

Steve Kozuki, executive director of the Forest Enhancement Society of BC, explains how the organisation is supporting the utilisation of forest residual fibre

# Forest sector helps BC take action on climate change



Steve Kozuki

**T**he Forest Enhancement Society of BC (FESBC) has funded the utilisation of 4.8 million cubic meters (m<sup>3</sup>) of forest residual fibre in British Columbia (BC), Canada, between 2017 and 2022. As of March 2021, 3.2 million m<sup>3</sup> of fibre had already been successfully delivered to secondary fibre-consuming facilities around BC, such as wood pellet plants. Almost all of this biomass was logging waste piled in slash piles that would have otherwise been burned on-site. Given the experience of using uneconomic forest fibre in BC, what are the lessons learned so far?

FESBC has implemented processes to reduce the burning or abandonment of slash piles created after timber harvesting and operations related to post-wildfire stand rehabilitation, pre-commercial thinning, and certain wildlife habitat enhancement projects. When

biomass is utilised instead of burned or wasted, greenhouse gas (GHG) emissions are reduced, thereby contributing to the achievement of BC's climate action goals under the CleanBC Plan, as well as Canada's international commitments on climate change.

FESBC has contributed to driving down the cost of treatments over time. In the early days of FESBC, wildfire risk reduction projects averaged about \$8,000/hectare (ha) (€5,300/ha). The current estimated average cost is now \$2,100/ha (€1,400/ha) as a result of shifting from hand treatments to using mechanised methods, increasing economies of scale, choosing appropriate equipment, and dove-tailing treatments with commercial timber harvesting operations. FESBC has also seen the cost of incremental fibre utilisation projects go down



Hog fuel. Credit: FESBC

over time for similar reasons.

Historically in BC, many forest management activities were conducted by major forest licensees. FESBC's funding of new and emerging participants, including Indigenous peoples, has led to a significant increase in the number of non-traditional participants who are not major licensees. Consequently, the organisation has fostered an increase in diversity of participation in BC's forest economy, with a total of 63 of its 269

funded projects led by First Nations, and an additional 23 having significant First Nations involvement.

As overall timber supply decreases in BC, sawmilling facilities produce less residual hog fuel, sawdust, shavings, and wood chips. These residual products are the primary fibre for pulp mills, pellet facilities, and green energy production facilities as well as several emerging bio-product technologies. The reduction of sawmill residual fibre available to secondary manufacturing facilities means there must be a corresponding increase in utilisation of logging waste and residue in order to maintain employment levels, support community transition, accelerate the growth of BC's bioeconomy, and to meet climate action goals.

Increasing the use of fibre from logging residuals instead of burning on-site or wasting it is good public policy; however, depending on the location of the fibre, it can also be some of the most expensive fibre available. The end-products (hog, bio-



Atlantic Power residual fibre utilisation. Credit: FESBC



Roadside grinding. Credit: FESBC

logs, pulp logs) have well-established economics and the cost to transport fibre to the end-product facility can be a financial barrier. Fibre outside of the economic range will not be utilised and would likely continue to be burned or left to rot. However, as the logging industry gains experience and pioneers innovative fibre recovery processes, the cost of recovery drops and the economic recovery limit is pushed out, thereby increasing the volume of economic fibre available on a go-forward basis. FESBC funding has contributed significantly to improving the economics of fibre recovery in BC and increasing the volume of residual fibre available to be utilised.

The portion of the fibre cost supported by FESBC is only the uneconomic portion



Pellets. Credit: FESBC

of the total fibre cost, often specifically the transportation cost to get the fibre close enough to the market to be economic. Industry pays the full market value of the fibre. The determination of the actual amount of FESBC support is very case specific for the operational circumstances and market conditions at the time of utilisation. Prior to approval, the FESBC staff carefully review each project to ensure

that fibre recovered under this programme is truly incremental to existing supply and that no competition for that fibre is displaced.

For the four years ending March 2021, across all regions of the province and all fibre types and market conditions, the average FESBC 'top up' contribution has been \$12.22/m<sup>3</sup> (€8.18/m<sup>3</sup>) over and above the average market value of \$39.06/m<sup>3</sup> (€26.15/m<sup>3</sup>). Therefore, the ratio is three industry dollars for each FESBC dollar.

Supporting the further transition to normalisation of higher residual fibre utilisation will allow the Province to implement policy goals while at the same time providing a good financial return-on-investment.

The work done by FESBC:

- Supports the transition of the forest sector to a larger bioeconomy;
- Assists the Province and Canada in reducing GHG emissions, contributing to achievement of the CleanBC Plan, Canada's Low Carbon Economy Leadership Fund, and international climate action targets. GHG modelling in accordance with international carbon accounting standards indicates that the average net benefit is 0.17 tonnes of CO<sub>2</sub> equivalent for each m<sup>3</sup> that is used instead of slash

burned, after accounting for all carbon expenditures for the transportation and manufacture of the fibre to make pellets, pulp, and green energy.

The FESBC cost per tonne of avoided emissions for CO<sub>2</sub>-equivalent is \$71.88/tonne (€48.12/tonne) CO<sub>2</sub>e (\$12.22/m<sup>3</sup> [€8.18/m<sup>3</sup>]). The current BC carbon tax is \$45/tonne (€30/tonne);

- Contributes to employment and community stability;
- Provides a financial return to the Province (based on data from BC Stats and econometric analysis reviewed by economists):
  - Total economic output (which includes BC multiplier effects and contribution to BC's GDP) is \$1.44 (€0.96) for each FESBC dollar expended;
  - Tax revenue to the three levels of government (direct and indirect) is \$0.14 (€0.09) for each FESBC dollar expended;
  - Employment of 8.5 person-years (direct, indirect, and induced) for each \$1 million (€669,000) of FESBC contribution;
  - The financial returns to government expressed above are magnified by \$3 (€2) of private industry expenditures for each FESBC dollar.

On average, for every \$1 (€0.66) allocated by FESBC toward increased utilisation, the Province sees additional financial expenditures by forest industry partners at a ratio of 3 to 1, i.e. \$3 (€2) additional expenditure for every \$1 (€0.66) of FESBC contribution.

#### Supporting data

FESBC has prepared a robust dataset based on over four years of residual fibre utilisation. Table 1 illustrates the calculation of the above noted ratio. ●

FLNRORD* Area	Actual FESBC Top Up Contribution	Biomass Utilised, Not Burnt on Site (m <sup>3</sup> ) Actual	Market Value of Fibre Purchased by Industry	Volume Weighted Ratio Private \$ to FES \$
COAST AREA	\$1,178,264 (€789,000)	61,080	\$3,566,647 (€2,388,300)	3.03
NORTH AREA	\$10,799,895 (€7,231,000)	1,179,172	\$43,820,268 (€29,344,000)	4.06
SOUTH AREA	\$27,454,742 (€18,383,500)	1,986,019	\$78,622,544 (€52,644,700)	2.86
PROVINCIAL TOTAL	\$39,432,901 (€26,404,100)	3,226,270	\$126,009,459 (€84,376,800)	3.20

Table 1. FESBC data source FESIMS March 31, 2021. Subset – not including rehab or wildfire risk reduction projects. Actual incurred spending – not including current plans with existing funding

\*Forests, Lands, Natural Resource Operations & Rural Development Area

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