

Sustainability of Biomass Utilisation

Issue analysis by the Prince Edward Island
Forestry Commission

ISSUE ANALYSIS- SUSTAINABILITY OF BIOMASS UTILISATION

Prepared by the PRINCE EDWARD ISLAND FORESTRY COMMISSION

Introduction

The Forestry Commission was appointed by the Minister of Environment, Energy and Climate Action to assist in developing a forest recovery plan and a new Forest Policy for the province. The Commission began its work in February 2023 and has held several meetings and field trips as part of a process of learning about our private and public forests, the forest industry, and government's role in encouraging best practices.

The Commission determined that recent developments in the biomass sector required immediate analysis and decided that there is a need to share this information with government and the public to seek input on preliminary recommendations.

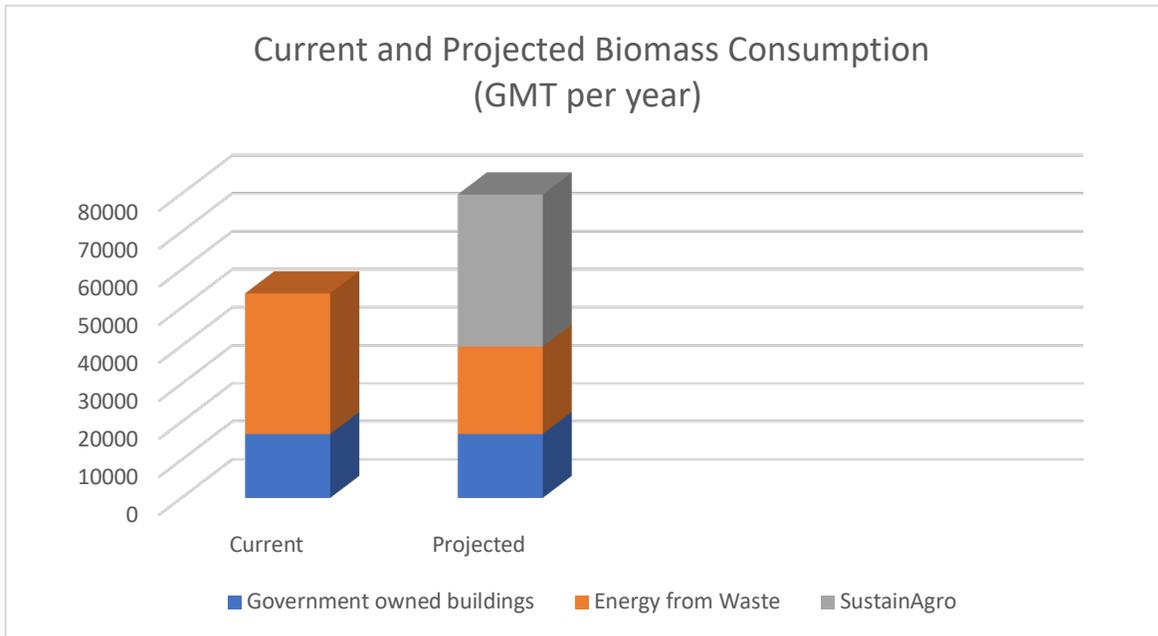
Background

There are eighteen contracts between the Department of Transportation and Infrastructure (DTI) and suppliers to provide heat from biomass to forty-four provincially owned buildings. Together, they consumed approximately 17,190 green metric tonnes (GMT) of biomass in 2022.

Although the Department of Environment, Energy and Climate Action (DEECA) is not a signatory to any of the contracts with biomass heat suppliers, five contracts require that it complete a post-harvest audit in accordance with the *Ecosystem-Based Forest Management Standards Manual* and report its findings to DTI. Taken together, these five contracts represent 38% of annual total consumption for provincially owned buildings.

In addition to the forty-four government-owned buildings heated with biomass, Charlottetown's Energy From Waste plant on Riverside Drive, owned by Enwave Energy Corp., consumes 36,000 GMT per year. The new facility it plans to build will reduce consumption to 23,000 GMT per year.

SustainAgro Ltd. proposes to build a facility in the Kensington Business Park and has submitted its plan to the provincial government under the *Environmental Protection Act's* environmental impact assessment (IEA) process. If built, the plant will consume 40,000 GMT annually.



Sector Profile

1. Biomass heat is provided to the forty-four government-owned buildings across the province by four firms: Atlantic Bioheat, AF BioEnergy, Wood4Heating, and Tignish Initiatives. These four companies own and operate several of the heating systems. The provincial government paid the capital cost of installing nine plants, serving fifteen buildings.
2. SustainAgro’s EIA submission states that it will source biomass from Working Forest PEI Inc., a forest harvesting company based in Kings County, to supply a proposed biodiesel plant in Kensington. To quote from the EIA submission:

“Working through the Sustainable Forest Alliance (SFA), the prescribed practices certify that the wood used is procured from a forest which is managed according to strict environmental, social, and economic standards. The SFA is an organization that is committed to becoming certified under the Forest Stewardship Council (FSC) process and to work to improve forest management in Atlantic Canada.”
3. The Energy From Waste plant acquires its biomass from two suppliers. The owner, Enwave Energy Corp., has received approval from DEECA to construct a new plant on Riverside Drive, adjacent to the current facility. According to DTI and Enwave, it will consume 36% less than the current facility.

