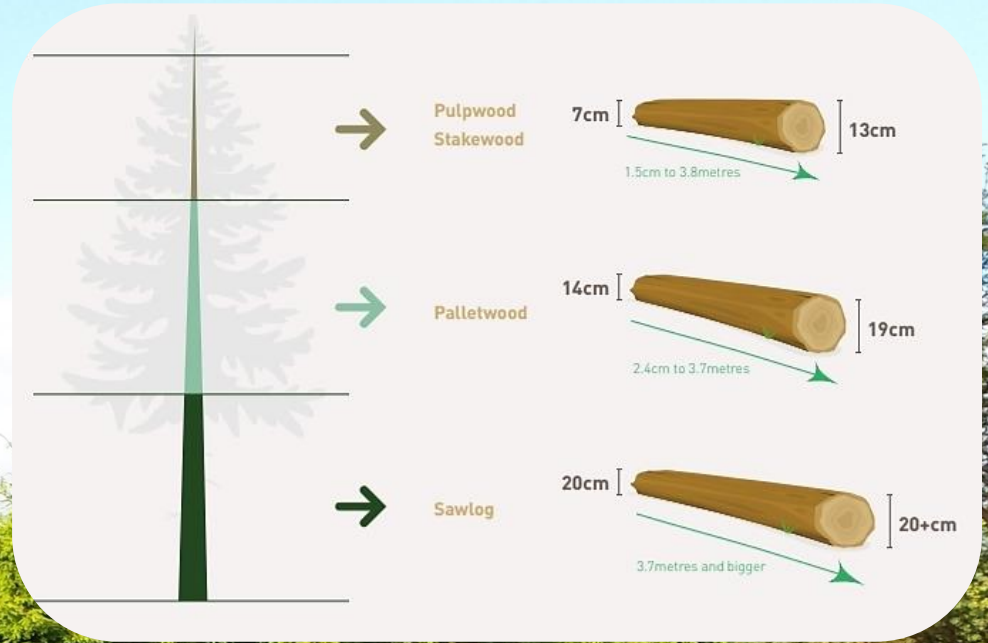


Source of raw material  
primarily in the North-West.



# Source of Raw Material

Pulpwood from local forests.





# Source of Raw Material

---

## Variety of sources:

Not limited to species or form,  
can include brash or slabs.





# Source of Raw Material

---

Local haulage contractors collect pulpwood at roadside in forests, transport to our site where it is offloaded.





# Log Storage



Incoming trucks offload pulpwood in designated stacks according to processing rota.

# Log Drying



Pulpwood is stacked to allow air drying until desired moisture content is achieved.



# Log Drying

---



**Allow for sufficient ventilation.**





# Chipping

---

350hp chipper, chipping directly from storage stacks.





# Chipping

---

350hp chipper, chipping directly from storage stacks.





# Chipping

350hp chipper, chipping directly from storage stacks.





# Chipping

---

350hp chipper, chipping directly from storage stacks.





# Loading

---



Wood chip loaded from  
stockpile into delivery trailer.



# Loading



Wood chip loaded from  
stockpile into delivery trailer.



# Chipping

---

Carry out wood chipping at the forest site and delivered direct to customer, where suitable or required.



# Transport

---

A variety of delivery methods and quantities are possible to suit individual customer needs or site constraints.





# Delivery

---

Wood chip is delivered to site and conveyed into the fuel store by means appropriate to the site and customer requirements.





# End Users



End users predominantly  
in the North-West region.



# Mains Gas

- No mains gas in the North-West.
- Potentially a reason for industries to discount North-West region.
- A well developed biomass industry and supply network could fill this void, acting as an attraction for other industries to establish in this region.



Gas  
Networks  
Ireland

## Pipeline Map





# Wood Chip Systems

---

Typical users:

- Process heating
- Agricultural industry
- Hospital/Care home
- Leisure centres





# Wood Chip Systems

---

Agricultural site, Co. Mayo

- 300kW Fröling system installed by Biomass Engineering
- Annual biomass consumption 490,000kWh





# Wood Chip Systems

Agricultural site, Co. Mayo

- SSRH income €22,718 pa
- Estimated annual fuel saving €9,300 based on existing oil cost
- CO<sup>2</sup> annual saving = 122 tonnes





# Wood Chip Systems

---

Agricultural site, Co. Monaghan

- 400kW Fröling system installed by Biomass Engineering
- Annual biomass consumption 596,000kWh





# Wood Chip Systems

Agricultural site, Co. Monaghan

- SSRH income €25,920 pa
- Estimated annual fuel saving €7,750 based on existing gas cost
- CO<sup>2</sup> annual saving = 149 tonnes





