

# Bittern Countryside

Community Interest Company



## Energy Fact Sheet 3.

# *“Woodfuel Wisdom”*

Buying, storing and using wood

**New for 2021**

Save energy,

Cut your carbon footprint,

Save the environment!



Supporting the

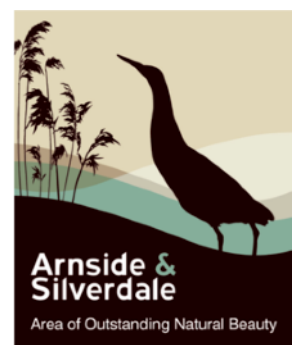
**Arnside Silverdale AONB**

Low Carbon Landscape Initiative

Bittern Countryside Community Interest Company  
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Registered number 6363720

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Website: <http://www.bitterncountrysidecic.org.uk>



## **Introduction**

This is the third in a series\* of leaflets prepared by the Bittern Countryside CIC to help you understand renewable energy and see how it can reduce your carbon emissions and may save you money on your energy bills too.

## **Why burn wood?**

Wood is a clean, low carbon renewable energy source which offers many benefits.

## **What about pollution from particulates?**

In a rural area these are not likely to be a problem if you use your stove responsibly. Many activities from making toast to vacuuming give off particulates. A good discussion of this can be found on the Which website at <https://www.which.co.uk/reviews/wood-burning-stoves/article/wood-burning-stoves-what-you-need-to-know/stoves-and-pollution-a1PXC8g7Ibu5>

## **Saving money**

Locally bought woodfuel can be cheaper than fossil fuels when replacing electric, LPG, coal or heating oil. Used in a woodburning stove it can provide an alternative, competitively priced source of heat. Even for those who rely on mains gas for central heating, a woodburning stove will provide emergency heating and possibly cooking facilities if the main energy supplies are disrupted. If you collect your own when volunteering it is free. For volunteering opportunities look at the AONB website at <https://www.arnsidesilverdaleaonb.org.uk/get-involved/volunteer/> .

## **Saving carbon dioxide (CO<sup>2</sup>)**

Burning wood releases carbon dioxide but this is balanced by the carbon dioxide absorbed by the original trees and in the growth of new ones. The biggest savings of carbon dioxide occur when wood replaces carbon-intensive fossil fuels, especially in areas that are not on mains gas. This is not true when burning peat. Burning peat is as bad if not worse than burning coal. Our peat bogs are huge carbon sinks and when the moss is growing can store away even more CO<sup>2</sup>. Taking the peat for fuel or horticulture kills the moss making it impossible for the bog to capture any more carbon.

## **Providing local jobs**

The development of a robust woodfuel supply chain requires a skilled work force. Rapid uptake of renewable heating will contribute towards creating green jobs and the active management of woodlands presents significant opportunities for farm and rural diversification. We live in an area that is blessed with woodland that, if sympathetically managed, can provide woodfuel as well as benefit the landscape.

## Encouraging wildlife

Bringing woodlands back into management, as the market for wood heat expands, has a positive impact on wildlife. Opening up space allows sunlight in, which enables a wider range of plants, insects and animals to live in the woodland.

## Recycling and avoiding waste

Wood that could otherwise end up as waste can be used to provide energy. Twigs from the garden, if stored for a year, can be used for kindling as can offcuts from joinery. Logs from tree surgery can be stored for a couple of years and then burned. Any reputable tree surgeon will cut the logs into lengths for you and may even split them. Sawdust can be made into briquettes commercially. Newspaper can be made into logs. Do **NOT** use painted or treated wood or any form of chipboard. Driftwood from the beach should **never** be burned in a fire because the high salt content will damage the metal and glass of the stove as well as the chimney liner.

