1. Identification

Call	Date of submission
C1	25/04/2022

1.1. Full name of the project

Innovation in forestry biomass residue processing: towards circular forestry with added value products

102 / 250 characters

1.2. Short name of the project

CEforestry

10 / 20 characters

1.3. Programme priority

3. Climate-neutral societies

1.4. Programme objective

3.1 Circular economy

1.6. Project duration

Contracting start	22/09/2022	**Contracting end**	31/12/2022
Implementation start	01/01/2023	**Implementation end**	31/12/2025
		Duration of implementation phase (months)	36
Closure start	01/01/2026	**Closure end**	31/03/2026

1.7. Project summary

CEforestry-Innovation in forestry biomass residue processing: towards circular forestry with added value products.
Volumes of underutilized forestry biomass residues (bark, needles, cones etc.) in the Baltic Sea region are huge and countries are in different development phases in relation to the utilization of forestry side streams. In many cases these side streams are used as lower value products e.g. bioenergy, however biomass is an ultimate resource for isolation of high value compounds with various applications.
The objective of CEforestry is to develop new and innovative practices (circular economy concepts) in forestry and novel solutions to utilize forestry side stream in BSR. This will be achieved through innovative means of collaboration across sectors (researchers, target SMEs, large companies and other relevant actors) and demonstrated in pilot facilities.
A Circular Economy business model will be developed based on the project results and the aim is to propose recommendations to utilize forestry side streams in BSR countries in order to meet EU Green Deal, EU Circular Economy and Baltic Sea region bioeconomy strategy goals.
The results from the project will benefit circular forest economy and enterprises interested in refining sustainable novel products. The activities will involve target groups, 12 partners and 17 associated partners from Poland, Latvia, Lithuania, Finland and Sweden.

1,423 / 1,500 characters

1.8. Summary of the partnership

• Swedish University of Agricultural Sciences (SLU) will coordinate the project. SLU will work with mapping of forestry biomass residues in BSR to reveal the potential of the side-streams in relation to the target products. The pilot plant at SLU for pre-treatment of the forest side-streams. Mitigation of gas generation form recycled pulp and municipal wastewater by addition of extracts will be monitored in pilot studies.
• Department of Environmental Science of University of Latvia will contribute at the evaluation of environmental impact of the forestry biomass stream processing and will elaborate and propose environmentally friendly biomass extraction process prospective for pilot scale experiments, analytical characterization of obtained products supporting their application possibilities. UL team will lead WP1 and A 2.4., A 3.1.
• Food Institute from Kaunas University of Technology (KTU) is cooperating with industry. KTU will extract bioactives from pine needles, formulate and develop technological parameters for meat analogues matrices and antiviral product with incorporated bioactives and transfer the knowledge of technological processes to the enterprise “Fructus AG”, LTD in which pilot production of the products (A2.4) take place.
• Centria UAS will participate in extraction and characterization of valuable compounds, market demand studies, CE business model work and collaboration with target enterprises. Centria coordinates WP3 activation, dissemination, development of guidelines, advisory board.
• Mineral and Energy Economy Research Institute of Polish Academy of Sciences will analyses the opportunities for developing circular business models based on processing FBR (O2.3), the social acceptance of using/buying goods made from recovered materials and develop an Education Roadmap to improve CE transition in the forestry-related sectors (A2.3).
• Natural Resources Institute Finland will carry out the extractions in pilot-scale. The obtained extracts will be characterized for chemical composition, antioxidant and antimicrobial properties.
• JSC BIOLAT is a SME working on development and production of non-timber forest products and interested in the coniferous needle processing products and will participate in the A1.4, A2.1 and in dissemination activities.
• Umeå University will contribute with microbial investigations in industrial processes and wastewater system (A2.2) and screening of the extracted fractions of bark as biocide replacement.
• Finnish Forest Center will disseminate the results and information of the project in Finland to forestry SMEs, and to the SMEs working with non-timber forest products.
• Aalto University will work on techno-economic feasibility studies (A2.3) and the evaluation of business potential of forestry side streams in BSR.
• GreenBack will develop a sales and distribution model for the FBR processing products and prepare the questionnaires for the Educational Roadmap (A2.3).

2,970 / 3,000 characters

1.11. Project Budget Summary

Financial resources [in EUR]		Preparation costs	Planned project budget
ERDF	ERDF co-financing	0.00	2,394,270.80
	Own contribution ERDF	0.00	598,567.70
	ERDF budget	0.00	2,992,838.50
NO	NO co-financing	0.00	0.00
	Own contribution NO	0.00	0.00
	NO budget	0.00	0.00
NDICI	NDICI co-financing	0.00	0.00
	Own contribution NDICI	0.00	0.00
	NDICI budget	0.00	0.00
RU	RU co-financing	0.00	0.00
	Own contribution RU	0.00	0.00
	RU budget	0.00	0.00
TOTAL	**Total Programme co-financing**	0.00	2,394,270.80
	Total own contribution	0.00	598,567.70
	Total budget	0.00	2,992,838.50

2. Partnership

2.1. Overview: Project Partnership

2.1.1 Project Partners

No.	LP/PP	Organisation (English)	Organisation (Original)	Country	Type of partner	Legal status	Partner budget in the project	Active/inactive	
								Status	from
1	LP	Swedish University of Agricultural Sciences	Sveriges Lantbruksuniversitet (SLU)	SE	Higher education and research institution	a)	734,329.80 €	Active	22/09/2022
2	PP	University of Latvia	Latvijas Universitāte	LV	Higher education and research institution	a)	317,820.00 €	Active	22/09/2022
3	PP	Kaunas University of Technology	Kauno Technologijos Universitetas	LT	Higher education and research institution	a)	249,866.00 €	Active	22/09/2022
4	PP	Centria University of Applied Sciences	Centria-ammattikorkeakoulu Oy	FI	Higher education and research institution	a)	384,908.00 €	Active	22/09/2022
5	PP	Mineral and Energy Economy Research Institute of the Polish Academy of Sciences	Instytut Gospodarki Surowcami Mineralnymi i Energią Polskiej Akademii Nauk	PL	Higher education and research institution	a)	150,167.00 €	Active	22/09/2022
6	PP	Natural Resources Institute Finland	Luonnonvarakeskus	FI	Higher education and research institution	a)	395,356.00 €	Active	22/09/2022
7	PP	JSC BIOLAT	AS BIOLAT	LV	Small and medium enterprise	b)	182,092.00 €	Active	22/09/2022
8	PP	Fructus AG, LTD	Fructus AG, UAB	LT	Small and medium enterprise	b)	49,993.10 €	Active	22/09/2022
9	PP	Umea University	Umeå universitet	SE	Higher education and research institution	a)	178,305.80 €	Active	22/09/2022
10	PP	Finnish Forest Centre	Suomen metsäkeskus	FI	Sectoral agency	a)	81,788.00 €	Active	22/09/2022
11	PP	Aalto University	Aalto-yliopisto	FI	Higher education and research institution	a)	238,656.00 €	Active	22/09/2022
12	PP	GreenBack Ltd.	GreenBack sp. z o.o.	PL	Small and medium enterprise	b)	29,556.80 €	Active	22/09/2022

