

SBP audit report on Energy and GHG data (SAR)

(For Biomass Producers)

SBP certificate Holder number: SBP-01-57

SBP Certificate Holder name: Begoml Forestry Enterprise, State Forestry Institution

Reporting period: Dates From *01.01.2016* to *31.12.2016*

Static Date References (SDIs) included in this report: SBP-01-57-02

GENERALITIES

PART 1 – Administrative information

Basic information on the Certification Body (CB)

Date of audit (on site)	29.05.2017
Name of the Certification Body	NEPCon
Audit team members	Aliaksandr Zubkevich
Qualifications of team members	Mr. Aliaksandr Zubkevich has an education of engineer-economist in timber industry. He did a postgraduate study at the Belarusian State Technological University. Mr. Zubkevich passed the FSC FM/CoC Lead Auditor training course, as well as the Legal Source, ISO 14001 and SBP training courses. He has experience in assessing woodworking companies and SBP (pre-) assessments in Belarus.

General Information on the legal owner

Company name	Begoml State Forest Enterprise
Contact person on site	Artem Grigorjevich Zemchenok +375-29-5990029 email: zemchenok_a_g@rambler.ru
Contact person's function	Quality Engineer
E-mail	begom@vitebsk.mlh.by
Address (physical location of the biomass production unit)	Yukhnovtса street, 21, 211730, Begoml, Dokshitsy district, Vitebsk region, Belarus
Telephone	+375215733144
Describe the location and the surroundings of the production unit: <i>(for example, in an industrial estate, in forest area, next to a sawmill, next to a harbour...)</i>	Next to a sawmill in the town of Begoml
Geographic coordinates of biomass production unit:	54.733463 N latitude 28.050011 E longitude

Please indicate company office address if different from the production unit

Address	Vitebsk region, Dokshitsy district, 21 Yukhnovtса street, Begoml
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Description of activity occurring at this location	The company is involved in forestry, wood harvesting, wood working and trade both within the country and abroad
Telephone / Fax company office	+375215733554

Please indicate address of off-site storage, handling or trans-shipment facility, if any

Address	Train station Parafyanov, Vitebsk region, Belarus
Description of activity occurring at this location	Cargo train station
Telephone / Fax company office	-

Operating licence of the legal owner

Type and reference number	Certificate of state registration of non-commerce organization 300012800
Place and date of issue	Vitebsk, 10/08/2004
Issuedby	Vitebsk regional executive committee

Certifications held by the legal owner (if applicable)

Certification type and reference number (SBP, ISO 9001:2000, ISO 14001:2004, SA 8000:2001, Other...)	FSC certificate SGS-FM/COC-007101
Place and date of issue	Johannesburg of South Africa, 06/02/2017
Certification Body	SGS South Africa(Pty)Ltd

Geographic location of the production unit

Insert the location of the biomass factory on a regional map:



Insert the location of any port facility on a regional map:

- Not applicable -

SECTION A: Input Groups for Biomass Production

Feedstock sourcing and certification

Introduction

This part has been designed for essentially **woody biomass**.

Nevertheless, please mention any other type of bio fuel that is used as feedstock if applicable.

On the following pages, it is necessary to list all the main sources of feedstock suppliers for each Input Group for Biomass Production.

Input Groups for Biomass Production shall be defined in compliance with the requirements specified in Instruction Document 5B, section 4.1 Setup of Input Groups for Biomass Production.

This Section (A) shall be completed for each Input Group for Biomass Production. **Use as many copies of the table as needed.**

Description of the Input Groups for Biomass Production

FEEDSTOCK ID 1 - Fuel wood - for production - <i>(If different Input Groups for Biomass Production are used, please use one copy of this table for each.)</i>	
country / region of origin: Republic of Belarus/Vitebsk region	mass ratio (this Input Group for Biomass Production / Total feedstock) for the Reporting Period: 14 % (m/m, wet basis)
Type, origin and form of the feedstock as received	Transport data
<p>1) TYPE <i>(Tick only one box).</i></p> <p><input checked="" type="checkbox"/> primary feedstock from forests (products or residues)</p> <p><input type="checkbox"/> woody energy crops (primary feedstock)</p> <p><input type="checkbox"/> wood industry residues (secondary feedstock)</p> <p><input type="checkbox"/> post-consumer wood (tertiary feedstock)</p> <p>2) PHYSICAL FORM <i>More than one physical form is allowed in one group.)</i></p> <p><input type="checkbox"/> sawdust</p> <p><input type="checkbox"/> shavings</p> <p><input type="checkbox"/> wood offcuts</p> <p><input type="checkbox"/> wood chips</p> <p><input type="checkbox"/> wood bark</p> <p><input type="checkbox"/> roundwood</p> <p><input checked="" type="checkbox"/> wood logs</p> <p><input type="checkbox"/> tree bark</p> <p><input type="checkbox"/> tree stumps</p>	<p>Select all types of vehicle used:</p> <p><input type="checkbox"/> conveyor belt</p> <p><input checked="" type="checkbox"/> truck</p> <p><input type="checkbox"/> train</p> <p><input type="checkbox"/> river boat</p> <p><input type="checkbox"/> other (specify)</p> <p>Maximum distance to the BP per vehicle type used: 60 km</p> <p>Average distance to the BP per vehicle type used: 29 km</p> <p>Average load per vehicle tonne: 17,25 metric tonne</p> <hr/> <p>In-forest use of chemicals - not applicable -</p> <p><i>To be completed in compliance with ID5B section 5.2.</i></p> <p><i>Per metric tonne of feedstock:</i></p> <p>1. Mass fertiliser in kg/metric tonne: N: 0</p>