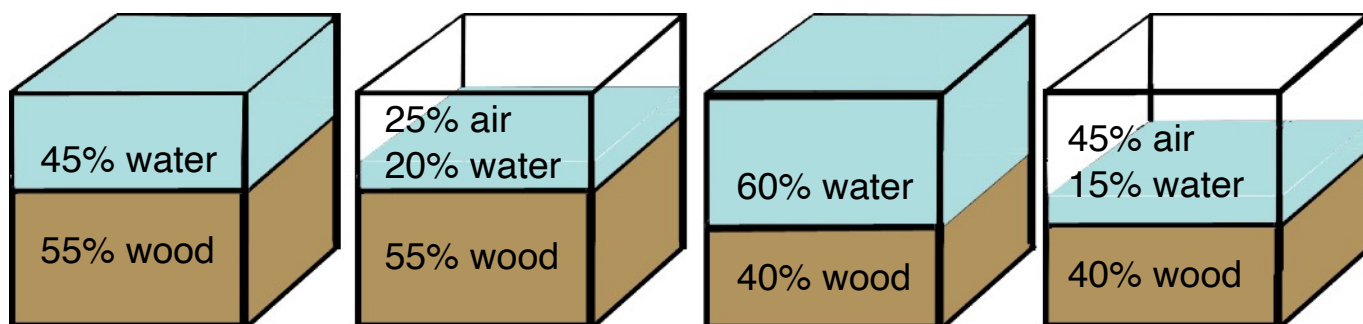
## Improving air quality

Modern, wood-burning boilers and stoves can compete on ease of use, cleanliness, efficiency and convenience with fossil-fuelled alternatives. This can potentially lead to an improvement in air quality if replacing coal or oil boilers.

## Facts about logs

Any fire or stove is only as good as the fuel that you put on it. A fire using wet or unseasoned logs will only give a small percentage of the heat that the same logs would give if they were dry and properly seasoned. This is because the fire must dry the logs before they can start to burn and release heat. The water is driven off up the chimney, where it will condense and cause tar deposits or cause erosion of the liner with expensive consequences.

A 10 cm cube from a hardwood log of freshly cut timber contains around 45% water. A similar cube from a log of softwood contains around 60% water.



Fresh Hardwood Seasoned Fresh Softwood Seasoned

Well seasoned (air or kiln dry) logs have a much lower moisture content and will be dry to the touch, the bark will come away easily and they may have cracking

down the length of the log. Softwood logs will be much lighter and have a more open texture.

Logs should not be more than 10 cm across and split logs burn better than round logs.

### **Is all wood the same?**

Different types of wood produce different amounts of heat. Some are very poor for burning and are best avoided. Hardwoods will burn longer and give out more heat than softwoods for a given volume. The best common woods for burning are oak, beech, ash and birch. (see the table on page 7)

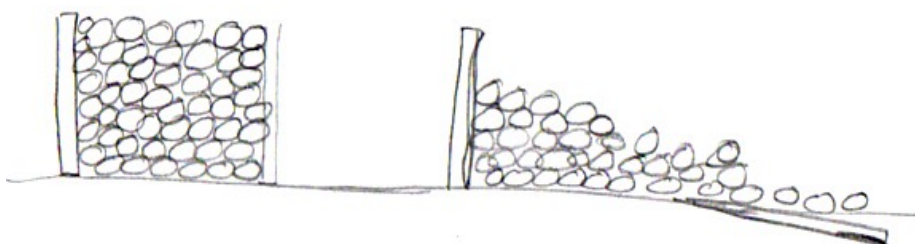
### **Cutting and storing wood**

Trees should be cut in the autumn or winter when the moisture content is least. Ideally, the wood should then be left to air dry in stacks for at least 1 year. A tarpaulin over the top will keep the worst of the rain off but the sides of the stack must be open to the wind to allow the air to circulate. It can then be cut into short sections and split into logs not more than 10 cm in diameter. These should be stored in a roofed stack until needed. You may want to build a store against your house wall. If you do, make sure you stack the wood so that it doesn't touch the wall. You should also make sure it doesn't constitute a fire risk.

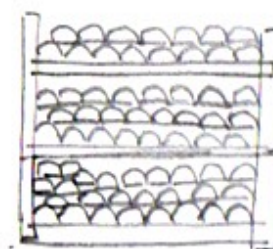
### **Making a safe woodstack.**

The log pile must be stable. A wood pile 6 feet high may look impressive but its collapse onto someone removing wood from it can be lethal. The stack should be built on bricks or concrete blocks with gaps between them or on wooden bearers raised off the ground. Ideally, the logs should be split to aid stability and either chicken wire or wooden bearers should be placed every 3 or 4 layers. The ends can be supported by vertical posts joined to the bearers.