# Wood Chip Systems

## Large industrial sites

- 1-30MW
- Larger volumes
- Higher moisture class material
- Larger particle sizing





# Wood Chip Systems

---

Power gen sites – Dispatchable on-demand power

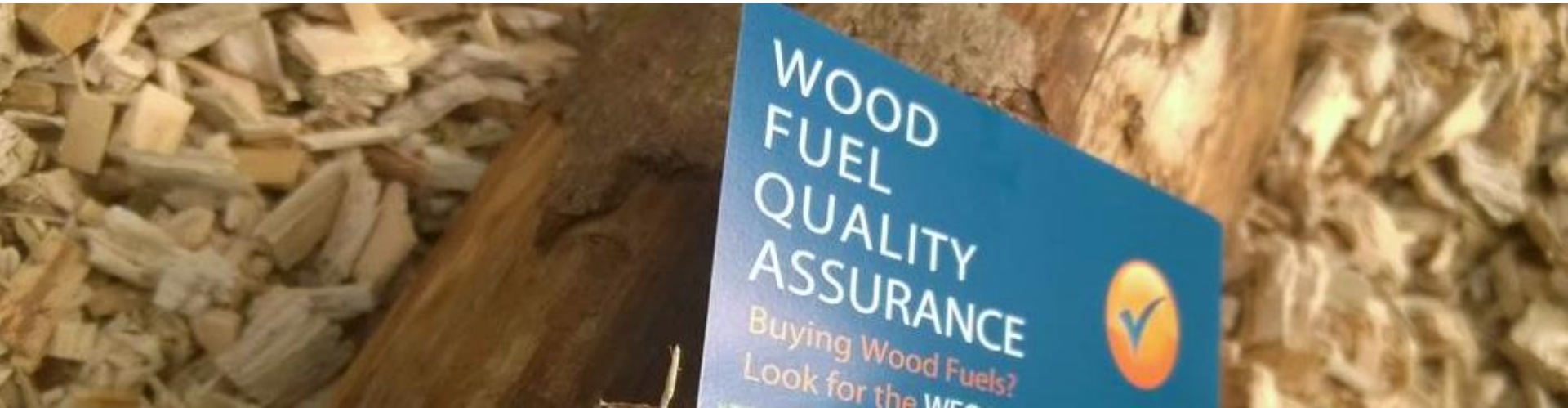




# Wood Fuel Quality Assurance

---

- Irish certification scheme for wood fuels.
- Industry-led working group of consumer representatives.
- Covers wood fuels under (EN) ISO 17225:2014 – Solid Biofuels.
- McCauley Wood Fuels certified since 2013.





# Wood Fuel Quality Assurance

## Moisture content

- ✓ Sample weighed and recorded
- ✓ Sample placed in oven at 105°C for 8 hours
- ✓ Sample then re-weighed
- ✓ Moisture content calculated based on weight loss

## Particle sizing

- ✓ Sample passed through sieves of given sizes
- ✓ Portions collected in each sieve weighted
- ✓ Weights expressed as a percentage of total weight



Collection sieves: 3.15mm, 16mm, 31.5mm, 45mm





# Wood Fuel Quality Assurance

---

## Quality standards and sustainability

- Material sources
- Chain of custody
- Boiler reliability and efficiency
- Air emission control
- Consumer confidence
- Standardisation aids trading

## Wood Chip (EN ISO 17225-4)

- Size profile
- Moisture





# Forest Resource

11% forest cover in ROI

- EU is approx. 40%

Ownership is 53% state

- EU average is 40%

Forests are mainly coniferous

- 69% conifer
- 17% broadleaf
- Mixed forests making up the balance

Net Realisable Volume  $\geq 7$  cm (000 m<sup>3</sup> overbark) - All Species (2016 - 2035)

