

SBP Audit Report (SAR) on Energy and Carbon Data for Pellets

for Biomass Producers producing pellets1

Version 2.1

SBP certificate holder number: [SBP-01-57]

SBP certificate holder name: State Forestry Institution 'Begoml Forestry Enterprise'

Please visit www.sbp-cert.org for more information about the biomass producer

Reporting period. Reporting period (should be based on 12 months) and the start date shall not be older than 18 months from the audit date.

From: 01/07 /2020 To: 01/07/2021

SAR expiry date (=date of the first audit closure for the reporting period+ 15 months): 02/09/2021

¹ and woodchips if both stationary chipping and thermal treatment are carried out on a separate processing site.

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1 Generalities

1.1 General information on the Biomass Producer

Company name	Begoml Forest Enterprise
Contact person on site	Nadzeya Polochanina +375-29-3919601
	Email: kach_begom@vitebsk.mlh.by
Contact person's function	Quality Engineer
E-mail address	glhu_begoml@vitebsk.by
Address (physical location of the biomass production unit, pellet plant or woodchips processing unit)	Yukhnovtsa street, 21, 211730,Begoml, Dokshitsy district, Vitebsk region, Belarus
Telephone	+375215753144
DBSD enabled? (has BP established the system for feedstock groups and is allowed to use the 99 code in DTS)	Yes

1.2 Justifications for data provided and methodologies used

This space made be used to provide additional information appropriate to the whole SAR, for example selection of a reference period other than 12 months or how recording of data has been undertaken for a recently commissioned plant.

1.3 Basic information on the Certification Body (CB)

Name of the Certification Body	09/2021
Audit team members	UAB NEPCon LT
Qualifications of team members	Aliaksandr Zubkevich
Contact details of the auditor (email)	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.

2 Feedstock data

2.1 Feedstock Groups – as defined by local industry practice

Guidance: please click on the row and then click on "+" button on the right to add another row.

In case of multiple transport steps for a Feedstock Group (column A) proceed by adding one line and merging other columns.

It is not required to include feedstock that is ONLY used as biomass fuel, but optionally this can be done if data are available and verifiable.

If part of the Feedstock Group is diverted as biomass fuel, then consider the TOTAL mass here and add also a corresponding line in Table 3.5 Complete all columns, mark N/A if not relevant.

raw mass of feedstock as I for biomass production ng period, including shares omass fuel. ¹	22595,43	metric tonne as received
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Α	В	С	D	E	F	G	Н	I	J	K	L	М
#	Origin	Feedstock type	Physical description	Country of harvest (new row for each country) ⁴	Raw mass as received in metric tonnes	Moisture % as received (weighted average, single figure) ²	Weighted average distance (km)	Maximum distance (km)	Vehicle	Vehicle powered by	Weighted average load of the vehicle	Specify any pre- processing OUTSIDE the BP plant (chipping, drying, none) ³
1	Processi ng residues	Sawmill and wood industry residues	Chips	Republic of Belarus	12480,09	66,11	0,5	0,7	Tractor MTZ-82	diesel oil	3,53	drying
2	Processi ng residues	Sawmill and wood industry residues	Sawdust	Republic of Belarus	10115,35	66,11	0,5	0,7	Tractor MTZ-82	diesel oil	3,53	drying

¹Sum all values in column F of the Table (Letter ID's refer to Instruction Document 5E)

²Where the moisture content of the feedstock is not recorded; the BP may provide an estimate or use a default value.

³ If chipping or drying takes place inside the pellet or chipping plant then please specify the information in the relevant sections 3.3 and 3.4

Nation or large region of nation (like State of USA, Province of Canada, Region of Russia)	

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

Please mention at the minimum:

- for the Origin, the evidence elements assessing the thinning character of the origin,
- for the Feedstock type, the evidence elements assessing the low grade character of the stemwood, in comparison with local high grade specifications (like sawlogs for local sawmills).
- -you may also specify optional data on energy use and chemicals in forests