This also allows more air to circulate. The practice of placing logs between stakes driven into the ground or having a pyramid shaped pile may look simpler but it depends on nothing rotting or being disturbed. Short logs should be stacked 2 or 3 deep and have longer logs going through the pile every so often.



**This pile is unstable and may well collapse**



**A stable woodpile**

## Buying logs

One solid m<sup>3</sup> of logs forms a loose pile around 1.8 m<sup>3</sup>. Neatly stacked it will be around 1.25 m<sup>3</sup>. Make sure you know whether the logs are sold by solid, stacked or loose volume. If buying by the tonne (1,000kg) remember that 1 tonne of seasoned hardwood logs should make a loose pile of around 2.8 m<sup>3</sup> or a stack of around 2 m<sup>3</sup>. 1 tonne of seasoned softwood logs should make a loose pile of around 3.3 m<sup>3</sup> or a stack of 2.3 m<sup>3</sup>. Unless you can store your wood for a year, buy well seasoned wood, which will have a low moisture content; 25% or below. It is worth buying a digital wood moisture meter. These devices are reasonably cheap, between £10 and £20, give you an instant readout of moisture content and will save you a lot more money in the long term. Ideally any wood should be stored by you for at least a few months to allow surface water to dry off and reduce the water content to 20% or below. You might want to look for the government **Ready to Burn** logo. This states the water content is less than 20%. For more info go to their website at <https://woodsure.co.uk/firewood-ready-burn/> .



## Kiln dried wood.

Most wood is left to dry in the open air, stacked in covered piles. However some wood may be sold as Kiln dried. This does not necessarily mean it has a lower moisture content to seasoned wood. Only that the drying period has been shortened by heating the wood in a kiln. Check the moisture content. Only if it is 15% or less is it worth paying more for. While kiln drying does add considerably to the carbon footprint of the logs, it does tend to kill off any insects and fungi that may be under the bark. Once again the **Ready to Burn** logo is worth looking for.

## What other wood based fuels are there?

Wood briquettes are a good alternative if bought in bulk and if storage space is short. They are made from waste sawdust or chipped waste wood, compressed at elevated heat which causes the fibres to bind together without any added substances. (Some other briquettes such as coffee grounds have binders to enable them to hold their shape.) They usually have less than 6 % moisture but **must** be kept dry or they will disintegrate. They are also easy to handle. You can also get bark briquettes which will burn slowly overnight with the stove shut right down. If you have difficulties with storage or do not wish to pay for a large supply, why not share a load with friends. They are easy to carry in the back of a car. To get the same energy as 1 stacked m<sup>3</sup> of Hotblocks (one of the wood based briquette sold locally) you would need around 3 stacked m<sup>3</sup> of seasoned hardwood, 5 stacked m<sup>3</sup> of softwood and at least 15 m<sup>3</sup> of unseasoned softwood if you burned it when first felled.

There are 3 basic sorts, Those forming bricks like Hotblocks, those forming hollow cylinders like Blazers and those forming solid cylinders like Hotmax. Look for those

that are produced in the North West and **please avoid anything made from peat**. Remember burning peat destroys the mosses which form such a large part of the earth's natural carbon sink. Any briquettes from abroad especially those made from virgin wood will have a higher carbon footprint. They should be avoided. The idea is to use a waste product **not** to cut down virgin forest.



A Hotblock



Half a Blazer log



Some Hotmax logs

### Using kindling

You should not need firelighters to light a woodburning stove. Some crumpled newspaper and a few pieces of kindling or a handful of dry pine cones should be sufficient. You should store your kindling inside so that it is house dry. Pine cones should be fully open. If they are shut they are not old or dry enough. Collect them from the ground in the spring and dry them over the summer. Old wooden pallets also make good kindling if chopped up. Softwood is better than hardwood as it has a more open structure.

### How can I get the most out of my wood?

Use a woodburning stove to burn it (see Fact Sheet 2) rather than an open fire. A stacked m<sup>3</sup> of airdried hardwood contains around 2400 kWh of energy. This is not the effective energy which is around 1700 kWh in a stove and 600 kWh on an open fire. Bring your wood into the house a week or more before you burn it.