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<input type="checkbox"/> inhomogeneous form 3) CERTIFICATION SYSTEM <u>(Tick all that apply)</u> <input type="checkbox"/> none <input checked="" type="checkbox"/> FSC <input checked="" type="checkbox"/> PEFC <input type="checkbox"/> SFI <input type="checkbox"/> other (specify)	P ₂ O ₅ : 0 K ₂ O: 0 CaO: 0 2. Type of pesticide used: kg active substance/metric tonne: 0 <hr/> Energy use in forestry operations and chipping <i>To be completed in compliance with ID5B section 5.3.</i> <i>Mass/Volume of fuel used per metric tone of feedstock:</i> 1,67 l/MT 1. Type of fuel used: diesel

FEEDSTOCK ID 2 - Wood offcuts and slab wood – for production - <i>(If different Input Groups for Biomass Production are used, please use one copy of this table for each.)</i>	
country / region of origin : Republic of Belarus/Vitebsk region	mass ratio (this Input Group for Biomass Production / Total feedstock) for the Reporting Period: 86 % (m/m, wet basis)
Type, origin and form of the feedstock as received	Transport data
1) TYPE <i>(Tick only one box).</i> <input type="checkbox"/> primary feedstock from forests (products or residues) <input type="checkbox"/> woody energy crops (primary feedstock) <input checked="" type="checkbox"/> wood industry residues (secondary feedstock) <input type="checkbox"/> post-consumer wood (tertiary feedstock) 2) PHYSICAL FORM <i>More than one physical form is allowed in one group.</i> <input checked="" type="checkbox"/> sawdust <input type="checkbox"/> shavings <input checked="" type="checkbox"/> wood offcuts <input checked="" type="checkbox"/> wood chips <input type="checkbox"/> wood bark <input type="checkbox"/> roundwood <input type="checkbox"/> wood logs <input type="checkbox"/> tree bark <input type="checkbox"/> tree stumps <input type="checkbox"/> inhomogeneous form	Select all types of vehicle used: <input type="checkbox"/> conveyor belt <input type="checkbox"/> truck <input type="checkbox"/> train <input type="checkbox"/> river boat <input checked="" type="checkbox"/> other (specify): bucket loader Maximum distance to the BP per vehicle type used: 0.1 km Average distance to the BP per vehicle type used: 0.1 km Average load per vehicle tonne: 2,18 metric tonne <hr/> In-forest use of chemicals - not applicable - <i>To be completed in compliance with ID5B section 5.2.</i> <i>Per metric tonne of feedstock:</i> 3. Mass fertiliser in kg/metric tonne: N: 0 P ₂ O ₅ : 0 K ₂ O: 0

<p>3) CERTIFICATION SYSTEM <i>(Tick all that apply)</i></p> <p><input type="checkbox"/> none</p> <p><input checked="" type="checkbox"/> FSC</p> <p><input checked="" type="checkbox"/> PEFC</p> <p><input type="checkbox"/> SFI</p> <p><input type="checkbox"/> other (specify)</p>	<p>CaO:0</p> <p>4. Type of pesticide used:</p> <p>kg active substance/metric tonne:</p> <p>0</p> <hr/> <p>Energy use in forestry operations and chipping - not applicable -</p> <hr/> <p><i>To be completed in compliance with ID5B section 5.3.</i></p> <p><i>Mass/Volume of fuel used per metric tonne of feedstock:</i></p> <p>2. Type of fuel used:</p>
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In-forest use of chemicals (fertilisers)

To be completed in compliance with ID5B section 5.2.

Note: Operational data must should only be recorded only in the case of primary feedstock from woody energy crops.

- Tier 1: Fertiliser is rarely used in forestry, except in short rotation systems. In traditional forestry, the default will be 0. In short rotation systems, the values from Biograce will be used.
- Tier 2: The doses of fertiliser applied on the land throughout the rotation period need to be reported in kg fertiliser/metric tonne harvested wood (taking into account the total amount of wood harvested during the rotation period). Each type of fertiliser has to be reported separately, for example, N, P₂O₅ and K₂O. Other types of fertiliser and other components of fertilisers do not need to be reported.
- Tier 3: Operational data may be recorded where this is done in compliance with the requirements of ID5B section 5.2.