2.1.2 Associated Organisations

No.	Organisation (English)	Organisation (Original)	Country	Type of Partner
AO 1	Swedish Water	Svenskt Vatten	SE	Interest group
AO 2	Montinutra Oy	Montinutra Oy	FI	Small and medium enterprise
AO 3	Innomost Oy	Innomost Oy	FI	Small and medium enterprise
AO 4	Wibax	Wibax	SE	Large enterprise
AO 5	KoivuBioTech Oy	KoivuBioTech Oy	FI	Small and medium enterprise
AO 6	FSF Metsänlahja, FOREST SPA FINLAND LTD	FSF Metsänlahja, FOREST SPA FINLAND LTD	FI	Small and medium enterprise
AO 7	Alternative Plants Ltd.	Alternative Plants Ltd.	LV	Small and medium enterprise
AO 8	Centre for Economic Development, Transport and the Environment, Ostrobothnia	Pohjanmaan ELY-keskus	FI	National public authority
AO 9	Ministry of Agriculture Republic of Latvia	Latvijas Republikas Zemkopības Ministrija	LV	National public authority
AO 10	State Food and Veterinary Service	Valstybinė maisto ir veterinarijos tarnyba	LT	National public authority
AO 11	Lithuanian Association of Meat Processing Enterprises	Lietuvos mėsos perdirbėjų asociacija	LT	Business support organisation
AO 12	Ministry of agriculture and forestry	Maa- ja metsätalousministeriö	FI	National public authority
AO 13	Lumene	Lumene	FI	Large enterprise
AO 14	BioFuel Region	BioFuel Region	SE	NGO
AO 15	SCA Packaging	SCA-Obbola	SE	Large enterprise
AO 16	Częstochowa University of Technology	Politechnika Częstochowska	PL	Higher education and research institution
AO 17	Municipal Wastewater Treatment Plant in Małobądz	Gminny Zakład Oczyszczania Ścieków w Małobądzu	PL	Local public authority

2.2 Project Partner Details - Partner 1

LP/PP Lead Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Sveriges Lantbruksuniversitet (SLU)

35 / 250 characters

Organisation in English Swedish University of Agricultural Sciences

43 / 250 characters

Department in original language Institution för Skogens biomaterial och tecknologi

50 / 250 characters

Department in English Department of Forest Bio-materials and Technology

49 / 250 characters

Partner location and website:

Address Skogsmarksgränd

15 / 250 characters

Country Sweden

Postal Code	90183 (5 / 250 characters)	**NUTS1 code**	Norra Sverige
Town	Umeå (4 / 250 characters)	**NUTS2 code**	Övre Norrland
Website	http://www.slu.se/ (18 / 100 characters)	**NUTS3 code**	Västerbottens län

Partner ID:

Organisation ID type	Organisation number (Organisationsnummer)
Organisation ID	202100-2817
VAT Number Format	SE + 12 digits
VAT Number	N/A ☐ SE202100281701 (14 / 50 characters)
PIC	999887350 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	85.42 - Tertiary education	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Financial data	**Reference period**	01/01/2021 –	31/12/2021
	Staff headcount [in annual work units (AWU)]		3,193.0
	Employees [in AWU]		0.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		3,193.0
	Owner-managers [in AWU]		0.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
	Annual turnover [in EUR]		391,643,413.00
	Annual balance sheet total [in EUR]		434,091,769.00
	Operating profit [in EUR]		17,079,363.00

Role of the partner organisation in this project:

SLU will be coordinator of the project. SLU will also do applied research during the project time. Just to mention here we will use the pilot plant at SLU (Biomass Technology Center) for pre-treatment and preparation of biomass for pilot scale extraction of biomass by Luke. SLU is WP2 leader and activity leader for three activities in the project: In WP1 SLU will have two project activities (1.1 and 1.5) and in WP2 activity 2.2. SLU will also have active role in WP3 regarding dissemination activities. SLU will monitor the whole project economy day for day and our information officer will be active during the project time for continuous information flow. SLU will arrange the kick-off meeting and the final meeting of the project in Sweden. We will have annual project meetings and three workshops during the project time but the place will be decided later to maximize the interaction and dissemination of the project results.

936 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 2

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Latvijas Universitāte (21 / 250 characters)
Organisation in English	University of Latvia (20 / 250 characters)
Department in original language	Vides zinātnes nodaļa (21 / 250 characters)
Department in English	Department of Environmental Science (35 / 250 characters)

Partner location and website:

Address	Raina blvd 19 (13 / 250 characters)	**Country**	Latvia
Postal Code	LV 1586 (7 / 250 characters)	**NUTS1 code**	Latvija
Town	Riga (4 / 250 characters)	**NUTS2 code**	Latvija
Website	www.lu.lv (9 / 100 characters)	**NUTS3 code**	Rīga

Partner ID:

Organisation ID type	Unified registration number (Vienotais reģistrācijas numurs)
Organisation ID	90000076669
VAT Number Format	LV + 11 digits
VAT Number	N/A ☐ LV90000076669 (13 / 50 characters)
PIC	999871830 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.

Sector (NACE) 85.42 - Tertiary education

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

University of Latvia team will contribute at the development of forestry biomass biorefinery approaches, concentrating on coniferous tree biomass and environmentally friendly processing (extraction) technologies providing in-depth analysis of obtained products. UL will lead WP1 and will contribute at the elaboration of solutions for pilot scale activities as well as market analysis of forestry by-product valorisation to identify most promising application areas. UL will actively participate in the dissemination of obtained results both from training perspective, both from application potential, considering integration of circular economy solutions and promoting circular bioeconomy approaches in forestry as well as to solve other biomass processing challenges. The dissemination activities will concentrate on active involvement of stakeholders and associated partners, but will be directed also towards scientists and students.

939 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 3

LP/PP Project Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Kauno Technologijos Universitetas

33 / 250 characters

Organisation in English Kaunas University of Technology

31 / 250 characters

Department in original language Maisto Institutas

17 / 250 characters

Department in English Food Institute

14 / 250 characters

Partner location and website:

Address K. Donelaičio g. 73, LT-44249 Kaunas

36 / 250 characters

Postal Code LT-44249

9 / 250 characters

Town Kaunas

6 / 250 characters

Website https://ktu.edu/

16 / 100 characters

Country Lithuania

NUTS1 code Lietuva

NUTS2 code Vidurio ir vakarų Lietuvos regionas

NUTS3 code Kauno apskritis

Partner ID:

Organisation ID type	Legal person's code (Juridinio asmens kodas)
Organisation ID	111950581
VAT Number Format	LT + 9 digits
VAT Number	N/A ☐ LT119505811 (11 / 50 characters)
PIC	999844961 (9 / 9 characters)

Partner type:

Legal status	a) Public
Type of partner	Higher education and research instituti — University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	85.42 - Tertiary education

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

Project partner KTU will perform food science research for food industry. Laboratory scale extraction of valuable compounds will be carried out from pine needles and incorporated into meat analogues in order to prevent food oxidation and increase product shelf life, nutritional value. KTU food institute consists of sensory, microbiology and technology laboratories.

