Bioeconomy Science Institute™
Maiangi Taiao

Certification of biomass from forests

There are various certification schemes internationally for certification of biomass. In New Zealand, there are some concerns about acceptability of our biomass and being aware of the limits of these schemes is useful to understand what is allowed as residues and byproducts under the heading of 'sustainable'.

These classifications affect the carbon intensity calculations applied on international markets. They do not mean a particular resource could be used as energy.

Concerns

- That the Roundtable on Sustainable Biofuels (RSB) needs separate certification, which would be a further cost – in most cases RSB recognises FSC certified forests[1].
- Clarification of what is and isn't included as a 'residual material'
- Pulp and KIS logs – residue, byproduct or co-product?
- Biomass classification (product, co-product, or byproduct/residual) shapes carbon accounting and allocation in supply chains, affecting carbon intensity calculations and, ultimately, tree value.

Within an FSC certified forest there are a range of biomass sources that could potentially be used as a bioenergy feedstock. These include the branches and broken stem sections (slash) that are generated in harvesting operations. However, the needles, cones and bark in the branches are a good source of nutrients for the next rotation and, in the case of needles, are poor fuels due to high nitrogen and ash contents. This means that from a bioenergy point of view the interest lies in the stem sections that are otherwise not merchantable. Table 1 – shows the lists of materials that qualify as residuals, therefore, as low carbon intensity feedstocks for making sustainable biofuels. An important inclusion is treetops, which allows the collection of stem sections of the upper part of the tree. This will include material from stems broken during felling operations.

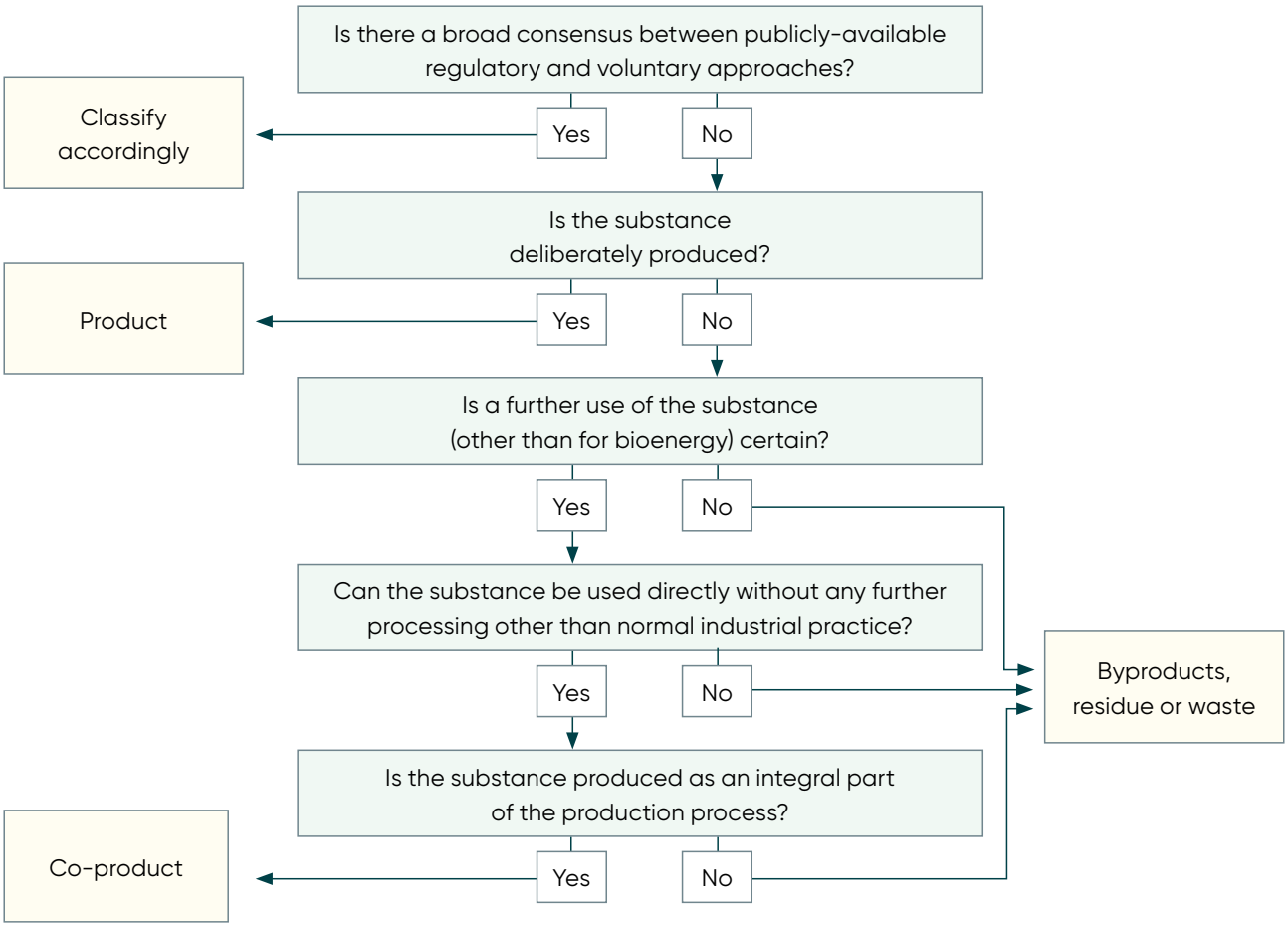
Further clarification around what is eligible for being counted as a residue is shown in Figure 1 below. Question 3 in the middle section of the diagram asks; Is a further use of the substance (other than for bioenergy) certain? The answer to this for pulp and KIS grade logs is "No", therefore these materials are, or could be classified, as a byproduct and eligible for use in making lower carbon instensity and sustainable biofuels.