In-forest use of chemicals (pesticides)

To be completed in compliance with ID5B section 5.2.

- Tier 1: The default value from Biograce shall be used: 0.07654 kg/metric tonne roundwood. This value has been established for short rotation systems but can also be applied conservatively to traditional forestry.
- Tier 2: The dose of pesticide used in the forest throughout the rotation period needs to be reported in kg active substance/metric tonne harvested wood (taking into account the total amount of wood harvested during the rotation period). The concentration of the active substance is taken into account in the calculation.

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- Tier 3: Operational data may be recorded where this is done in compliance with the requirements of ID5B section 5.2.

Energy use in forestry operations and chipping

To be completed in compliance with ID5B section 5.3.

As energy expenses in forestry are difficult to monitor, tier 1 or 2 can be used instead of tier 3.

- Tier 1: In the absence of readily available data, a default value maybe used: 1.67 litre diesel / metric tonneroundwood (computed from Biograce).
- Tier 2: If there are specific data based on statistics for the relevant region, they can be used.
- Tier 3: All the fuel use throughout the rotation period is reported. The amount is divided by the total amount of wood harvested during the rotation period (litre fuel / metric tonneroundwood).

Other relevant information, including justifications for data provided and methodologies used:

For production and heating - wood chips (made of slab wood) and sawdust (after sawmilling) are stored 100 m away from the pellet plant.

The use of energy in forestry and logging is taken from Biograce: 1.67 l / MT.

As feedstock to produce woodchips for production in the reporting period, 3,035 m³ of round wood were used.

Roundwood and fire wood are delivered together from own FMU. Selection is made after delivery. There for the estimations of the weighted average distance of separately roundwood and fire wood had to be based on a few assumptions.

The average loading of timber is 28 m³ per delivery. Average distance for timber delivering is 29 km (average for supply base) – one way, Maximum is 60 km. Fire wood has less economic value then roundwood and is transported less from most faraway harvesting plots. Because this input group is sourced just from one administrative FMU, it is impossible to split input group.

Validation by the CB

Parameter	Comments/information
Geographical origin of the feedstock used for making the pellets	<p>What evidence was available on site to confirm this origin? (for example, CMR, supplier invoices, supplier contracts, registers)</p> <p><i>All feedstock come from forest area of the BP. It is confirmed by checking internal registry (1C bookkeeping system)</i></p> <p>Are the average distances validated by checking locations on a map?</p>

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	<i>On the map auditor checked distance from the most faraway harvesting plots to pellets factory</i>
Types of feedstock	<p>What evidence was available on site to confirm what type of feedstock is used? (for example, CMR, supplier invoices, supplier contracts, registers, physical evidence on site)</p> <p><i>Physical evidence on site</i></p>
Transport systems	<p>Was the auditor able to confirm the type of vehicles / transport facilities used to transport the feedstock to the production site? (visual checking?)</p> <p><i>Yes, transport type was verified during field inspection</i></p>
Certification systems	<p>If the delivered feedstock is wood certified against a recognised international forestry standard, please provide the approved certificate numbers or references. Please explain in detail what is covered by the wood certification scheme (for example, the BP itself, some of its suppliers, all of its suppliers, the feedstock).</p> <p><i>All feedstock come from forest area of the BP and is FSC certified</i></p>

SECTION B: Energy use for biomass production

PART 2 – Biomass production chain

General data		
Annual production	Recent <u>effective</u> production:	<p>Data should be based on the Reporting Period</p> <p>7 615 metric tonnes of pellets/year</p> <p>Alternatively, for a recently commissioned plant, please indicate the production volume achieved to date:</p> <p>..... metric tonnes of pellets</p>
		The above reported production has been achieved during the following period: <i>from</i> 01.01.2016 <i>to</i> 31.12.2016
	Production <u>capacity</u>	8000 metric tonnes of pellets/year
	<u>Expected</u> production (if an expansion is expected) : metric tonnes of pellets/year
<p>CB. What evidence is available to substantiate the reported annual pellet production?</p> <p>Options include: internal registers, annual reports or sales documents.</p>		Internal registers together with the sales documents.
Supplier of the processing equipment (mills, densifiers) if applicable		<input type="checkbox"/> Andritz (Sprout-Matador, ADR Geldrop) <input type="checkbox"/> California Pellets Mill <input type="checkbox"/> Kemyx <input checked="" type="checkbox"/> Other, specify Munch
Date of commissioning of the biomass production plant		02/2010

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Describe the biomass production process, focusing on any variation from accepted practice, and including a detailed description of the processes undergone by feedstock.