2.3 Validation by the Certification Body

Parameter	Comments/information
Origins	What evidence was available on site to confirm the origins? (for example, CMR, supplier invoices, supplier contracts, registers), in particular for thinnings:
	Describe here
Feedstock types	What evidence was available on site to confirm origins and feedstock types? (for example, CMR, supplier invoices, supplier contracts, registers, physical evidence on site), in particular for the low grade character of stemwood.
	Describe here
Physical description and	What evidence was available on site to confirm those data?
description and raw mass	Describe here
Distances	Are the average distances validated by checking locations on a map?
	Yes/No
Vehicles	Was the auditor able to confirm the type of vehicles / transport facilities used to transport the feedstock to the production site? (visual checking?)
	Yes/No

3 Biomass production

Please see appendix 1 for photos and full description of the production process. Biomass product can be wood pellets or woodchips or energy logs

3.1 Total production

	A <u>ctual</u> biomass	Production during reporting period		
	production (1)	8379,39	metric tonnes	
Annual production	Design capacity:	8000	metric tonnes of biomass product/year	
	Average lower heating value:	18,6	MJ/kg (wet basis) average for the reporting period	
(CB) What evidence is available to substantiate the reported annual biomass production? Options include: internal registers or annual reports.		1C accountant program		

3.2 Electricity use

Not applicable □

	⊠ from network	1107108 kWh	
	☐ on-site generation	kWh	
Give the origins of the electricity used in the biomass production	☐ CHP plant (see 3.5.4)	kWh	
process during the reporting period (2)	☐ wind or solar farm	kWh	
	□ other (specify)	kWh	
	Total specific electricity use sum of (2)/(1)	132,12 kWh/metric tonne	
Explain how this energy consumption has been evaluated: The calculation method based on electricity invoices is the most accurate and reliable one. This method must be used if feasible. Please provide the calculation itself	 □ a theoretical evaluation based upon specific consumption installed machinery and nominal production capacity of plant ☑ Other explanation: in the shop for the production of fuel 		
	readings Calculation: 1107108/8379,3	9=132,12 kWh/metric tonne.	

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

3.2.2 Validation by the CB

(CB) What evidence / explanation was made available to the auditor

3.3 Use of fossil fuels

Not applicable ⊠

Each fossil energy source must be described in detail in the table hereunder. Use as rows as necessary in order to cover each fossil fuel. If any responses are marked as 'other', please include further detail in the box below (also for offsite chipping by third party)

Type of fossil fuel	Total consumption during reporting period (value)	Units	For gaseous fuels specify high or low heating value	Processing step using fossil fuels	How has this energy consumption been calculated:
Diesel oil	16016	litre (liquid only)	N/A	handling	Fuel consumption is registed in 1C

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

The feedstock at the production plant is ha	andled by front loader Amkodor 10-24.
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3.3.2 Validation by the CB

(CB) What evidence / explanation was made available to the auditor

3.4 Use of biomass fuels

Not applicable □

Use as many rows as necessary in order to cover each type of biofuel and each process.

Feedstock ID Group in Table 2.1 if applicable or NA ¹	Biomass type ²	Total consumption during reporting period (value)	Units	Moisture content %as received, point of use	Processing step using biomass fuels	How has this energy consumption been calculated:
Feedstock Group 1	saw mill residues (dust, chips,)	3325,14	m3	66,11	boiler	Fuel consumption is registered in 1C

¹If biomass fuel is diverted from Feedstock Groups, please mention them in column 1.

² Each type of biomass used as a fuel must be described per type

3.4.1 Other relevant information, justifications for data and methodologies used

The distance from the plant to the Parafyanov station is 40 km.

The granules are transported by MAZ 642205 truck with a semitrailer. Fuel consumption, according to waybills (according to the dispatcher's data), for the transportation of 1 pellet machine is 38,333 liters (average value). The car transports 17.3 tons of pellets / aut. (mean).

We get the fuel consumption for the transportation of 1 ton of pellets to the Parafyanov station, it is 38,333 / 17.3 = 2,22 l / t. Or 2,22 * 35.86 = 79,61 MJ / t of pellets.

Pellet handling is carried out by a MAZ vehicle with a hydraulic manipulator (MAZ630308). Fuel consumption rate for unloading pellets is 0.2 l of diesel / t, loading into a car - 0.34 l of diesel / t

We get: $0.2 + 0.34 = 0.54 \, \text{l}$ of diesel / t, or $0.54 * 35.86 = 19,4 \, \text{MJ}$ / t.

3.4.2 Validation by the CB

(CB) What evidence / explanation was made available to the auditor
(,

3.5 Moisture content and drying

Is feedstock dried as part of the biomass production process? If \underline{no} , complete table 3.5.1. If \underline{yes} , complete table 3.5.2.