370 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 4

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Centria-ammattikorkeakoulu Oy (29 / 250 characters)
Organisation in English	Centria University of Applied Sciences (38 / 250 characters)
Department in original language	TKI kemia ja biotalous (22 / 250 characters)

Department in English	RDI chemistry and bioeconomy (28 / 250 characters)

Partner location and website:

Address	Talonpojankatu 2A (17 / 250 characters)	**Country**	Finland
Postal Code	67100 (5 / 250 characters)	**NUTS1 code**	Manner-Suomi
Town	Kokkola (7 / 250 characters)	**NUTS2 code**	Pohjois- ja Itä-Suomi
Website	www.centria.fi (14 / 100 characters)	**NUTS3 code**	Keski-Pohjanmaa

Partner ID:

Organisation ID type	Business Identity Code (Y-tunnus)
Organisation ID	1097805-3
VAT Number Format	FI + 8 digits
VAT Number	N/A ☐ FI10978053 (10 / 50 characters)
PIC	997172708 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	72.19 - Other research and experimental development on natural sciences and engineering	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	No

Role of the partner organisation in this project:

- participation in work packages:
o lab scale extraction (and possibly pilot scale extraction(5 liter reactor, Chemplant) and characterisation of valuable ingredients from forestry side streams
- processing biorefinery methods
- Extraction in pilot scale and product concept development with target enterprises
- coordination with target enterprises
-participation in the advisory board work
- activation and dissemination : target enterprises and groups, EU policy makers or politicians
-participation in the evaluation of forestry biomass residue streams in the BSR region
development of recommended guidelines
- participation in the market analysis of forestry side stream products

692 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

Justification why the partner's activities are not State aid relevant

Centria is a university of applied sciences. In Finland UAS have similar identification numbers as enterprises. The project activities are to support the industry, results are public and open to any stakeholder. Centria will not gain any economic advantage in the market. The organisation provides expertise and needed infrastructure for the benefit of the project.

367 / 3,000 characters

2.2 Project Partner Details - Partner 5

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Instytut Gospodarki Surowcami Mineralnymi i Energią Polskiej Akademii Nauk (75 / 250 characters)
Organisation in English	Mineral and Energy Economy Research Institute of the Polish Academy of Sciences (79 / 250 characters)
Department in original language	Pracownia Surowców Biogenicznych (32 / 250 characters)
Department in English	Division of Biogenic Raw Materials (34 / 250 characters)

Partner location and website:

Address	Wybickiego 7A (13 / 250 characters)	**Country**	Poland
Postal Code	31-261 (6 / 250 characters)	**NUTS1 code**	Makroregion południowy
Town	Kraków (6 / 250 characters)	**NUTS2 code**	Małopolskie
Website	https://min-pan.krakow.pl/en/ (29 / 100 characters)	**NUTS3 code**	Miasto Kraków

Partner ID:

Organisation ID type	Tax identification number (NIP)	
Organisation ID	6750001900	
VAT Number Format	PL + 10 digits	
VAT Number	**N/A** ☐	PL6750001900 (12 / 50 characters)
PIC	998501705 (9 / 9 characters)	

Partner type:

Legal status a) Public

Type of partner Higher education and research instituti — University faculty, college, research institution, RTD facility, research cluster, etc.

Sector (NACE) 72.19 - Other research and experimental development on natural sciences and engineering

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

The Mineral and Energy Economy Research Institute of the Polish Academy of Sciences (MEERI) will analyze the opportunities for developing circular economy (CE) business models based on processing forestry side streams and social acceptance of using/buying goods made from recovered materials. Based on the obtained results, the individual strategies of further dissemination and education for analysed stakeholders will be proposed by MEERI PAS by the development of an Education Roadmap.

488 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 6

LP/PP Project Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Luonnonvarakeskus

17 / 250 characters

Organisation in English Natural Resources Institute Finland

35 / 250 characters

Department in original language Tuotantojärjestelmät

20 / 250 characters

Department in English Production Systems

18 / 250 characters

Partner location and website:

Address Latokartanonkaari 9

19 / 250 characters

Country Finland

Postal Code	FI-00790 (8 / 250 characters)	**NUTS1 code**	Manner-Suomi
Town	Helsinki (8 / 250 characters)	**NUTS2 code**	Helsinki-Uusimaa
Website	https://www.luke.fi/en/ (23 / 100 characters)	**NUTS3 code**	Helsinki-Uusimaa

Partner ID:

Organisation ID type	Business Identity Code (Y-tunnus)
Organisation ID	0244629-2
VAT Number Format	FI + 8 digits
VAT Number	N/A ☐ FI02446292 (10 / 50 characters)
PIC	934887262 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	72.19 - Other research and experimental development on natural sciences and engineering	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

Applied research (16 / 1,000 characters)

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 7

LP/PP	Project Partner		
Partner Status	Active		
	Active from 22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	AS BIOLAT (9 / 250 characters)

Organisation in English	JSC BIOLAT (10 / 250 characters)
Department in original language	Pētniecības un attīstības departaments (38 / 250 characters)
Department in English	Research and development department (35 / 250 characters)

Partner location and website:

Address	Rigas str. 111 (14 / 250 characters)	**Country**	Latvia
Postal Code	LV-2169 (7 / 250 characters)	**NUTS1 code**	Latvija
Town	Salaspils (9 / 250 characters)	**NUTS2 code**	Latvija
Website	www.biolat.lv (13 / 100 characters)	**NUTS3 code**	Pierīga

Partner ID:

Organisation ID type	Unified registration number (Vienotais reģistrācijas numurs)
Organisation ID	40003128200
VAT Number Format	LV + 11 digits
VAT Number	**N/A** ☐ LV40003128200 (13 / 50 characters)
PIC	n/a (3 / 9 characters)

Partner type:

Legal status	b) Private	
Type of partner	Small and medium enterprise	Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total
Sector (NACE)	72.11 - Research and experimental development on biotechnology	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	Yes

Financial data	**Reference period**	01/01/2020	–	31/12/2020
	Staff headcount [in annual work units (AWU)]			8.0
	Employees [in AWU]			8.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]			0.0
	Owner-managers [in AWU]			0.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]			0.0
	Annual turnover [in EUR]			390,858.00
	Annual balance sheet total [in EUR]			240,432.00
	Operating profit [in EUR]			38,674.00

Role of the partner organisation in this project:

BIOLAT JSC will participate in Market analysis of forestry biomass side stream processing and biorefinery as well as innovation possibilities. It is planned to study extraction of valuable compounds and product concept development with target enterprises as well as collection of pine and spruce needles, treatment before extraction. Main interests are related to Spruce needle extraction, including separation of 1)Essential oils. 2)Chlorophyllin. 3)Lipophylic extract (Polyphenols, terpenoids). 4)Processed water with biocides. 5)Silbiol separation. 6)Polyprenol isolation. BIOLAT JSC is interested in pine needle extraction, including separation of: 1)Essential oil. 2)Chlorophyll-provitamine concentrate.3. Recycled needle utilization. Further JSC Biolat will contribute at the 1)Thermochemical treatment of wastes after extraction and 2)Mechanical treatment – preparation of mulch. JSC BIolat will contribute at techno-economic studies for selected valuable business opportunities.

