The looming large-scale shift towards using wood to generate electricity is having indirect impacts on other sectors and may not be the best environmental solution

Can all biomass be treated equal?

Referred to by some as the fourth energy source, biomass undoubtedly has the potential to contribute towards reducing the world's dependency on fossil fuels.

However not all types of organic material are equal and available in abundant quantities and at the moment existing energy policy does not recognise this.

Wood is a case in point. As a fuel it is attractive because it has a calorific value greater than most other biomass types, it is perceived as being present in abundance and there are established supply chains. These are just a few reasons as to why it is seen as the fuel of choice by the majority of dedicated biomass-fired electricity generators.

But is it the right direction for biomass policy to be heading? Those who already use wood, such as the wood panel industry certainly do not think so.

The Renewables Obligation (RO) policy, which is driving the move towards renewable electricity in the UK, does not differentiate between fuel types. Instead it focuses attention on technologies.

The RO works by obligating the licenced electricity suppliers to source a specified percentage of their electricity supply from renewable sources. Any shortfall in that attainment has to be made up by paying a minimum buy-out price per MWh of shortfall. This 'tax' is then re-circulated via tradable certificates (ROCs) to the generators, which can use this indirect subsidy to invest in renewable electricity generation capacity. The level of support is banded according to technology types.

An argument against the RO is that it is a blunt instrument that works well for the likes of wind generation, where the subsidy is used to support capital and distribution costs. However, in respect of biomass, the bulk of the subsidy is used to support bringing the fuel to the generators gate and as such the RO actually has some perverse consequences. In particular the RO encourages the cherry picking of biomass fuel types in favour of those that will generate greatest profit for the generators, rather than focusing on those fuel types that will in the long run actually lead to the best environmental returns such as short rotation crops, energy crops and energy from waste.

Carbon balance (accounting) studies highlight the point that whilst biomass is generally carbon neutral over its lifecycle, because trees have a relatively long lifecycle (typically 40 years European softwoods) net CO2 emissions over the next 20 to 30 years could actually increase if wood formerly used for product manufacture is displaced by burning.

As well as supporting the case for focusing biomass policy towards short rotation biomass types or end of life wastes, this brings into sharper focus the need to look at the carbon storage potential of different raw materials. One should also question whether the best use is to burn them in the first instance or whether it is better to capitalise on their economic value in product manufacture and their environmental value as a carbon store which, in some product applications, could run into several decades or depending upon species, hundreds of years.

There is a significant disconnect between total biological availability and the material which can economically be brought to market.

Unlike short rotation 'farmed' crops changes to planting can be implemented over a relatively quick period, forestry is a long term activity and the motivations to plant or fell are many and varied and not always directly related to profit, particularly for the private grower. These, as well as factors such as access constraints or soil protection, mean it is highly unlikely that estimations of potential supply will ever be realised.

This has particular significance when considering the demand side of the equation. A widely respected study by John Clegg Consulting published earlier this year, looked at the potential availability and demand for wood fibre (from all sources) in the UK and identified that demand for some wood sources is already outstripping supply. Over the next five to seven years demand could in fact be more than double the potential supply, leading to a requirement to import up to 30 million tonnes of wood fuel.

The negative consequence of this scenario is that domestic wood cost will rise to match that of an import cost, which could be two to three times higher than that currently paid by wood processing companies. With some developers of wood-fired electricity projects seeking to source between 10 and 15% domestically, the risk of displacement of supply from other wood-using industries is a distinct possibility.

Because of its long growing cycle the wood basket is a finite resource. There is potential to realise more of the harvest than has been the case to date, but this can only occur if the carbon value of the resource is fully appreciated and the nature of the growing-cycle and the realities of harvesting fully understood. To ignore these and to treat wood as any other agricultural commodity will be to waste a valuable resource that can deliver multiple benefits.

The level of subsidy and incentive available to the energy sector is such that the consequences (albeit unintended) of the policy are none the less predictable. As wood prices rise to reflect the energy sector's ability to pay, the competitiveness of the wood processing sectors will be eroded to the point where closure is inevitable.

The subsidy regime in its current form is starting to unbalance the market for wood, a process which if left uninterrupted will inevitably lead to the loss of established industries. Manufacturing panelboard, for example, is far more carbon positive than burning the same wood.

The consequence of redirecting, through subsidy, the wood used today into energy generation would be a net increase in CO2 emissions of 6 million tonnes each year.