### Woodfuel data.

#### Approximate Energy of different types of wood per cubic metre volume.

	Energy (kWh)	Effective energy (kWh)	
		in stove(70%)	in open fire (25%)
Airdry (20%)			
Beech, oak	2,520	1,764	630
Ash, birch	2,440	1,708	610
Sycamore,elm	2,200	1,540	550
Larch	2,150	1,512	540
Pines	2,000	1,400	500
Spruces	1,840	1,288	460
Poplar	1,800	1,260	450
Briquette(5%)	8,000	5,600	2,000

(1 kWh produces 1 kW of heat for 1 hour).

## Approximate Energy of wood and briquettes per kg.

1 kg of airdried hard wood contains around 4 kWh of energy.

1 kg wood briquette contains around 5.5 kWh of energy.

For comparison a litre of fuel oil contains around 10 kWh of energy.

A solid cubic metre of logs will make a neat stack of 1.25 m<sup>3</sup> and a pile of 1.8 m<sup>3</sup>.

### What should I expect to pay?

You should be able to buy seasoned logs in bulk\* locally for around £180 per stacked m<sup>3</sup>. Kiln dried wood may be around 30% more. Wood bought in small quantities will be much more expensive.

Briquettes vary considerably. For example Hotblocks cost around £126 a quarter ton if bought in bulk and £4.50 for an 8.2kg bag. Blazers cost around £117 a quarter ton if bought in bulk and £5 for a 10 kg bag. ( prices as at Sept 2021, larger quantities are even cheaper pro rata). A good selection can be found at [Logs Direct](#) at Halton or [Cumbria Green Fuels](#) at Carlisle both of which have been used with success by our members\*\*.

**\*When comparing prices you should check wood sold in so called 1 cubic metre dumpy bags. Most of these are in fact only around 0.8 m<sup>3</sup> and as the wood is jumbled in them it actually stacks to even less.**

\*\* Neither the AONB nor The Bittern Countryside CIC are endorsing either of these particularly.

The BCCIC has produced 5 Energy *Fact Sheets* and a *directory*. They are all available free on our website.

*Fact Sheet 1 “Electricity From Sunshine” deals with PhotoVoltaic panels.*

*Fact Sheet 2 “Heat from Trees” deals with woodburning and multifuel stoves.*

*Fact Sheet 3 “ Woodfuel Wisdom” deals with buying, storing and using wood.*

*Fact Sheet 4 “Avoiding energy waste” looks at small ways you can lower your carbon footprint.*

*Fact Sheet 5 “Heat from Ground and Air” deals with Heat Pumps.*

*“Feel Good about Wood” is a directory that gives more information about local wood management, wood products and wood suppliers in the AONB.*

*We also produce a series of Nature Atlases about the flora and fauna of our AONB which are also available on our website, or hard copies can be purchased from the Landscape Trust online Bookshop or from the shop at RSPB Leighton Moss.*

**If we all work together we can help reduce our carbon footprint and help preserve our AONB from the ravages caused by climate change.**

**If you have found this helpful please pass it on to a friend to read.**

**All our publications are available to download free of charge on our web site: <http://bitterncountrysidecic.org.uk>**

**Where did the CIC get its information from?**

It is drawn from recognised official websites, publications and practical experience - email:[info@bitterncountrysidecic.org.uk](mailto:info@bitterncountrysidecic.org.uk) for more information.

## **The woodman's song**

Logs to burn, logs to burn  
Logs to save the coal a turn  
Here's a word to make you wise  
When you hear the woodman's cries  
Never heed his usual tale  
That he has good logs for sale  
But read these lines and really learn  
The proper kinds of logs to burn

OAK logs will warm you well  
If they are old and dry  
LARCH logs of pine wood smell,  
But the sparks will fly  
BEECH logs for Christmas time,  
YEW logs heat well  
SCOTS PINE logs it is a crime  
For anyone to sell

BIRCH logs will burn too fast,  
CHESTNUT scarce at all  
HAWTHORN logs are good to last  
If cut in the fall  
HOLLY logs will burn like wax  
You should burn them green  
ELM logs like smoldering flax  
No flame to be seen