In particular, at each stage, mention elements that might influence the calculation of the net fossil CO₂ emissions.

Production stage	Description
Feedstock delivery, storage and handling	<ul style="list-style-type: none"> • Delivery of fuel wood (together with sawlogs) from logging sites by truck MAZ 6303 • Transportation of sawdust and wood chips from silo storage to an open storage by MTZ tractor • The delivery of sawdust and wood chips in production and burner from the open storage by MTZ loader
Feedstock preparation (crushing, drying, milling....) ¹	<ul style="list-style-type: none"> • Chipping of slab wood with MP-40 diesel chipper • Chipping of fuel wood with electric chipper PC-942-P • Chipping of slab wood and offcuts by electric chipper Jenz • Drying sawdust and chips with a solid-fuel (chips) drum dryer
Pelletising	<ul style="list-style-type: none"> • Feeding of feedstock by pneumatic transport to a silo storage • Feeding from the silo storage to the conditioner to determine the moisture content of the feedstock • Feeding of feedstock into the granulator • Pelleting at 70-90 degrees without additives • Moving pellets into the cooler, big bags filling
Biomass storage, handling and shipping	<ul style="list-style-type: none"> • Loading of the pellet to a truck for transportation to the railway station by fork loader • Transportation of pellets to the railway station Parafyanov by truck • Overloading of pellets into hoppers with diesel auto crane with hydromanipulator • Transportation of pellets by diesel train

The description should include pictures of at least the following:

- Feedstock storage

¹ If any feedstock enters the site as logs, please specify clearly what machinery is used to crush the logs before they can enter the process together with the rest of the feedstock. In particular, the energy source used for this crushing must be stated and mentioned in section 4 of the document.

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- Overview of biomass manufacturing plant



- Dryer(s) (if any)



- Press(es)

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- Biomass storage and handling



A ground plan of the facilities and / or a flow chart should also be included if available.

This table should only be completed if no drying is undertaken.		
Moisture content	Initial moisture of the feedstock, as received % (wet basis)
	Explain, with reference to its origin, why the moisture content of the feedstock is sufficiently low to enable the production of pellets without prior drying.
	Biomass moisture content % (wet basis)

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This table should only be completed if drying is undertaken.		
Dryer information	Manufacturer	<i>Munch</i>
	Type	<input checked="" type="checkbox"/> drum dryer <input type="checkbox"/> belt dryer <input type="checkbox"/> other (specify).....
	Energy carrier <i>(The energy carrier is the transfer medium circulated in pipes and used to transport the heat from the boiler/burner to the dryer.)</i>	<input type="checkbox"/> steam <input type="checkbox"/> hot water <input checked="" type="checkbox"/> hot air / flue gases <input type="checkbox"/> other (specify).....
	Heat consumption <i>If a heat meter is installed, calculate how much heat energy from the boiler is provided to the dryer and give details of the calculation.</i> <i>If no heat meter is installed, there is no need to provide a figure.</i>	<input type="checkbox"/> heat meter installed : consumption =kWh / metric tonne reference period..... details of the calculation..... <input checked="" type="checkbox"/> no heat meter installed
Boiler / Burner / CHP information	Origin of the heat used in the drying process	<input checked="" type="checkbox"/> conventional biomass boiler/burner <input type="checkbox"/> conventional fossil fuel boiler/burner <input type="checkbox"/> biomass CHP (combined heat and power) <input type="checkbox"/> fossil fuel CHP (combined heat and power)
	<i>If a CHP is installed, specify CHP efficiency.</i>	CHP efficiency% = (valorised heat + net electricity) / primary energy input
Moisture content	Initial moisture of the feedstock	54.4 % (wet basis)
	If any of the feedstock is not fresh wood (moisture content <45%) explain its moisture content (for example, wood is from dead trees, sawdust is from an industry working with dry material).
	Moisture of feedstock at the dryer outlet, <u>if measured</u> (target moisture)	9,6 % (wet basis)
	Moisture of the pellets (finalmoisture)	11,0 % (wet basis)

Other relevant information, including justifications for data provided and methodologies used

The plant software provides the ability to monitor the moisture at all stages of preparation of feedstock for pelleting on the monitor screen.
Moisture is calculated as weighted average.

Validation by the CB

CB. What evidence / explanation was made available to the auditor to substantiate the moisture content of the feedstock:

- weighted average of moisture measurements performed on each individual feedstock shipment (one measurement per delivery)
- typical values based on some moisture measurement (number of measurements available = continuous measurements by operating system.)
- supplier / process specifications (documents available:.....)
- other explanation:
- no evidence or explanation available

PART 2 –Energy use

For each of the energy sources used in the production process, a detailed evaluation must be provided using the tables on the following pages. The description is based on three categories of energy sources: electricity, fossil primary energy, and non-fossil primary energy (biomass).