991 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 8

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Fructus AG, UAB
	15 / 250 characters
Organisation in English	Fructus AG, LTD
	15 / 250 characters
Department in original language	Gamybos padalinys
	17 / 250 characters
Department in English	Production department
	21 / 250 characters

Partner location and website:

Address	JUODONIŲ STR. 60	**Country**	Lithuania
	16 / 250 characters		

Postal Code	LT-54336 (8 / 250 characters)	**NUTS1 code**	Lietuva
Town	JUODONIAI (9 / 250 characters)	**NUTS2 code**	Vidurio ir vakarų Lietuvos regionas
Website	https://www.fructusag.lt (24 / 100 characters)	**NUTS3 code**	Kauno apskritis

Partner ID:

Organisation ID type	Legal person's code (Juridinio asmens kodas)
Organisation ID	305645374
VAT Number Format	LT + 12 digits
VAT Number	N/A ☐ LT100014181811 (14 / 50 characters)
PIC	n/a (3 / 9 characters)

Partner type:

Legal status	b) Private	
Type of partner	Small and medium enterprise	Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total
Sector (NACE)	10.89 - Manufacture of other food products n.e.c.	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Financial data

Reference period	01/01/2021 –	31/12/2021
Staff headcount [in annual work units (AWU)]		2.0
Employees [in AWU]		1.0
Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		0.0
Owner-managers [in AWU]		1.0
Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
Annual turnover [in EUR]		6,700.00
Annual balance sheet total [in EUR]		2,500.00
Operating profit [in EUR]		0.00

Role of the partner organisation in this project:

"FRUCTUS AG" LTD will participate mainly in the innovation part of the project where piloting of KTU laboratory processes will take place. It is planned with the enterprise to upscale: the modelling and production of meat analogs matrices with bioactives from pine needles; the modelling and production of antiviral product from pine needles. "FRUCTUS AG" LTD is interested in recycled biomass utilization capabilities and possibilities, therefore the company will contribute at the mechanical treatment – preparation of mulch.

535 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 9

LP/PP	Project Partner
Partner Status	Active
Active from	22/09/2022
Inactive from	

Partner name:

Organisation in original language	Umeå universitet (16 / 250 characters)
Organisation in English	Umea University (15 / 250 characters)
Department in original language	Institutionen för odontologi (28 / 250 characters)
Department in English	Department of Odontology (24 / 250 characters)

Partner location and website:

Address	Umeå universitet, Institutionen för odontotlgi, Våning 5, T51 (61 / 250 characters)
Postal Code	SE-90187 (8 / 250 characters)
Town	Umeå (4 / 250 characters)
Website	www.umu.se (10 / 100 characters)
Country	Sweden
NUTS1 code	Norra Sverige
NUTS2 code	Övre Norrland
NUTS3 code	Västerbottens län

Partner ID:

Organisation ID type	Organisation number (Organisationsnummer)
Organisation ID	202100-2874
VAT Number Format	SE + 12 digits
VAT Number	N/A ☐ SE202100287401 (14 / 50 characters)
PIC	999881821 (9 / 9 characters)

Partner type:

Legal status	a) Public
Type of partner	Higher education and research instituti — University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	85.42 - Tertiary education

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	Yes

Role of the partner organisation in this project:

Determination of antimicrobial activity of different fractions extracted from spruce and pine bark. The target bacteria included in the test panel have been isolated from recycled pulp, process water, waste water, and waste water tubing. Methods are well established.

267 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 10

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Suomen metsäkeskus (18 / 250 characters)
Organisation in English	Finnish Forest Centre (21 / 250 characters)
Department in original language	Elinkeinopalvelut, läntinen palvelualue (39 / 250 characters)
Department in English	Business Services, Western Service Area (39 / 250 characters)

Partner location and website:

Address	Huhtalantie 2 (13 / 250 characters)	**Country**	Finland
Postal Code	60220 (5 / 250 characters)	**NUTS1 code**	Manner-Suomi
Town	Seinäjoki (9 / 250 characters)	**NUTS2 code**	Länsi-Suomi
Website	www.metsakeskus.fi (18 / 100 characters)	**NUTS3 code**	Etelä-Pohjanmaa

Partner ID:

Organisation ID type	Business Identity Code (Y-tunnus)
Organisation ID	2440921-4
VAT Number Format	FI + 8 digits
VAT Number	N/A ☐ FI24409214 (10 / 50 characters)
PIC	919785041 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Sectoral agency	Local or regional development agency, environmental agency, energy agency, employment agency, etc.
Sector (NACE)	02.40 - Support services to forestry	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

Finnish Forest Centre (FFC) will disseminate the results and information of the project in Finland to forestry SMEs, and to the SMEs working with non-timber forest products. FFC's corporate customer advisers can share the results of the project when they are in contact with the SMEs and entrepreneurs working in the forestry and non-wood forest product sectors. FFC also has contacts to forest owners (600 000; private and public) to disseminate the results. FFC can share the ideas and information from SMEs to the other project partners when attending to the advisory board.
FFC will inform the target groups about the project activities and invite them to project events such as webinars in Finland. FFC will work to reach new target groups, to inform about the project results and to get guidance from the target groups. Dissemination of results will be done in events such as exhibitions, seminars and webinars.

918 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 11

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Aalto-yliopisto (15 / 250 characters)
Organisation in English	Aalto University (16 / 250 characters)

Department in original language	Kemian tekniikka ja metallurgia (31 / 250 characters)
Department in English	Chemical and Metallurgical Engineering (38 / 250 characters)

Partner location and website:

Address	Kemistintie 1 (13 / 250 characters)	**Country**	Finland
Postal Code	02150 (5 / 250 characters)	**NUTS1 code**	Manner-Suomi
Town	Espoo (5 / 250 characters)	**NUTS2 code**	Helsinki-Uusimaa
Website	www.aalto.fi (12 / 100 characters)	**NUTS3 code**	Helsinki-Uusimaa

Partner ID:

Organisation ID type	Business Identity Code (Y-tunnus)
Organisation ID	2228357-4
VAT Number Format	FI + 8 digits
VAT Number	N/A ☐ FI22283574 (10 / 50 characters)
PIC	991256096 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	85.42 - Tertiary education	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Role of the partner organisation in this project:

The research in Plant Design group led by prof. Pekka Oinas of Aalto University focuses on process feasibility study, synthesis, design, operation, integration, simulation and optimization, as well as inherent safety, occupational health, pollution prevention and industrial risk. The key theme is the development of systematic methodologies to identify optimum, sustainable and creative strategies that lead to process intensification, yield improvement, debottlenecking, costing, safety, pollution prevention and energy conservation. Fundamental chemical engineering principles are coupled with systems engineering approaches to develop methods and computer-aided tools that are applicable in all areas of chemical process industry. This is why Aalto University coordinates the techno-economic studies for sustainable processes and selected targeted value-added compounds in this project.

891 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 12

LP/PP	Project Partner
Partner Status	Active
Active from	22/09/2022
Inactive from	

Partner name:

Organisation in original language	GreenBack sp. z o.o. (20 / 250 characters)
Organisation in English	GreenBack Ltd. (14 / 250 characters)
Department in original language	Dział Badań i Rozwoju (21 / 250 characters)
Department in English	Research and Development Department (35 / 250 characters)

Partner location and website:

Address	Tadeusza Kościuszki 227 (23 / 250 characters)	**Country**	Poland
Postal Code	40-600 (6 / 250 characters)	**NUTS1 code**	Makroregion południowy
Town	Katowice (8 / 250 characters)	**NUTS2 code**	Śląskie
Website	Greenback.net.pl (16 / 100 characters)	**NUTS3 code**	Katowicki

Partner ID:

Organisation ID type	Tax identification number (NIP)
Organisation ID	6342815731
VAT Number Format	PL + 10 digits
VAT Number	**N/A** ☐ PL6342815731 (12 / 50 characters)
PIC	n/a (3 / 9 characters)

Partner type:

Legal status	b) Private	
Type of partner	Small and medium enterprise	Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total
Sector (NACE)	72.19 - Other research and experimental development on natural sciences and engineering	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	Yes

Financial data	**Reference period**	01/01/2021	–	31/12/2021
	Staff headcount [in annual work units (AWU)]			5.0
	Employees [in AWU]			1.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]			2.0
	Owner-managers [in AWU]			2.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]			0.0
	Annual turnover [in EUR]			49,665.61
	Annual balance sheet total [in EUR]			91,422.14
	Operating profit [in EUR]			9,955.87

Role of the partner organisation in this project:

The work carried out under the project by GreenBack Ltd. will concern the development of questionnaires, reports and technological expertise in the field of identification of opportunities and barriers associated with the implementation of the innovative technologies, operating in the circular economy system, related to the acquisition and processing of biomass in forestry. Moreover, GreenBack Ltd. will support other partners by developing a sales and distribution model for the recovered forestry biomass processing products and carry out consultations and meetings with key stakeholders aimed at assessing the markets in the Baltic Sea region for the forestry biomass resides.