Economic Value

The estimated value of the 80,190 GMT that will be consumed by all biomass heating systems, assuming the Energy From Waste and the SustainAgro projects go ahead, is \$4.5 million annually, based on a weighted average delivered price of biomass of \$56.25 per GMT.

The four biomass heating contractors, Atlantic Bioheat, AF BioEnergy, Wood4Heating, and Tignish Initiatives, are paid by DTI for the heat they produce as measured in megawatt hours (MWh). The total price paid by the provincial government for 37,143 MWh of heat it bought in 2020 to heat the forty-four buildings was \$4,261,241.

In addition to the dollar value of delivered biomass and the dollar value of heat generated from biomass, there are other economic benefits. Employment is created in harvesting, trucking, and chipping operations, in equipment repair and heating system operation and maintenance, and in management, clerical, and accounting jobs in both the private and public sectors.

Inconsistencies with the Contracts

The eighteen contracts for biomass supply to government-owned buildings were signed by DTI and suppliers over a period of several years, beginning in 2008. Different versions of the contract exist, depending on when they were signed. There are three main problems with the current contracts:

1. DEECA is not a party to any of the contracts. They are all signed between DTI and the biomass or heat suppliers. This fact is acknowledged by the Auditor General. Not being a signatory to the contracts complicates the work of DEECA when it comes to auditing the sustainability of biomass harvesting.
2. There are significant discrepancies between the eighteen contracts.

Some require the supplier to provide the following information to DTI one year in advance: calculate the quantity of fuel required; identify properties or forest stands that will be used as the source for fuel; and submit a copy of calculated forest feedstock requirements and a list of property identification (PID) and stand numbers along with areas for each property or forest stand to DTI.

Some require the supplier to notify DTI and indicate the PID and stand number, along with the area harvested within one month of completing a harvest.

None of the suppliers are respecting the requirement to provide the information required one year in advance. They claim it would be impossible to comply. Not all are providing the required post-harvest information. Noncompliance on these points makes them subject to a fine of \$2,000 for each hectare not harvested as per the contract, but no penalty has ever been imposed by DTI for noncompliance.

DEECA receives information on some harvests after the fact but claims it does not have enough timely information to do the job it is expected to do under the contracts.

3. Five of the eighteen contracts, representing fourteen provincially owned buildings, require that at least 80% of biomass be acquired from sustainable sources and harvested in a sustainable manner in accordance with the *Ecosystem-Based Forest Management Standards Manual*, and that the biomass “must be harvested from property or forest stands with a current and registered Forest Management Plan”. A maximum of 20% of biomass fuel can be sourced from agricultural land clearing operations.

Since no more than 25% of Island private forests are registered under the Forest Enhancement Program, this effectively rules out 75% of the available forest resource as a source of biomass supply to provincially owned buildings. In other words, if a biomass contractor supplying publicly owned buildings were to obtain any part of its supply from the other 75% of private forest, the company would be in non-compliance.

Other Issues

1. The Auditor General’s January 2023 report states that: “Post-harvest audits were not completed to ensure that biomass used to heat public buildings was harvested in a sustainable manner.” This finding is technically correct but does not, unfortunately, tell the whole story. In fact, for reasons explained above, DEECA cannot complete post-harvest audits. It does not currently have the information required or the staff resources to audit the 38% of biomass heating contracts in which it is named.
2. Biomass is used to generate heat in existing and planned facilities and will be used in biodiesel production should the SustainAgro project become operational. Yet, no definition of “biomass” or “mixed residue” is to be found in any provincial legislation. Schedule 3 of the *Ecosystem-Based Forest Management Standards Manual* includes the only clarification found in any known official provincial government document:

“For block, patch, and strip harvests, only the tree bole may be removed, with branches and foliage to be spread throughout the harvest site (i.e., no whole tree removal); and For commercial thinnings and harvests other than block, patch and strip harvests, whole tree harvest is allowed, but stumps must be left in situ.”
3. The terms “sustainability” and “sustainable harvest” are not defined in any provincial legislation, in any of the biomass fuel supply contracts, or in the *Ecosystem-Based Forest Management Standards Manual*. There is therefore no way to determine whether sustainability is to be achieved as a goal at the stand level, at the woodlot level, at the landscape level, or on a province-wide scale.
4. Without clear definitions of these terms, DEECA’s obligation under the contracts is unachievable, and it is unfortunate that the Auditor General’s report did not highlight this shortcoming. In its response to the Auditor General’s report, DEECA states that it will prepare a report “with the information that has been made available” in the fall of 2023. The Commission is not clear on how this will be done.