Electricity

Give the origin of the electricity used in the biomass production process.	<input checked="" type="checkbox"/> from network <input type="checkbox"/> own generation <input type="checkbox"/> genset <input type="checkbox"/> fossil cogeneration plant <input type="checkbox"/> biocogeneration plant <input type="checkbox"/> wind or solar farm <input type="checkbox"/> other (specify)	100% --- % --- % --- % --- %
If the electricity is from the network, please indicate how many kWh-meters cover the pellets production unit:	1	
Electricity consumption	1127887 / 7649 = 147,46 kWh / metric tonne pellets	
List the process steps/machinery using electricity:	Chipping process (2 external chippers), milling process, drying process, pelleting process, cooling, lightning.	
<p>Explain how this energy consumption has been evaluated:</p> <p><i>The calculation method based on electricity invoices is the most accurate and reliable one. This method <u>must</u> be used if feasible.</i></p> <p><i>The reference period to assess electricity consumption <u>must</u> be one year unless it can be justified that it is not feasible (for example, newly commissioned facilities).</i></p>	<input checked="" type="checkbox"/> invoices of external electricity supplier and biomass production achieved, during the following period: 01.01.2016 - 31.12.2016 <input type="checkbox"/> specific fuel consumption and electrical efficiency of installed cogeneration plant and biomass production	<input checked="" type="checkbox"/> a theoretical evaluation based upon specific consumption of installed machinery and nominal production capacity of the plant (electric chipper) <input checked="" type="checkbox"/> Other explanation: One kWh-meter covers pellet plant and this data is available for every month
CB. If the calculation method is not based on invoices verification, explain why:	One chipper is covered by Kwh meter of sawmill.	
CB. If a reference period other than 12 months has been used to assess the specific electricity consumption, justify why:	
CB. Provide the full calculation resulting in the energy consumption shown above:	1127887 / 7649 = 147,46 kWh / metric tonne pellets One kWh-meter covers pellet plant and this data is available for every month, one chipper consumption included (1017262 kWh). Additionally, calculation done for electric chipper Jenz (110625 kWh total). Theoretical approach used based upon specific consumption of installed machinery (75 kW engine,	

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	load factor is 0,5 based on experimental measurements) and hours (2950 h)
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Natural Gas - not applicable -

Other fossil fuels

<p>Specify any fossil primary fuels), other than natural gas used as an energy source in the biomass production process. If any fossil fuels are used, specify in which part of the process:</p> <p><input checked="" type="checkbox"/> handling <input checked="" type="checkbox"/> chipping / crushing <input type="checkbox"/> drying <input type="checkbox"/> other (specify).....</p>	<p><input type="checkbox"/> industrial gas <input checked="" type="checkbox"/> diesel oil <input type="checkbox"/> propane <input type="checkbox"/> waste heat fossil boiler (specify fuel)..... <input type="checkbox"/> waste heat fossil CHP (specify fuel)..... <input type="checkbox"/> other (specify).....</p>
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Each fossil energy source must be described in detail in the table hereunder. Use as many copies of this table as necessary in order to cover each fossil fuel.

<p>Fossil fuel 1 (specify): Diesel</p>	<p>(Use one table for each applicable fossil fuel.)</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>#</th> <th>Production stage</th> <th>Consumption in reference period</th> <th>l diesel / ton pellets</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Feedstock haulage</td> <td>908,92 l / 7649,01 ton</td> <td>0,119</td> </tr> <tr> <td>2</td> <td>Feedstock onsite</td> <td>7801.99 l / 7649,01 ton</td> <td>1,020</td> </tr> <tr> <td>3</td> <td>Chipper</td> <td>(2028,25 * 1,84) l / 7649,01 ton</td> <td>0,488</td> </tr> <tr> <td>4</td> <td>Loading train</td> <td>727,28 l / 7354,91 ton</td> <td>0,099</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total (l diesel / ton pellets)</td> <td>1,726</td> </tr> </tbody> </table> <p>62,04 MJ / metric tonne</p> <p>1,73 litres / metric tonne pellets</p> <p>.....kgs / metric tonne pellets</p>	#	Production stage	Consumption in reference period	l diesel / ton pellets	1	Feedstock haulage	908,92 l / 7649,01 ton	0,119	2	Feedstock onsite	7801.99 l / 7649,01 ton	1,020	3	Chipper	(2028,25 * 1,84) l / 7649,01 ton	0,488	4	Loading train	727,28 l / 7354,91 ton	0,099	Total (l diesel / ton pellets)			1,726
#	Production stage	Consumption in reference period	l diesel / ton pellets																						
1	Feedstock haulage	908,92 l / 7649,01 ton	0,119																						
2	Feedstock onsite	7801.99 l / 7649,01 ton	1,020																						
3	Chipper	(2028,25 * 1,84) l / 7649,01 ton	0,488																						
4	Loading train	727,28 l / 7354,91 ton	0,099																						
Total (l diesel / ton pellets)			1,726																						
<p>Step of the process/machinery using fossil fuels</p>	<p><input type="checkbox"/> Transportation of sawdust and chips from storage bins to an open storage warehouse by MTZ 82 tractor <input type="checkbox"/> Supply of sawdust and chips in production from the open storage warehouse by the MTZ loader <input type="checkbox"/> Crushing of the slab with a chipper MR-40-01 <input type="checkbox"/> Loading the transport pellet to the railway station Parafyanov</p>																								