Private Forest

Coillte Forest/DARD NI Forest

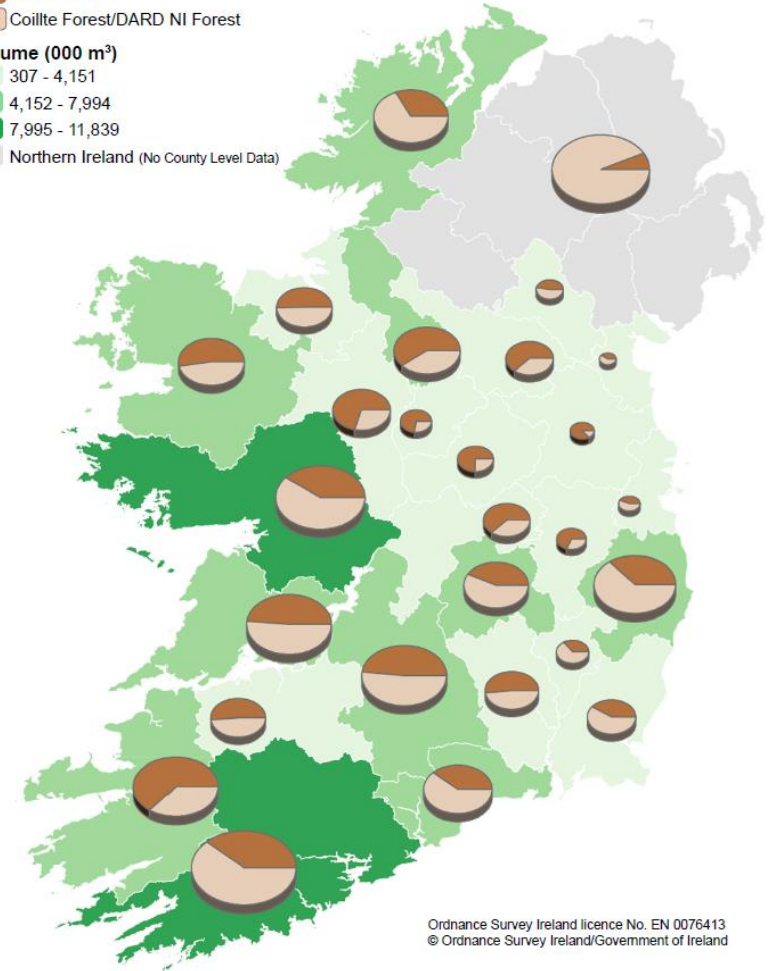
Volume (000 m<sup>3</sup>)

307 - 4,151

4,152 - 7,994

7,995 - 11,839

Northern Ireland (No County Level Data)



Ordnance Survey Ireland licence No. EN 0076413  
© Ordnance Survey Ireland/Government of Ireland



# Forest Resource

11% forest cover in ROI

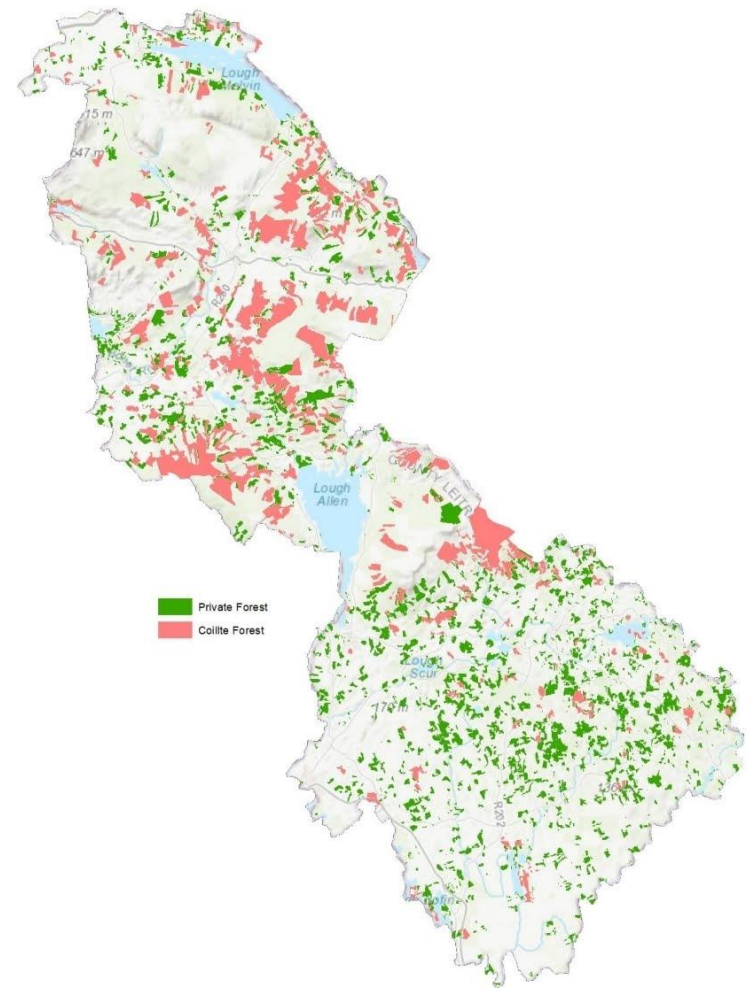
- EU is approx. 40%

Ownership is 53% state

- EU average is 40%

Forests are mainly coniferous

- 69% conifer
- 17% broadleaf
- Mixed forests making up the balance



**Figure 4: Distribution of forest in Co. Leitrim**

Source: Forest Service and DAFM statistics provided to the study

# Forest Resource | Community

In 2017:

- 151.3 full-time equivalent jobs generated in Leitrim as a result of forestry activity.
- A further 158 full-time equivalent jobs were generated in wood processing.
- Economic activity of forestry in Leitrim was estimated to be €26.5m.

