

A short response to the AECB report "Biomass A burning Issue"

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The report "Biomass a Burning Issue" was commissioned by the AECB and claims that it demonstrates that burning fossil fuels is better in terms of CO2 than burning wood because the wood could be used for building with (or making timber building products from) and the CO2 sequestered resulting in a nett CO2 saving.

This is presented as applying to all aspects of forest industry and wood use.

The report can be downloaded as a pdf here:

<http://www.aecb.net/UserFiles/File/Biomass%20-%20A%20Burning%20Issue%20-%20published%20September%2020101.pdf>

Please do read the AECB report first before reading this response.

The statements in the report rest on some core assumptions:

- 1 - All wood that is used for woodfuel could otherwise be used for building with or making timber products from.
- 2 - Building new houses and buildings from wood is 'low carbon'.

Neither of these assumption is 100% correct. Not all wood is suitable for building with or making timber products from. The reasons are to do with timber quality (i.e. the wrong type or quality of wood), and economic (i.e. not enough profit to viably extract or use certain timber for certain uses).

Neither is assumption 2 100% correct. I will not dwell on it for as long as assumption 1 but it is worth considering the high embodied energy of any new building and the energy use associated with its use, even if it is made from wood. We are in the middle of a massive slump in building in the UK, and even if we weren't there remain many houses and buildings going unused. To suggest that building something new somehow has a lower CO2 footprint than upgrading existing stock is potentially misguided.

Lets take a look at how forests work:

There are two distinct types of forest: evergreen plantations which can be viewed as 'wood factories' and the more traditional deciduous forests. The wood factories are densely planted so as to encourage straight growth, they are poor in terms of species diversity, and in terms of recreation. The more traditional forests are good in terms of species diversity (as long as they are managed – i.e. wood from them is harvested regularly) and good in terms of recreation. They are by no means as good at producing timber of building grade.

We then also need to consider the fact that many are unmanaged, and this includes both types of woodland. The reason for this is that profit from extracting timber from forests is low. Woodfuel production has added an extra string to the bow of the forest owner and hence can make managing a forest a more commercially viable process. This means that the associated timber production which would often go hand in hand with the woodfuel production also becomes more viable. This can also act as an incentive for landowners to plant up new woodland and continue the trend of increased forestation in the UK.

Now let's look at how wood is actually extracted. In the forest factory the saplings are densely planted and then, as they grow, they are thinned. This takes out trees which did not grow well and trees which were sickly. Side branches are cut so that the tree grows nice and straight with few knots. When the trees are harvested there are some distinct uses for each part of the tree. The main trunk of large diameter is hopefully (but not always) suitable for building timber. This usually goes to a sawmill. The smaller diameter branches of 150mm and up may be suitable for producing timber boards and other similar products if the manufacturer is willing to pay at a viable rate (I will expand on this later). Tops of branches, roots, and other brash cleared at the same time is only really suitable for woodfuel. An alternative use to this is to let the timber rot producing some methane with a GHG potential 20 times that of CO₂.

The timber taken to the sawmill is then sawn into useable planks and sections. A lot of wood is necessarily wasted at this stage. Again the potential use for this wood is probably only woodfuel, or wood based products, but again the wood based product manufacturers need to pay at a viable rate.

From the sawmill the timber would then be used by fabricators and end users where there is more wastage. Offcuts, shavings, sawdust etc, are suitable for woodfuel but not really anything else unless produced on a very large scale.

All the above assumes that the timber factory has been well managed. Many have not been and hence the trees are of a very poor grade for building with. They could be used by timber product manufacturers and for woodfuel. The timber product manufacturers would need to pay a viable rate for the timber which they may not be willing to pay.

In the more traditional forests extracting trees for building timber may only be viable on a much smaller scale. The trees are not as densely planted and hence specimen trees can be extracted but there will be a lot of trees of low quality in terms of building. The cost of extracting a few trees like this is relatively high and hence the price paid for the product needs to be enough to cover it. Timber product manufacturers currently are unlikely to pay enough to make this viable, but woodfuel (logs) is an option, and increasingly forest owners are starting to manage previously unmanaged forests in part because of this.

The end result of all this is that from the point of planting the saplings to harvesting it is likely that less than 50% of the mass of wood produced is useable as building timber. The rest of the wood has varied uses according to where in the cycle it is produced, and which part of the tree it comes from, and the price paid by the various consumers of it.