682 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ◉ No

2.3 Associated Organisation Details - AO 1

Associated organisation name and type:

Organisation in original language: Svenskt Vatten (14 / 250 characters)

Organisation in English: Swedish Water (13 / 250 characters)

Department in original language: No department (13 / 250 characters)

Department in English: No department (13 / 250 characters)

Legal status: a) Public

Type of associated organisation: Interest group — Trade union, foundation, charity, voluntary association, club, etc. other than NGOs

Associated organisation location and website:

Address: Gustavslundsvägen 12 (20 / 250 characters)

Country: Sweden

Postal Code: 167 51 (6 / 250 characters)

Town: BROMMA (6 / 250 characters)

Website: https://www.svensktvatten.se/om-oss/in-english/ (47 / 100 characters)

Role of the associated organisation in this project:

Swedish Water (Svenskt Vatten) was set up by the municipalities to assist with technical, economic and administrative issues and to represent the interests of the municipalities in negotiations with authorities and other organisations on regulations. One of the first duties of Swedish Water was to collect and evaluate statistical data. Other obligations are the compilation of recommendations and guidelines and the arrangement of seminars and short courses for the members. Swedish Water has several working groups with experts from member municipalities covering the whole field of municipal water and wastewater activities.Swedish Water publishes a journal, newsletters and reports. The association is a member of EUREAU, the European Union of National Association of Water Supplies and administers IWA, the national secretariat for the International Water Association. Swedish Water has 290 municipalities as its members. They will act as knowledge transfer to municipal wastewater members.

998 / 1,000 characters

2.3 Associated Organisation Details - AO 2

Associated organisation name and type:

Organisation in original language
Montinutra Oy
13 / 250 characters

Organisation in English
Montinutra Oy
13 / 250 characters

Department in original language
Montinutra produces high value bioactive products from forest industry side streams
83 / 250 characters

Department in English
Montinutra produces high value bioactive products from forest industry side streams
83 / 250 characters

Legal status
b) Private

Type of associated organisation
Small and medium enterprise

Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total

Associated organisation location and website:

Address
Rieskalähteentie 68
20300 TURKU
FINLAND
59 / 250 characters

Country
Finland

Postal Code
20300
5 / 250 characters

Town
Turku
5 / 250 characters

Website
https://www.montinutra.com/
27 / 100 characters

Role of the associated organisation in this project:

Montinutra is interested in novel extraction methods for valuable compounds in logging residues. Montinutra has a pilot facility in Turku. Montinutra is interested in testing novel methods in Turku.
198 / 1,000 characters

2.3 Associated Organisation Details - AO 3

Associated organisation name and type:

Organisation in original language
Innomost Oy
11 / 250 characters

Organisation in English
Innomost Oy
11 / 250 characters

Department in original language
Utilization of forest industry side streams, start up
53 / 250 characters

Department in English
Utilization of forest industry side streams, start up
53 / 250 characters

Legal status
b) Private

Type of associated organisation
Small and medium enterprise

Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total

Associated organisation location and website:

Address
Teknologiakatu 7
16 / 250 characters

Country
Finland

Postal Code
67100
5 / 250 characters

Town
Kokkola
7 / 250 characters

Website
https://www.innomost.com/
25 / 100 characters

Role of the associated organisation in this project:

Innomost is interested in novel end use applications and of forestry side streams and novel technologies to utilize forestry side streams.
139 / 1,000 characters

2.3 Associated Organisation Details - AO 4

Associated organisation name and type:

Organisation in original language: Wibax (5 / 250 characters)

Organisation in English: Wibax (5 / 250 characters)

Department in original language: No department (13 / 250 characters)

Department in English: No department (13 / 250 characters)

Legal status: b) Private

Type of associated organisation: Large enterprise — ≥ 250 employees

Associated organisation location and website:

Address: Batterigatan 12, (16 / 250 characters)

Country: Sweden

Postal Code: 94147 (5 / 250 characters)

Town: Piteå (5 / 250 characters)

Website: https://www.wibax.com/en/ (25 / 100 characters)

Role of the associated organisation in this project:

Wibax is a sustainable chemical supplier that gives consideration to both human and the environment. The company have the headquarters in Sweden but they have terminals and offices in Finland, Estonia and Norway. They work with the market's most efficient logistics system in order to supply liquid chemical products. Wibax is supplier of chemicals for industrial processes. Wibax interest of the project is to collect knowledge about the new environmental friendly chemicals from biomass that can be utilized in industrial processes. They want to be in the front line for the future production and distribution of the candidate chemicals from the project. The role of Wibax in the project is to be advisor regarding handling and testing of the produced chemicals in the project in different industrial processes, since they have long experience in such activities. They can help with advise regarding transport of chemicals by an efficient logistic system between partners countries.

987 / 1,000 characters

2.3 Associated Organisation Details - AO 5

Associated organisation name and type:

Organisation in original language
KoivuBioTech Oy
15 / 250 characters

Organisation in English
KoivuBioTech Oy
15 / 250 characters

Department in original language
Development of novel products from wood and forest industry side streams
72 / 250 characters

Department in English
Development of novel products from wood and forest industry side streams
72 / 250 characters

Legal status
b) Private

Type of associated organisation
Small and medium enterprise
Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total

Associated organisation location and website:

Address
Poutamäentie 5
15 / 250 characters

Country
Finland

Postal Code
00360
6 / 250 characters

Town
Helsinki
8 / 250 characters

Website
https://www.rasweet.com/
24 / 100 characters

Role of the associated organisation in this project:

Koivubiotech is interested in novel extraction and end use applications of forestry side streams.
97 / 1,000 characters

2.3 Associated Organisation Details - AO 6

Associated organisation name and type:

Organisation in original language
FSF Metsänlahja, FOREST SPA FINLAND LTD
39 / 250 characters

Organisation in English
FSF Metsänlahja, FOREST SPA FINLAND LTD
39 / 250 characters

Department in original language
cosmetics and hygiene products, a branch office in FInland
58 / 250 characters

Department in English
cosmetics and hygiene products, a branch office in Finland
58 / 250 characters

Legal status
b) Private

Type of associated organisation
Small and medium enterprise
Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total

Associated organisation location and website:

Address
1/111 Crouch Hill N89RD London
31 / 250 characters

Country
Finland

Postal Code
xxxxx
5 / 250 characters

Town
London
6 / 250 characters

Website
https://forestspafinland.com
28 / 100 characters

Role of the associated organisation in this project:

ForestSpaFInland is interested in novel end use applications of forestry side streams
85 / 1,000 characters

2.3 Associated Organisation Details - AO 7

Associated organisation name and type:

Organisation in original language
Alternative Plants Ltd.
23 / 250 characters

Organisation in English
Alternative Plants Ltd.
23 / 250 characters

Department in original language
Izpētes nodaļa
14 / 250 characters

Department in English
Innovation Department
21 / 250 characters

Legal status
b) Private

Type of associated organisation
Small and medium enterprise

Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total

Associated organisation location and website:

Address
54 Jaunciema 3.linija
22 / 250 characters

Country
Latvia

Postal Code
LV-1023
8 / 250 characters

Town
Riga
4 / 250 characters

Website
https://alternativeplants.eu/
29 / 100 characters

Role of the associated organisation in this project:

Alternative Plants Ltd has expressed interest in the use of project results at development of their own products as well as in possibilities to use the expertise of the CEForestry team at the development of new product lines. At the same time Alternative Plants Ltd is ready to contribute sharing own expertise to select the optimal forestry biomass processing product properties and their application possibilities in cosmetics. Alternative Plants Ltd representatives has expressed interest to participate in project meetings as well as contribute with information exchange to support market analysis of the project, result dissemination activities and others.