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<p>CB. How has this energy consumption been calculated:</p>	<p><input type="checkbox"/> invoices from fuel suppliers, for the following period:</p> <p><input type="checkbox"/> fuel consumption monitored by the supplier for the following period:</p> <p><input checked="" type="checkbox"/> a theoretical calculation based upon specific consumption of installed machinery.....</p> <p><input type="checkbox"/> other method:</p>
<p>CB. Provide the full calculation that results in the energy consumption shown above:</p>	<p>Transportation of sawdust and chips from sawmill storage bins to the pellet factory open storage warehouse Transportation is carried out with the MTZ-82 tractor. Fuel consumption of the tractor for 1 trip MTZ-82 - 0.19 liters. The average loading of one trip is 3.54 m3. Number of trips MTZ $16\,944 / 3,54 = 4784$ The fuel consumption for transportation was $4784 \times 0.19 = 908.92$ l</p> <p>Supply of sawdust and chips in production from the open storage warehouse by the MTZ loader During the reporting period pellet production used 19748.26 m3 of sawdust and chips. The filing of hopper by sawdust and chips from the open storage warehouse was carried out by the MTZ loader. The fuel consumption is 1.02 l / t pellets. The fuel consumption was $7649.01 \times 1.02 = 7801.99$ l</p> <p>Crushing of the slabwood with a chipper MR-40-01 For the reporting period was processed into chips 2028.25 M3 of slabwood. The rate of fuel consumption is 1.84 l / M3. The fuel consumption is: $2028.25 \times 1.84 = 3731.98$ liters.</p> <p>Loading of the transport pellet to the railway station Parafyanov During the reporting period, all forklifts in the pellet shop were handled by the HCCPCD50KW forklift. Its consumption of diesel fuel is 3.3 l / h. Time to load one machine is 31 minutes. The average load of one machine is 17.02 tons of pellets. $3.3 \times 0.51 = 1.68$ liters of diesel to load one mashine. Or $1.68 / 17.02 = 0.10$ liters of diesel / t pellets.</p>

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Biofuel primary energy

<p>Specify any non-fossil bio fuel used as an energy source in the biomass production process. If any biomass is used, specify in what part of the process:</p> <p><input checked="" type="checkbox"/> drying</p> <p><input type="checkbox"/> other (specify).....</p>	<p><input type="checkbox"/> wood pellets</p> <p><input type="checkbox"/> sawdust / shavings</p> <p><input checked="" type="checkbox"/> wood chips</p> <p><input type="checkbox"/> logs / roundwood</p> <p><input type="checkbox"/> branches, offcuts, tree stumps....</p> <p><input type="checkbox"/> bark.s</p> <p><input type="checkbox"/> non woody biomass (specify)</p>
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Each bio energy source must be described in detail in the table below. **Use as many copies of this table as necessary** in order to cover each type of bio fuel.

Biofuel 1 <i>(specify):</i>	Wood chips (from slab wood and offcuts)
Moisture contents	54.4 % wet basis
Origin of the bio fuel (Please tick only one box; if several boxes are applicable, use additional copies of this table.)	<p>Origin</p> <p><input type="checkbox"/> diverted from biomass process</p> <p><input checked="" type="checkbox"/> from sawmills / wood industry</p> <p><input type="checkbox"/> from forest harvesting/thinning</p> <p><input type="checkbox"/> other....</p> <p>Transport</p> <p><input checked="" type="checkbox"/> locally available (i.e. from own process or from next door sawmill or industry)</p> <p><input type="checkbox"/> transported by</p> <p style="padding-left: 20px;"><input type="checkbox"/> truck</p> <p style="padding-left: 20px;"><input type="checkbox"/> train</p> <p>for 0,1 km</p>
Fuel consumption	<p>Tonne bio fuel / Tonne pellets: 0,251 (3112,76 m³ * 0,616 ton/m³) / 7649,01 ton = 0,251</p> <p>MJ (biomass) / metric tonne (pellets): 1783 MJ / ton 7106 MJ/MT* fuel wood * 0,251 = 1783 MJ/MT pellets * Fuel wood with 54,4% MC (source: FAO Wood Fuel Handbook)</p>
CB. Provide the full calculation that results in the fossil fuel consumption shown above:	The amount of material used in the dryer is recorded and thus known. To calculate the MJ per tonne of material FAO Wood Fuels Handbook was used.