A brief look at timber product manufacturers

Timber product manufacturers (timber boards like mdf, osb, chipboard, timber insulation panels, etc) have traditionally used up a lot of the waste wood created in the UK. The price they paid for this was very low. In recent years however energy production plants have been using up a lot of the waste wood as fuel, and so the manufacturers will need to look elsewhere for supply and pay a more viable rate for it. A viable cost for this lower grade wood is still low but of course more than they have been used to paying. Unfortunately for a business model to be viable the producer needs to be paid enough for their own business to be viable and so essentially the manufacturers need to look to paying a little more for their raw materials and passing this on by either putting the price up a little, or perhaps making a slightly lower margin.

Paper & pulp

It should be noted that in the UK by far the largest chunk of wood used goes to produce paper, cardboard, packaging, etc.

Sustainability

It should also be noted that wood is sustainable - we can keep on growing it year after year which we cannot of course be said of fossil fuels.

The report effectively encourages the use of fossil fuels or nuclear but many think that, at least regarding oil, that we are nearing, or have reached, peak production and that therefore we will see increasing prices and reduced supply over the coming years. Indeed we are already seeing increasing prices year on year.

A short term alternative in terms of electricity product is nuclear fuel. The cost of decommissioning a nuclear power station is enormous and the waste produced remains dangerous for longer than we can make a sign last to tell future generations that it is dangerous. Current thinking on how to manage nuclear waste is usually a variation on 'bury it in a hole and perhaps hopefully we will know what to do with it at some point.'. That said nuclear power station technology has improved and hence power stations are currently running in large part by using 'recycled' existing waste, but the huge sums of money could probably be better spent.

Perhaps what the report could have focussed on

Building with timber is a good idea for multiple reasons, including the short term storage of CO₂, and should be encouraged.

Production of timber insulation boards and other wood building products could also be encouraged. Unfortunately the prices for these board are currently prohibitive and so usage will be low. Manufacturers need to look at ways of reducing the price of these products if they want their use to increase whilst also paying a going rate for the raw wood they are made from.

There are issues with recycling mdf (apparently there is currently only one facility that can currently do so) so this may have a bearing on the choice of materials to promote.

There are quite a few large scale woodchip energy and CHP plants which have been granted planning permission (but are not yet built) that will be using virgin forest timber as their fuel source. It would seem sensible to limit their timber use to the parts of the tree not useable for timber production if possible rather than the wide scale use of whole trees. This is not an argument against woodfuel but an argument for good management.

With regard to newbuild the regs are currently seen to reward technological fixes like heat pumps, solar, biomass boilers, etc. These should be encouraged but not at the expense of insulation. But in fact Part L of the regs means that the insulation required is raised year on year, perhaps not quite as fast as some would like, but it nevertheless is on the increase.

With regard to retrofit in schools and other large scale woodchip installations there seem to be few requirements for serious insulation improvements before the projects go ahead. This should be a central part of the process.

The production of timber can be sustainable as long as the business model is too, which means that prices paid for wood products need to rise to make forestry viable. Woodfuel is an effective way to raise the profits from managing woodland and so make the production of other timber products, such as building timber, more viable. Woodfuel is also a way to make use of wood that would otherwise be left to rot (resulting in some methane production).

In summary

The AECB report relies on some assumptions which are demonstrably based on poor logic and a poor understanding of how the mechanics and economics of forest management and timber production work in the UK. The black and white stance taken not only dominates the report, but also effects the report's credibility, tarnishing some aspects of the report which might otherwise have had merit.

It is interesting to note that woodfuel production (which the report would presumably do away with) is in fact a driving force for making the production

of building timber more viable because the production of woodfuel goes hand in hand with the production of timber for building, increasing the (previously unviable) profits for the forest owner.

The report might have benefited by focusing, for example, on highlighting areas needing improvement with regard to identifying and designating the most appropriate uses of each part of a tree within woodland management, the planning of large scale biomass installations and power plants, the way in which insulation is specified in retrofit projects, and ways in which the use of timber and timber products for building can be encouraged, including the raising of the price paid for the various timber products in question so that it becomes a viable part of the forest owner's business.

As fossil fuels rise every year I know that I will be planting up trees where there were previously none to coppice for fuel - a process which my children can continue indefinitely. I will then burn that wood for my domestic hot water needs in the cooler months and possibly for some limited space heating. I will not be installing a gas boiler which the report seems to encourage me to do instead. Aside from anything else that would result in higher CO2 emissions than the solution I have planned.

Of course this is not the answer for everyone in the UK, but then what is?