662 / 1,000 characters

2.3 Associated Organisation Details - AO 8

Associated organisation name and type:

Organisation in original language
Pohjanmaan ELY-keskus
21 / 250 characters

Organisation in English
Centre for Economic Development, Transport and the Environment, Ostrobothnia
76 / 250 characters

Department in original language
Maaseutuyksikkö
15 / 250 characters

Department in English
Rural development
17 / 250 characters

Legal status
a) Public

Type of associated organisation
National public authority
Ministry, etc.

Associated organisation location and website:

Address
Pitkänsillankatu 15
19 / 250 characters

Country
Finland

Postal Code
67101
5 / 250 characters

Town
Kokkola
7 / 250 characters

Website
www.ely-keskus.fi/pohjanmaa
27 / 100 characters

Role of the associated organisation in this project:

Sirkku Wacklin, the head of the office, will participate in the advisory board work. She is also the national coordinator of natural products sector in Finland(one of the business sectors of Ministry of Labour and Economy)
224 / 1,000 characters

2.3 Associated Organisation Details - AO 9

Associated organisation name and type:

Organisation in original language
Latvijas Republikas Zemkopības Ministrija
41 / 250 characters

Organisation in English
Ministry of Agriculture Republic of Latvia
42 / 250 characters

Department in original language
Meža Departaments
17 / 250 characters

Department in English
Forest Department
17 / 250 characters

Legal status
a) Public

Type of associated organisation
National public authority
Ministry, etc.

Associated organisation location and website:

Address
Republikas laukums 2
20 / 250 characters

Country
Latvia

Postal Code
LV 1981
7 / 250 characters

Town
Riga
4 / 250 characters

Website
www.zm.gov.lv/en/
17 / 100 characters

Role of the associated organisation in this project:

Forest Department of Ministry of Agriculture of Republic of Latvia is coordinating all activities in state owned and private forests in Latvia, including development of forestry sector related businesses. The working task of the Ministry is also to support sustainable use of forest resources in Latvia. Interest of Ministry on the results of CEForestry is related to information of new applications of forestry biomass waste processing possibilities and reduction of wastes left after timber processing.
505 / 1,000 characters

2.3 Associated Organisation Details - AO 10

Associated organisation name and type:

Organisation in original language
Valstybinė maisto ir veterinarijos tarnyba
43 / 250 characters

Organisation in English
State Food and Veterinary Service
34 / 250 characters

Department in original language
Administracija
14 / 250 characters

Department in English
Administration
14 / 250 characters

Legal status
a) Public

Type of associated organisation
National public authority
Ministry, etc.

Associated organisation location and website:

Address
Siesikų str.. 19
16 / 250 characters

Country
Lithuania

Postal Code
LT-07170
8 / 250 characters

Town
Vilnius
7 / 250 characters

Website
https://vmvt.lt/?language=en
28 / 100 characters

Role of the associated organisation in this project:

Deimantė Biknerytė, Chief Adviser to the State Food and Veterinary Service will participate as member in the advisory board.
124 / 1,000 characters

2.3 Associated Organisation Details - AO 11

Associated organisation name and type:

Organisation in original language
Lietuvos mėsos perdirbėjų asociacija
36 / 250 characters

Organisation in English
Lithuanian Association of Meat Processing Enterprises
53 / 250 characters

Department in original language
None
4 / 250 characters

Department in English
None
4 / 250 characters

Legal status
b) Private

Type of associated organisation
Business support organisation
Chamber of commerce, chamber of trade and crafts, business incubator or innovation centre, business clusters, etc.

Associated organisation location and website:

Address
K.Donelaičio 2-116
18 / 250 characters

Country
Lithuania

Postal Code
LT- 01104
9 / 250 characters

Town
Kaunas
6 / 250 characters

Website
http://www.lmpa.lt/index.php
28 / 100 characters

Role of the associated organisation in this project:

1.Egidijus Mackevičius from the Lithuanian Association of Meat Processing Enterprises will participate as a member of the advisory board.
138 / 1,000 characters

2.3 Associated Organisation Details - AO 12

Associated organisation name and type:

Organisation in original language: Maa- ja metsätalousministeriö (29 / 250 characters)

Organisation in English: Ministry of agriculture and forestry (37 / 250 characters)

Department in original language: Luonnonvaraosasto (17 / 250 characters)

Department in English: Department of natural resources (31 / 250 characters)

Legal status: a) Public

Type of associated organisation: National public authority — Ministry, etc.

Associated organisation location and website:

Address: PL 30/PB30/ POB 30
00023 Valtioneuvosto/00023 Statsrådet /FI-00023 Government (78 / 250 characters)

Country: Finland

Postal Code: 00023 (5 / 250 characters)

Town: Helsinki (8 / 250 characters)

Website: https://mmm.fi (14 / 100 characters)

Role of the associated organisation in this project:

Anne Vehviläinen from the ministry will join as a member of the advisory board (78 / 1,000 characters)

2.3 Associated Organisation Details - AO 13

Associated organisation name and type:

Organisation in original language: Lumene
6 / 250 characters

Organisation in English: Lumene
6 / 250 characters

Department in original language: cosmetics manufacturing company
31 / 250 characters

Department in English: cosmetics manufacturing company
31 / 250 characters

Legal status: b) Private

Type of associated organisation: Large enterprise | ≥ 250 employees

Associated organisation location and website:

Address: Lasikuja 2
11 / 250 characters

Country: Finland

Postal Code: 02780
5 / 250 characters

Town: Espoo
5 / 250 characters

Website: https://www.lumene.com/
23 / 100 characters

Role of the associated organisation in this project:

Lumene is interested in the results of the project and testing extracts produced in the project in cosmetics formulations.
122 / 1,000 characters

2.3 Associated Organisation Details - AO 14

Associated organisation name and type:

Organisation in original language: BioFuel Region (14 / 250 characters)

Organisation in English: BioFuel Region (14 / 250 characters)

Department in original language: BioFuel Region (14 / 250 characters)

Department in English: BioFuel Region (14 / 250 characters)

Legal status: b) Private

Type of associated organisation: NGO — Non-governmental organisations, such as Greenpeace, WWF, etc.