Other relevant information, including justifications for data provided and methodologies used.

Pellet plant consumption and electric chipper PC-942-P are covered by one kWh-meter. Second chipper consumption is calculated theoretically (Power, working hours and work load coefficient).

Diesel consumption is calculated on theoretical basis for every production operation where vehicles are involved, since all vehicles are not fully engaged for pellet production operations, but for other tasks too. Total absolute consumption of diesel calculated for pellet production is divided to number of tons produces.

Amount of biofuel used for heating purposes:

Fuel wood is defined according to normative approach defined by the plant;

Lower heating value of fuels are defined according to following sources:

Woody fuel: Wood Fuel Handbook;

Diesel: Biograce II values.

SECTION C: Energy use for transport of biomass

This Section (C) shall be completed for each Static Data Indicator (SDI).

Use a separate copy of the table to describe each SDI.

Static Data Indicator: SBP-01-57-02

PART 1 – General transport data

Transport scheme

(For each relevant item of the transport scheme, check the applicable box and fill in the related details.)

✓ Inland road transportation

<u>Road distance</u> K =40 km <u>Load of the trucks</u> Q = 17.02 metric tonnes	<u>Transport from/to:</u> From City/Town of Begoml To City/Town of Parafianov <input checked="" type="checkbox"/> train station <input type="checkbox"/> seaharbour <input type="checkbox"/> river harbour <input type="checkbox"/> power plant	<u>Truck powered by:</u> <input checked="" type="checkbox"/> fossil diesel oil <input type="checkbox"/> bio-diesel <input type="checkbox"/> bio-ethanol <input type="checkbox"/> other 69,93 MJ/MT of pellets 1,95 l diesel / MT of pellets
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✓ Inland rail transportation

<u>Distance</u> K =189 km <u>Load of the wagon</u> Q = 50 metric tonnes	<u>Station of origin:</u> City/Town of Parafianov <u>Transport to:</u> City/Town of Bigosovo <input checked="" type="checkbox"/> train station <input type="checkbox"/> seaharbour <input type="checkbox"/> riverharbour <input type="checkbox"/> power plant	<u>Train powered by:</u> <input type="checkbox"/> electricity <input checked="" type="checkbox"/> diesel oil <input type="checkbox"/> bio-diesel <input type="checkbox"/> other 47,25 MJ/t of pellets
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Inland river transportation (flatboats)

<u>Distance</u> K =..... km <u>Load of the boat</u> Q =.....metric tons	<u>River harbour of origin:</u> City/Town of <u>Transport to:</u> City/Town of <input type="checkbox"/> sea harbour <input type="checkbox"/> power plant	<u>Boats powered by:</u> <input type="checkbox"/> fossil dieseloil <input type="checkbox"/> bio-diesel <input type="checkbox"/> other
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International sea or river transportation

<p><u>Distance K</u>=..... km</p> <p><u>Sea Harbour of origin:</u> From City/Town of</p> <p><u>Transfer to: Destination port area</u></p>	<p><u>Contract type</u></p> <p><input type="checkbox"/> Free-on-Board (<i>FOB</i>) <input type="checkbox"/> Cost Insurance Freight (<i>CIF</i>)</p>
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Validation by CB

The auditor must review the information delivered above and verify the data focusing on two parameters that play an important role in the CO₂ emissions:

- type of vehicles used for transport (*visual check of vehicles / transport facilities on site*)
- destination and distances (*to be checked on a map*)