3.5.1 No drying □ Only complete this table if no drying is undertaken.						
Feedstock 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 biomass product without prior drying.					
	Explain how it is monitored / evaluated?	☐ weighted average of moisture measurements performed on each individual feedstock shipment (one measurement per delivery)				
		☐ typical values based measurement (frequer)	I on some moisture ncy of measurements =			
		☐ supplier / process specifications (documents available:)				
		☐ other explanation:				
		☐ no evidence or expl	anation available			
Biomass moisture content	Moisture of biomass as produced	% (wet basis)				

3.5.2 I	Drying applicable \boxtimes Only complete this table if drying is					
u	undertaken.					
This table must be completed for each type of dryer.						
Moisture content	Initial moisture of the feedstock, as received	66,11	% (wet basis)			
	Explain how it is monitored / evaluated Tick all boxes that apply and provide additional information in 3.3 as required	 ☑ weighted average of moisture measurements performed on each individual feedstock shipment (one measurement per delivery) ☐ typical values based on some measurements (frequency of measurements =) ☐ supplier / process specifications (documents available:) ☐ default values e.g. for round wood ☐ other explanation: ☐ no evidence or explanation available 				
	Moisture of feedstock at the dryer outlet, if measured (target moisture)	10,15	% (wet basis)			
	Moisture of the finished biomass product (as produced)	10,39	% (wet basis)			
	Туре	□ drum dryer □ belt dryer □ other (specify)				
	Energy carrier (The energy carrier is the transfer medium circulated in pipes and used to transport the heat from the	□ steam □ hot water ⊠ hot air / flue gases				
	boiler/burner to the dryer.) Heat consumption	□ other (specify)				
Dryer	If a heat meter is installed, calculate how much heat energy	□ heat meter installed: consumption =kWh				
	from the boiler is provided to the dryer and give details of the calculation.	□ no heat meter installed				
	Detailed calculation of the heat consumption					
	Origin of the heat used in the drying process	□ burner⋈ conventional boiler□ CHP (combined heat a	nd power)			

3.5.3 Information where a conventional boiler is used

Not applicable ⊠

Report fossil and biomass fuels used as input resp. in 3.3 and 3.4 under 'boiler'		
Total heat output from boiler that is effectively recuperated and used in an application during reporting period	kWh	
Total heat output from boiler that is used in drying during reporting period	kWh	
How has this data been calculated (e.g. metered data, theoretical calculation based on specific consumption of installed machinery)	·	

3.5.4 Information where a CHP is used

Not applicable ⊠

Fuel input of Report fossil and biomass fuels used as input resp. in CHP				
OT III	or 3	rd party CHP' as relevant and calculate corresponding (i) and (2) values	
	1	Total fuel input quantity (unit= t, m³ or litre)		Choose an item.
	2	Weighted average lower heating value of total fuel input, as received (resp. unit= MJ/t, MJ/m³ or MJ/litre)		Choose an item.
	3	Total fuel input =(1) x (2)/3.6		kWh
Electricity output of CHP	4	net electricity used <u>on site of BP</u> for biomass production as copy/pasted from 3.2 under 'CHP plant'		kWh
	5	net electricity used <u>on site of BP</u> but <u>not for biomass</u> <u>production</u>		kWh
	6	other net electricity generated by CHP that is <u>not</u> <u>used on site of BP</u> and is <u>not self-consumption by</u> <u>CHP</u>		kWh
	7	Total net electricity from CHP = (4) +(5) +(6), excluding self-consumption by CHP		kWh
Heat output of CHP	8	Reference temperature of heat at the point of use (if measured)		°C
	9	net heat used <u>on site of BP</u> for biomass production		kWh
	10	net heat used <u>on site of BP</u> but <u>not for biomass</u> <u>production</u>		kWh
	11	other net <u>heat used</u> by any other party		kWh
	12	total net heat <u>used</u> from CHP = $(9) + (10) + (11)$		kWh
CHP yield	Tota	al net CHP yield (=(7) +(12))/ (3)		%
How has this data been calculated (e.g. metered data, theoretical calculation based on specific consumption of				

installed	
machinery)	

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

When some data among (1) to (12) is not available, please justify. In all cases at least the best estimate possible for (3), (4), (7), (9) and (12) must be given, as well as the distinction between fossil or biomass origins of the fuels.