Associated organisation location and website:

Address: BioFuel Region AB | Storgatan 35 | (35 / 250 characters)

Country: Sweden

Postal Code: 90325 (6 / 250 characters)

Town: Umeå (4 / 250 characters)

Website: https://biofuelregion.se/ (25 / 100 characters)

Role of the associated organisation in this project:

Participation in the project advisory group. BioFuel Region is financed by municipalities at the north of Sweden and they have the capacity to help to communicate the results of the projects to the municipalities

213 / 1,000 characters

2.3 Associated Organisation Details - AO 15

Associated organisation name and type:

Organisation in original language: SCA-Obbola (10 / 250 characters)

Organisation in English: SCA Packaging (13 / 250 characters)

Department in original language: Laboratory (10 / 250 characters)

Department in English: laboratory (10 / 250 characters)

Legal status: b) Private

Type of associated organisation: Large enterprise — ≥ 250 employees

Associated organisation location and website:

Address: Linjevägen 33 (13 / 250 characters)

Country: Sweden

Postal Code: 91380 (5 / 250 characters)

Town: Obbola (6 / 250 characters)

Website: https://www.sca.com/en/ (23 / 100 characters)

Role of the associated organisation in this project:

SCA is a large company and have Pulp and paper production in Obbola, Sweden. They are interested in new biocides from bark extractives. Hans Thoren, Laboratory manger will acts in advisory board of the project.
They are using large amount of fossil-based biocides such as Fennosan today in the process and they would like to see natural-based biocide as alternative. They have problem with hydrogen gas generation in recycled pulp and paper in the storage tower and an efficient biocide could help the process very much. This problem is well-known in several pulp and paper companies in BSR and in Europe.

609 / 1,000 characters

2.3 Associated Organisation Details - AO 16

Associated organisation name and type:

Organisation in original language: Politechnika Częstochowska (26 / 250 characters)

Organisation in English: Częstochowa University of Technology (36 / 250 characters)

Department in original language: Katedra Inżynierii Środowiska i Biotechnologii (46 / 250 characters)

Department in English: Department of Environmental Engineering and Biotechnology (57 / 250 characters)

Legal status: a) Public

Type of associated organisation: Higher education and research instituti — University faculty, college, research institution, RTD facility, research cluster, etc.

Associated organisation location and website:

Address: ul. Dąbrowskiego 73 (19 / 250 characters)

Country: Poland

Postal Code: 42-201 (6 / 250 characters)

Town: Częstochowa (11 / 250 characters)

Website: https://wis.pcz.pl/ (19 / 100 characters)

Role of the associated organisation in this project:

Professor Anna Grobelak, from the Częstochowa University of Technology will join as a member in the advisory board. (116 / 1,000 characters)

2.3 Associated Organisation Details - AO 17

Associated organisation name and type:

Organisation in original language
Gminny Zakład Oczyszczania Ścieków w Małobądzu
46 / 250 characters

Organisation in English
Municipal Wastewater Treatment Plant in Małobądz
48 / 250 characters

Department in original language
Gminny Zakład Oczyszczania Ścieków w Małobądzu
46 / 250 characters

Department in English
Wastewater Treatment Plant i
28 / 250 characters

Legal status
a) Public

Type of associated organisation
Local public authority
Municipality, city, etc.

Associated organisation location and website:

Address
ul. Górna 25
12 / 250 characters

Country
Poland

Postal Code
32-329
6 / 250 characters

Town
Bolesław
8 / 250 characters

Website
https://www.gzos.com.pl/
24 / 100 characters

Role of the associated organisation in this project:

Mr. Bartosz Dąbek, Head of a Municipal Department in Małobądz will join as member of the advisory board.
104 / 1,000 characters

3. Relevance

3.1 Context and challenge

Forestry biomass residues are a very important resource not only for production of heat and electricity but also for the production of chemical substances that can replace those from fossil resources. Logging residues amount to 40 to 90 per cent of the biomass in stemwood extracted from forests when harvesting. Also sawmills and pulp mill produce a big amount of forest biomass (mostly bark which consists 10% of the tree volume). Chemicals from residual forest biomass are widely pursued by companies due to the their sustainability and circular economy requirements and also due to the abundancy of the forest resources in the Baltic Sea Region.
The main target groups of the project include public authorities, forest agencies, municipalities, private forest owner associations, forest companies, energy enterprises and enterprises interested in extracting valuable ingredients as well as enterprises utilizing forestry side streams in novel product applications. The project will provide the main target groups with effective, innovative and climate-neutral solutions to the challenge they face. The solutions to be developed include:
i) Treatment of bad odour in municipal wastewater treatment plants with green chemicals produced by forestry biomass residues (replacing the toxic additives that are used now).
ii) A tool for planning ash recycling to the forest. The ash will originate from the combustion of the forestry biomass residues that remain after the extraction of the green chemicals. The tool will be developed as concept of proof to make ash recycling simpler and more digital.
iii)optimized and tested methods to extract valuable ingredients for novel intermediate products to be developed further by enterprises.
iv)techno-economic feasibility studies for selected ingredients.

1,810 / 2,000 characters

3.2 Transnational value of the project

There are large quantities of underutilized forestry biomass residues in the Baltic Sea countries. Increasing their use in the production of high value chemicals in these countries is necessary to implement EU's policies and strategies about the development of renewable chemicals and circular economy in order to speed up green transition. In this regard, the Baltic Sea countries face the same set of challenges, which speaks for the value of cooperation among them. The most significant benefits of transnational cooperation in this project are knowledge sharing and synergy among different countries in the Baltic Sea Region regarding the development of methods for the production of chemical substances that can replace those from fossil resources. The socioeconomic conditions, forest management traditions, as well the focus of forestry research vary across countries. These differences have resulted in considerable diversity in existing knowledge, experiences, and technologies related to the use of forest resources. Transnational cooperation in this project facilitates the transfer of knowledge and technologies related to the production of chemical substances from unused forestry biomass residues.
The synergy effect of transnational cooperation in this project is threefold. First, combining the existing knowledge and experiences accumulated in different countries creates a stronger basis for finding effective means to produce chemical substances from unused forestry biomass residues. Second, transnational cooperation assures that strong expertise in all related fields is available, which will enable us to avoid weak links in project implementation, and thereby improve the overall effectiveness of the project outputs. Third, transnational cooperation will significantly improve the efficiency of project implementation by avoiding repeating similar works.

1,880 / 2,000 characters

3.3 Target groups

Target group	Sector and geographical coverage	Its role and needs
Interest group	Interest groups such as BioFuel Region assist their members with technical, economic and administrative issues and to represent the interests of the members in negotiations with authorities and other organisations on regulations. Entrepreneurship associations are interested in novel business opportunities related to forestry side streams. 342 / 500 characters	This target group has identified a problem in its activities (bad odour during wastewater treatment) which can be solved by inserting chemicals that are produced (extracted) within the project from unused forestry biomass residues. The members of Swedish Water are municipal wastewater facilities at least two of them will help with pilot tests in their facilities. Entrepreneurship associations can give guidance on r&d goals and can activate members or disseminate results to enterprises. 490 / 1,000 characters
Infrastructure and public service provid	District heating plants are providing heat, electricity and cooling in many countries within the region. A big part of that is produced through combusting forest biomass. This target group is interested in getting added value from the biomass (e.g. though extracting valuable chemicals) and then combust the biomass. Also they are interested in find new uses for the ash that is produced during the combustion of the biomass. 426 / 500 characters	This target group will produce heat, electricity and ash from the forestry biomass residues that remain after the extraction of the green chemicals. It will assist on developing the tool for planning ash recycling to the forest. 228 / 1,000 characters