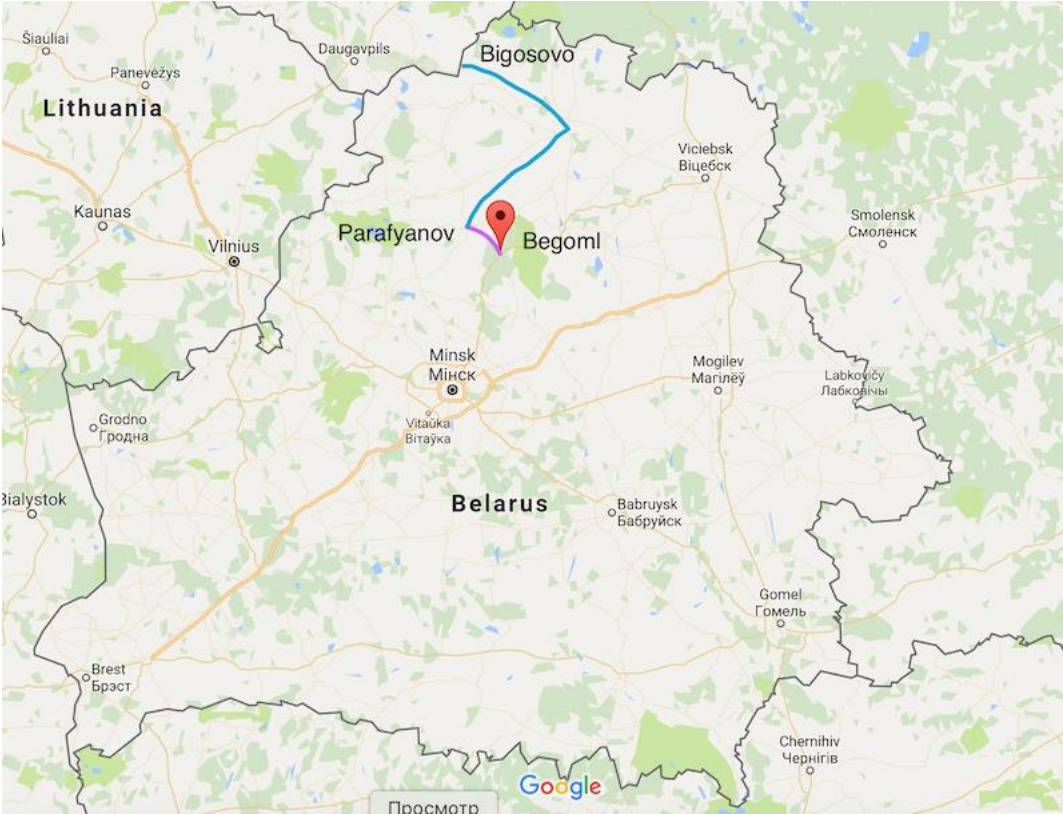
The auditor must add a map and should comment on the validation of the transport scheme as necessary.

Transport scheme is validated based on maps and type of vehicles used. Visual evaluation of the trucks at the site and trains used.

Geographic map:

Pink line – truck delivery to train station Parafyanov
 Blue line – diesel train delivery to border with Latvia – Bigosovo

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PART 2 –Sea transport

Not applicable

PART 3 –Storage, handling and trans-shipment

Description of any storage, handling or trans-shipment	Unloading of trucks and loading of hoppers by diesel crane.
Quantity of biomass handled at the different storage, handling and trans-shipment locations	7354,9 t
Energy usage data	0.19 l/t – unloading of 1 t of pellets, 0.33 – loading to hopper of 1 ton of pellets. 0,19+0,33=0,52 l diesel/t of pellets, or 0,52*35,86= 18,6 MJ/t
Justification for the approach followed and the values provided	Fuel consumption for unloading and hopper-loading processes were measured and defined consumption per ton of pellets.

Other relevant information, including justifications for data provided and methodologies used.

Pellets are loaded to the truck by a fork loader (this fuel consumption is included in production process). One truck carries 17.02 t of pellets and delivers them to 40 km one way. Fuel consumption of this truck is 36 l/100km. Fuel consumption for this delivery is calculated for 80 km (round rout). Full load coefficient is 1,3.
 $36/100*40 + (36*1,3)/100*40 = 33,12/17,02 = 1,95$ l diesel / MT of pellets,
 or 69,9 MJ/MT of pellets.

Contact details and audit reportsignature

Certificate Holder

Date	29/05/2017
Name, signature and optional stamp of representative filling in the declaration	Artem Zamchenok 

Auditor

Title (Mr/Mrs/Miss/ Ms? Dr)	Mr
Name of the auditor	Aliaksandr Zubkevich.
Name of the Certification Body	NEPCon OÜ
Address	Street: Filosoofi 31 City:... TartuPostcode 50108 Country: ... Estonia
Contacts	Tel :... , +420 606 730 382. Fax: e-mail:... ot@nepcon.net .

Signature of the auditor

Date	29.05.2017
I certify that the data gathered in this form has been checked and validated in compliance with SBP Standard #5 and SBP certification procedures. Signature	

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Technical reviewer


Date and place	30/05/2017 Brno, Czech Republic
Name of the reviewer	Ondřej Tarabus
I certify that the data gathered in this form has been checked and validated in compliance with SBP Standard #5 and SBP certification procedures. Signature	

Certification decision maker

Date and place	30/05/2017 Brno, Czech Republic
Name of the Certification decision maker	Ondřej Tarabus
I certify that the data gathered in this form has been checked and validated in compliance with SBP Standard #5 and SBP certification procedures. Signature	

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SAR Validation

Date and place	15 th June 2017.....
Name of the reviewer	François Ducarme
I certify that the data gathered in this form has been checked and validated in compliance with SBP Standard #5 and SBP certification procedures. Signature and stamp	

SBP Chief Executive Officer

Date and place	21 st June 2017.....
Name of the SBP CEO	Carsten Huljus
I certify that the data gathered in this form has been checked and validated in compliance with SBP Standard #5 and SBP certification procedures. Signature	