**Table 29: Percentage of farms where the return from Forestry would be higher than from Agriculture, by Farm System, for all counties**

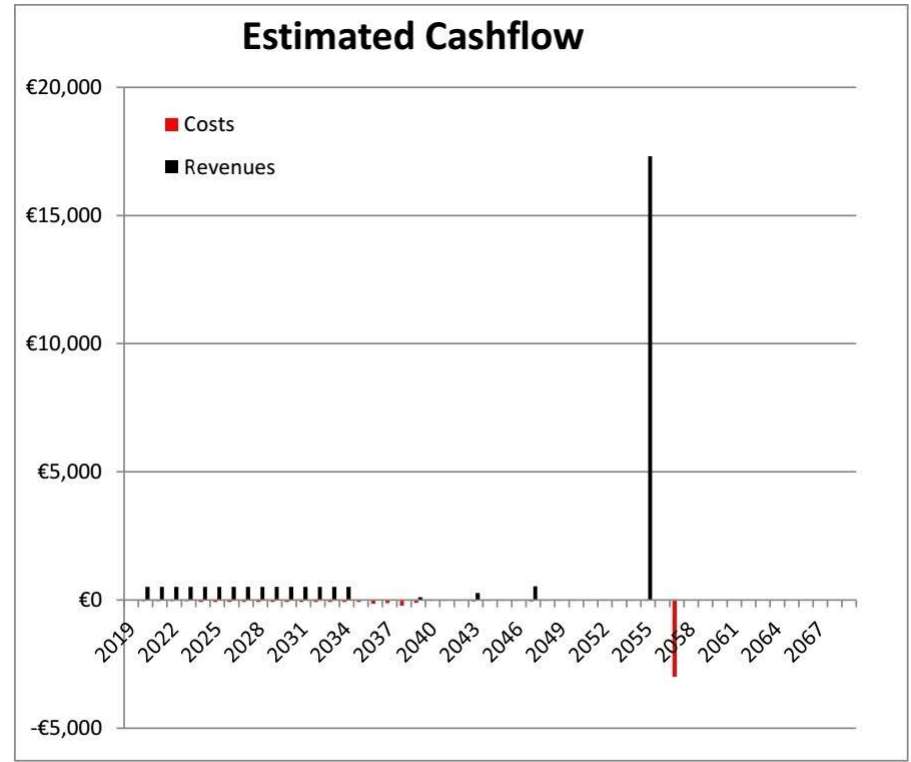
County	%	County	%	County	%	County	%
Carlow	39.6	Kerry	48.1	Louth	34.2	Waterford	35.6
Cavan	49.3	Kildare	46.9	Mayo	51.6	Westmeath	53.3
Clare	59.0	Kilkenny	37.5	Meath	43.1	Wexford	30.7
Cork	36.5	Laois	40.2	Monaghan	39.9	Wicklow	49.0
Donegal	50.0	Leitrim	67.1	Roscommon	62.2		
Dublin	42.2	Limerick	43.1	Sligo	59.6		
Galway	52.9	Longford	57.7	Tipperary	40.5		

Source: SMILE-Env



# Forest Resource | Community

- Biomass supply chains are part of a healthy forest industry.
- Biomass provides a market for lower grade material and an added justification for better management practices.
- Leading to a greater return from final clearfelling and revenues feeding into rural communities.



**Figure 9: Cash-flow from scenario 1**

Source: FIVE

# Forest Resource | Community

---

- Considering the costs vs. benefits of biomass processing.
- 1 articulated truck load, equivalent to  $\sim 10,000$  litres of oil.
- Chipped in  $\sim 30$  mins, consuming  $\sim 25$  litres of diesel.
- So for an input of 25 litres, getting enough to displace 10,000 litres.





# Forest Resource | Community

---

- Displacement of up to 150,000 litres of oil per week.
- Sufficient biomass processed in 2018 to heat the equivalent of  $\sim 10\%$  of the households in Leitrim.
- Current capacity will allow us to at least double our output.



# Forest Resource | Community

---

- Current headlines:
  - Industry (FII) urging Political parties to utilise ‘biggest weapon to tackle climate change’.
  - Farmer planting drops by 67% under forestry programme.
- Forest industry is in crisis – Mobilisation of material a serious impediment.



Thank you



**W:** [facebook.com/McCauleyWoodFuels](https://facebook.com/McCauleyWoodFuels)

**E:** [McCauleyWoodFuels@gmail.com](mailto:McCauleyWoodFuels@gmail.com)

**M:** +353 86 163 1628



# Appendix.