3.5.6 Validation by the CB

(CB) What evidence / explanation was made available to the auditor to substantiate the Biomass production chain moisture content of the feedstock and drying of feedstock:

4 Transport of biomass

Static Data Indicators (SDIs)	Description of SDI
included in this report: [In format	(This should include geographic location, and where appropriate type
XX-YY-ZZ]	of facility (e.g. port) and means of transport to location and any other
	identifier (e.g. FOB or transfer of ownership)) – 40 characters limit
01-57-06	To factory gate
01-57-05	Transportation to Bigosovo railway station

Please add the number of SDIs as required.

4.1 General transport data

Please complete a column for each SDI.

If the SDIs do not match the format of the table below please change the orientation of the page or transposition the table.

DATA	01-57-06	01-57-05
SDI starting point	factory gate	factory gate
Distance (km)	, 0	40
Transported to?		Parafyanov railway station
Mode of transport	Choose an item.	road
Transport powered by?	Choose an item.	fossil diesel oil
Transport capacity (tonnes)		20 MT per truck
Actual fuel use if known (litres)		23.396 I per flight
Backhaul if known		MAZ 642205
Starting location		Parafyanov railway station
Distance (km)		20
		Krulevshchizna
Transported to?		railway station
Mode of transport	Choose an item.	rail
Transport powered by?	Choose an item.	fossil diesel oil
Transport capacity (tonnes)		52 MT per railcar
Actual fuel use if known (litres)		-
Backhaul if known		no
Starting location		Krulevshchizna railway station
Distance (km)		91
Transported to?		Polotsk railway station

Mode of transport	Choose an item.	rail
Transport powered by?	Choose an item.	fossil diesel oil
Transport capacity (tonnes)		52 MT per railcar
Actual fuel use if known (litres)		-
Backhaul if known		No
Starting location		Polotsk railway station
Distance (km)		78
Transported to?		Bigosovo railway station
Mode of transport		rail
Transport powered by?		fossil diesel oil
Transport capacity (tonnes)		52 MT per railcar
Actual fuel use if known (litres)		-
Backhaul if known		No
Scope end point	Factory gate	Bigosovo railway station

4.2 Storage and handling of biomass

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

Not applicable □

Physical address	Parafyanov railway station		
Description of activity occurring at	Loading of railway wagons by MAZ truck with hydraulic		
this location	manipulator (MAZ 3630308)		
Maximum time of storage	0 days/months		
Relevant contact person	Zhdanko Viktar		
Telephone / Fax company office	80215754731		

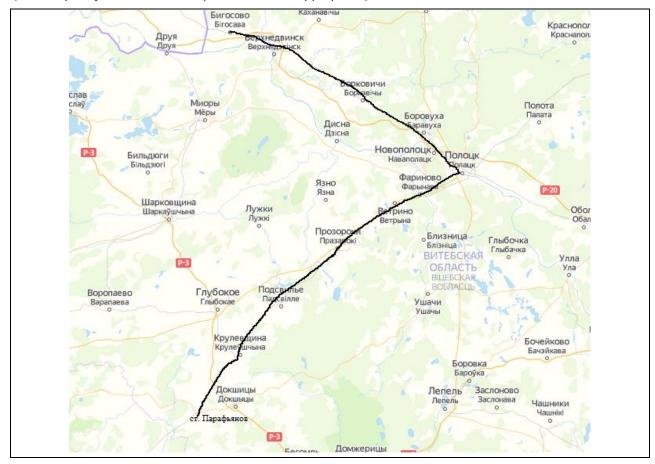
Please indicate energy requirements for storage and handling of biomass, where information is available.

	Value	Unit
Electricity		kWh/t

Fossil fuels	Value	Unit
Choose an item.		kWh/t
Choose an item.		kWh/t

4.3 Regional map demonstrating biomass producer and location of SDIs

(One map may be used for multiple SDIs where appropriate)



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

Distance by rail from Parafyanov station to Bigosovo station - 189 km.

(Source: Belarusian Railways website)

Pellets sold for export are transported in grain wagons.

Pellets sold 8120,38 tons.

4.5 Validation by CB

The CB 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 CB should comment on the validation of the transport scheme as necessary.