4. Additional demand of 40,000 GMT for the SustainAgro project will effectively double biomass consumption on Prince Edward Island if the project goes ahead.
5. A Natural Resources Canada Report entitled "Canada's Forest Biomass Resources: Deriving Estimates from Canada's Forest Inventory" (Information Report BC-X-370 Pacific Forestry Centre, Victoria, B.C.) states that Prince Edward Island forests average 73 GMT per hectare of softwood biomass (their estimates) to 103 GMT per hectare (PEI government estimate). Anecdotal information obtained from local biomass harvesters indicates that yield varies from 60 GMT to 150 GMT per hectare (25 to 60 GMT per acre) for all species.
6. An average yield of 123 GMT per hectare (50 GMT per acre) translates to 324 hectares (800 acres) of clearcuts per year to supply SustainAgro. It is true that Fiona-damaged wood will be available in abundance for a few years but, by the time the SustainAgro plant is in operation, much of this wood will be unusable. If contractors are not clearcutting entire stands, taking only 30% of the volume for example, then the area harvested would more than triple to approximately 1,100 hectares (2,700 acres). The effects of such an increase in harvest levels have not been assessed in terms of their impact on wildlife, soil health, or biodiversity.
7. The EIA submission by Enwave Energy Corp. for the proposed new Energy From Waste plant contains not a single reference to where wood biomass will come from, how it will be harvested, or whether it will be harvested sustainably. It does not even specify the amount that will be consumed. It was apparently not deemed necessary by DEECA under subsection 9(1) of the *Environmental Protection Act* to require the proponent to provide this information. Project go-ahead was granted by DEECA on March 1, 2023.
8. FSC certification, whether in relation to the SustainAgro project or to any other forest product or harvesting operation, will not be easily obtained. Currently, FSC is only linked to the use of bioenergy via its carbon storage and sequestration in ecosystem services. The climate benefits related to FSC forest management certification avoid degradation and deforestation, and ecosystems must be renewed. FSC could set two conditions before granting certification for the use of bioenergy: first, bioenergy would need to achieve real climate benefits, and second, users would need to prevent negative environmental and social impacts by, for instance, using only wood residues and waste.

It is not clear how DEECA, in its review of the SustainAgro EIA submission, will rule on SustainAgro's proposal if FSC certification cannot be obtained.

Forestry Commission Recommendations

1. The Commission recommends that, in consultation with contractors and DEECA, DTI renegotiate all biomass supply contracts for the forty-four provincially owned buildings to clarify the roles and responsibilities of the parties, to standardize requirements, to define reasonable and attainable measures of compliance regarding biomass harvest and supply, and to make DEECA a party to the contracts. For a variety of reasons (carbon tax for example), there may be an increased interest in biomass, and government needs to lead by example when it comes to

defining a sustainable approach. Ultimately, the contracts need to be reasonable to the point where compliance is possible and not simply a desired but ill-defined outcome.

2. The Commission recommends that the provincial government define the terms “biomass fuel”, “mixed residue”, and “sustainable biomass harvest” in revised biomass and heat supply contracts for public buildings and consider adding these definitions to legislation and to DEECA’s *Ecosystem-Based Forest Management Standards Manual*. The Commission recognizes that it will be a challenge for government to regulate biomass harvest standards on private land if the biomass consumer is not government. However, government should exert pressure wherever it can to ensure that all biomass is harvested in a sustainable manner.

The following definitions are from Nova Scotia and may serve as a guide:

“Biomass Fuel” means logs, bolts or pieces of wood of any size or form, from any species of hardwood or softwood tree having no higher valued potential and if originating from a forest harvest or silviculture operation shall be made only from the wood or bark of a tree stem from which the branches have been removed or if originating from a land clearing operation may be made from any portion of a tree.

“Mixed Residue” means the following specific types of residuals: sawdust, shavings, bark, and wood particles; generated as by-products at a wood processing facility from the processing of Primary Forest Products.

3. The Commission recommends that the existing EIA process be amended to require a comprehensive review of the environmental impact of biomass harvesting on long-term wood supply for all future projects that will use biomass. In addition to biomass supply, the review should include an assessment of the net impact on carbon emissions resulting from transportation of the product from harvesting sites to the plant.
4. The Commission recommends that government more clearly define the role of public forests as a potential source of biomass for provincially owned buildings under the theme “public forests heat public buildings”. DEECA manages 33,000 hectares (81,510 acres) of forested land, spread over 1,400 properties in communities across the Island. There may be an opportunity to source biomass from some of these properties, providing it can be done in a sustainable manner and in accordance with an approved forest management plan.
5. The Commission recommends that government determine how and to what extent the forest biomass sector can contribute to the province’s “Path to Net Zero” by 2040. While government has identified the potential for biomass to help the province meet its carbon goals, it has not articulated its vision in a manner that will contribute to short-term program decisions or to the development of a new Forest Policy. The vision should include biodiversity considerations and how the “Path to New Zero” will contribute to the goal of developing more climate-resilient forests.