Table 1. Positive list of materials classified as waste, residue or byproduct.

Residues		
Agricultural residues	**Forestry residues**	**Processing residues**
Bagasse	Bark	Crude glycerine
Cobs	Branches	Forestry processing residues
Stover	Cutter shavings	Empty palm fruit bunches
Husks	Leaves	Palm oil mill effluent
Manure	Needles	Sewage sludge
Nut shells	Pre-commercial thinnings	Crude tall oil
Stalks	Slash	Tall oil pitch
Straw	Tree tops	
Wastes		
Municipal solid waste		
Used cooking oil		
By-products		
Palm fatty acid distillate		
Tallow		
Technical corn oil		

Source: ISCC CORSIA 201-1 Wastes, Residue, Byproducts (V1.1, 2021).

Figure 1. ISCC Decision path for products and byproducts



Source: ISCC CORSIA 201-1 Wastes, Residue, Byproducts (V1.1, 2021).

It is clear from the market price for pulp logs and KIS logs that there is an upper limit that the market is prepared to pay for this material. In many cases it is less than the cost of production and depending on where the forest is in relationship to the log's destination (port or mill) the price paid for the log will not meet the cash costs of logging and transport.

In these cases, the forest owner sometimes decides that the cost of delivering logs to a market is too much of a financial imposition (loss) and leaves them in the forest. This is the case for many forests on the East Coast of the North Island, in the Wairarapa district and in parts of Northland. It will also occur in other, less obvious regions – at least in some of the more remote parts. In some cases, there are entire forests that have the harvesting operation postponed due to low log prices and high costs, which mean that the entire harvesting operation is a loss-making venture.

These situations should allow for these low-grade logs such as pulp ($59-$61 per tonne[2]) and KIS grade ($63-$85 per tonne) which are from the top of the tree to be regarded as a residue or byproduct under the ISCC CORSIA rules as they have an uncertainty around their future utilisation.

Forest costs (average price per green tonne delivered) to grow each tonne, regardless of log grade, varies with terrain as well as transport distance (table 2 and 3).

Table 2. Forest costs across different terrains

	Flat terrain	Rolling terrain	Steep terrain
Establish, grow & manage	$32	$34	$39
Roads and landings	$5	$8	$9
Log	$28	$35	$52
Transport (90km)	$25	$26	$27
Total	**$90**	**$103**	**$127**

1 anz.fsc.org/newsfeed/the-roundtable-on-sustainable-biofuels-recognizes-fsc-certified-forests
2 Prices as of August / September 2024

Table 3. Average log price by the main reported grades versus market cost

Log Grade	Price: $/tonne delivered	Costs above or below delivered price		
		Flat	Rolling	Steep
P1	200	+	+	+
Export P	180	+	+	+
P2	164	+	+	+
S1	127	+	+	+
S2	127	+	+	+
S3	117	+	+	–
A	115	+	+	–
L350	112	+	+	–
Posts	101	+	–	–
K	102	+	–	–
KS	101	+	–	–
KI	91	+	–	–
KIS	74	–	–	–
Pulp	59	–	–	–

Legend:
Green cell (+): a price higher than the cost of production
Red cell (–): price lower than the cost of production.
If the log costs more to produce than it can be sold for, then it may not be worthwhile for the forest grower to deliver the log to the market (wharf or mill).

It is worth noting that around half of New Zealand's forests are on terrain that would be classified as steep with the rest on flat to rolling (mostly rolling) terrain.

Forests in New Zealand are mostly targeting growing either structural grade sawlogs or pruned logs as well as logs suitable for appearance grade uses – this is because these are the types of logs that generate the profit for the forest owner. The pulp and KIS grades are not suitable for these uses due to their size, shape and knot size. Hence, they should be considered a non-target product – or byproduct.

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