5 Dynamic Batch Sustainability Data (DBSD)

Record all biomass with DBSD during the reporting period that have been shared to the DTS (as defined in Instruction Document 5E clause 5.2).

Biomass Category	Metric tonnes
SDE+ cat5	8120,38 mt

5.1 Validation by the CB

(CB) What evidence / explanation was made available to the auditor. Has corresponding DTS data been verified??

6 Key dates and representatives

This document is (select option)	new SAR with updated reporting period
Summary of changes if SAR was updated	

6.1 Certificate Holder

Name of the representative of the BP certifying that this template has been filled in to the best of his ability	Nadzeya Polochanina

6.2 Certification Body

Date 1 (=date of closure of the last audit)	DD/MM/YYYY
Name of the auditor certifying that the data gathered in this form has been checked and validated in compliance with the last version of SBP Standard #5 and SBP certification procedures.	
Name of the technical reviewer having checked this document	
Name of the certification decision maker	

6.3 SAR validation and upload in the DTS

Date 2 (= date upload SAR in the DTS = SAR reference)	DD/MM/YYYY
Please indicate corresponding validity date on page 1. Keep validity date as in previous SAR version if it is an updated version without change of the reporting period.	validity date = date 1 + 15 months
Name of the SBP officer in charge of validation	

Appendix 1: Photographs/illustrations

This shall include photographs/illustration/pictures of at least the following:

- Feedstock storage
- Overview of biomass manufacturing plant
- Dryer(s) (if any)
- Wood chippers (green island, dry island)
- Press(es) if wood pellets
- Biomass storage and handling

A ground plan of the facilities and / or a flowchart shall also be included if available.

Please add dates when photographs were taken.

Appendix 2: Production process

Describe the on-site biomass production process, focusing on any variation from best practices, and including a <u>detailed</u> description of the processes undergone by feedstock.

	Weighbridge or other volume measuring	 □ applicable to all feedstock groups □ applicable only to feedstock group nr ⋈ not applicable 		
	Moisture monitoring	 ☑ applicable to all feedstock groups ☐ applicable only to feedstock group nr ☐ not applicable 		
Feedstock delivery Unloading		 □ truck tipping □ live bottom truck □ moving floor ⋈ grab/front end loader/crane □ hopper/conveyor belt □ blowpipe □ other (specify) 	applicable to feedstock group nr	
Feedstock storage		⋈ wood yard□ warehouse□ silo□ other (specify)□ no storage	applicable to feedstock group nr	
Feedstock handling		□ rolling stock □ conveyor □ blowpipe □ other (specify)		
Feedstock	Debarking	□ applicable to all feedstock group nr □ applicable □ applicable □ applicable to all feedstock groups □ applicable to all feedstock groups □ applicable only to feedstock group nr □ delayed to all feedstock groups □ applicable only to feedstock group nr		energy source ☐ electricity ☐ diesel ☐ other(specify)
preparation	Chipping			energy source ☐ electricity ☐ diesel ☐ other(specify)

	Drying	□ applicable to all feedstock groups □ applicable only to feedstock group nr □ not applicable	□ drum dryer (number:) □ belt dryer (number:) □ other(specify) □ hot air □ hot water □ steam	Energy source(s) □ biomass burner/boiler □ fossil fuel burner/boiler (specify fuel) □ own biomass CHP □ third party fossil fuel CHP (specify fuel) □ own fossil fuel CHP (specify fuel) □ third party biomass CHP □ steam from biomass CHP □ other(specify)
Sizing	Before dryer (green)	 □ applicable to all feedstock groups □ applicable only to feedstock group nr ⋈ not applicable 		
(hammer mill) After dryer		□ applicable to all feedstock groups □ applicable only to feedstock group nr □ not applicable		
Pelletising		number of presses 1	design capacity of each press .1,7 tonnes/hour	
Product handling ☐ rolling stock, ☐ conveyor		belt. \square blowpipe, \boxtimes	forklift, □ other (specify)	
Product storage		 ⋈warehouse silo open air (woodchips or black pellets) dome (for pellets) other (specify) no storage 	maximum storage capacity: tonnes	
In this appendix, please concentrate on elements that might influence the calculation of the net fossil CO ₂ emissions (anything which will contribute >1% of the total Carbon emissions).				
Other relevant information to the biomass production process not captured anywhere else				