Target group	Sector and geographical coverage	Its role and needs
Small and medium enterprise	The Finnish startup Montinutra is interested in novel business opportunities (optimized and feasible extraction methods for selected valuable compounds in forestry side streams in lab and pilot scale). The following SME`s are interested in novel-end use applications: Innomost, ForestSpaFInland, Team Rasweet, ArcticWarriors (Finland), SilvExpo, Alternative Plants, Madara Cosmetics (Latvia), GreenBack (Poland). 412 / 500 characters	Montinutra can give preliminary guidance on the extraction methods to be optimized and tested. Montinutra is interested in testing and introducing the new optimized methods in their production. Enterprise interested in novel end-use applications would utilize results in their own projects and product development including novel ingredients from forestry side streams. Main areas of application includes food supplements, substances for application in cosmetics. 465 / 1,000 characters
Large enterprise	Enterprises are interested in novel end use applications. Atria and Raisio are interested in novel animal feed applications. Latvias Forests (Latvijas Valsts Meži) have a major interest in the utilization of forestry waste products (biomass), such as needles, to make the timber production more sustainable. Wibax is interested in development of forest based biocides for production in BSR countries. SCA Forest have interest in new products from bark, a side product of pulp and paper production. 498 / 500 characters	Enterprises are interested in testing novel ingredients in their product formulations and are interested in quality characterisation of novel ingredients. Enterprises, active in forestry sector are interested in applications which will help to reduce waste amounts, their application for production of new products. 316 / 1,000 characters
International governmental organisation	Field of responsibility: legislation and implementation of legislation economic sectors: forestry Representatives of target groups: from all participating countries. Target groups can be ministries, organisations led by governments, other non-research organisations or associations 281 / 500 characters	Representatives from government organisations will be invited to an advisory board which gives directions and guidance for the project work. Results from this project are presented to the advisory board and recommendations for guidelines will be discussed in the advisory board. 278 / 1,000 characters

3.4 Project objective

Your project objective should contribute to:

Circular economy

The needs assessment that we did on writing this funding proposal helped us to understand the needs of the target groups and which solutions that we could provide in order to satisfy these needs. The target groups are affected positively from the project and they are offered occasions to influence the solutions that the project produces for example through their participation in the advisory group that it is formed within the project. This project affects many target groups: Large enterprises that produce forest products are uncertain on how to produce added value from logging residues and sawmill by products, small and medium size enterprises often har innovative ideas on, at a small scale, extracting value from biomass and they need assistance for scaling up their operations. Interest groups, governmental organisations and public service providers need more knowledge, effective tools and suitable data to promote the use of residual forest biomass for producing chemicals and thus convert more forest biomass “waste” into bioproducts contributing to the circular bioeconomy. Also use of ash that results from combustion of residual biomass increase the circularity of the biomass. The project team develops solutions for utilizing forestry side streams in high value added products based on the needs by target groups and based on the opportunities found in research. Enhanced utilization of forestry side streams can contribute to circular economy and also upcycling of side streams as well as replacing oil based products.

1,539 / 2,000 characters

3.5 Project's contribution to the EU Strategy for the Baltic Sea Region

Please indicate whether your project contributes to the implementation of the Action Plan of the EU Strategy for the Baltic Sea Region (EUSBSR).

(•) Yes ( ) No

Please select which Policy Area of the EUSBSR your project contributes to most.

PA Bio-economy

Please list the action of this Policy Area that your project contributes to and explain how.

The project contributes in Action 3: "Strengthen multiple use of resources through cross-cutting and cross-sectoral approaches to release potential and accelerate the development of a sustainable circular bio-economy". In the project we produce added value from unused forestry biomass residues

Utilization of forestry side-streams would help to create new business and job opportunities and it would open up new development in rural areas. The project can enhance the growth of Bio-economy in the BSR region by focusing on the following actions: 1)Research and development in order to utilize forestry side streams 2)collaboration with enterprises in order to promote bio-based business 3) evaluation of bio-economy policies and development of guidelines since some regions and countries in the Baltic Sea Region have already holistic bioeconomy policies and strategies in place but others are on the way to developing such policies and strategies. 4) collaboration with civil societies; social acceptance of utilization of forestry side streams is included in the project 5) outreach: consumers, target groups are reached by disseminating project results.

1,161 / 1,500 characters

If applicable, please describe which other Policy Areas of the EUSBSR your project contributes to and how.

Our project contributes as well to the Policy Area PA Innovation. In the project we produce and use green chemicals from forestry biomass residues and replace those from fossil origin

183 / 1,500 characters

3.6 Other political and strategic background of the project

Strategic documents	
EU Chemicals Strategy for sustainability towards a toxic-free environment: One of the actions aims to boost the investment and innovative capacity for production and use of chemicals that are safe and sustainable by design, and throughout their life cycle. Utilization of forestry side streams by developing extraction methods for bio-based chemicals can promote sustainability e.g. by replacing fossil based chemicals. (423 / 500 characters)	
HELCOM Baltic Sea action plan: Development and testing of novel waste water treatment (tannins) would help to achieve good environmental status of the sea. (155 / 500 characters)	
This project is related to the following strategic documents: EU Circular Economy Action Plan, EU Green Deal and A sustainable bio-economy for Europe. Enhanced utilization of forestry side-streams would help EU's efforts to develop a sustainable, low carbon, resource-efficient and competitive economy and it would decrease EU's dependence on imported and virgin raw materials. Extracting more added-value from biomass through producing valuable chemicals has a positive impact in the wood sector (497 / 500 characters)	

3.7 Seed money support

Please indicate whether your project is based on a seed money project implemented in the Interreg Baltic Sea Region Programme 2014-2020.

( ) Yes (•) No

3.8 Other projects: use of results and planned cooperation

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation	

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation
BalticForbio 12 / 200 characters	Baltic Sea Region 17 / 200 characters	The aim of the project was to to increase production of renewable energy in the Baltic Sear Region by for promoting the harvest and use of logging residues and small trees cut in early thinning. The project developed cost-effective and sustainable harvest methods, decision support tools, guidelines and training programs for harvest of logging residues and small trees. The project produced, in close cooperation with target groups, a GIS platform and database for producing spatially explicit estimates of forest biomass potentials, and innovative business models for developing small-scale bioenergy plants in rural area in the BSR. In the current project we will build upon this project by using the forestry biomass residues identified by Baltic Forbio in creating solutions to needs expressed by our target groups 819 / 1,000 characters
NovelBaltic Market driven authentic non-timber forest products (NTFP) from the Baltic region 92 / 200 characters	Baltic Sea Region 17 / 200 characters	The objective was to enhance the market uptake of non-timber forest products (NTFP), at first wild berries innovations based on improved R&D infra related to authenticity and quality and enhanced utilization of the R&D capacity. Review the market demand for NTFP in selected regions in China and Asia were done and the feasibility of selected business opportunities through techno-economic pre calculations were evaluated. Authentification methods for products from reliable Baltic NWFP businesses were elaborated to provide verification of authenticity of NTFP. The results, quality demonstration and authenticity methods wwere used by SMEs as proof of quality products/premium products. The capacity of the NTFP R&D infra related to authenticity and quality and the utilization of the infra wasenhanced. The feasibility of selected technologies and needed production volumes will be evaluated. 896 / 1,000 characters
Value Added 11 / 200 characters	Interreg Botnia-Atlantica 25 / 200 characters	The aim of the project is to demonstrate a new innovative solution to produce valuable compounds from the currently under-utilized forestry side-stream, logging residues in the Botnia-Atlantica region in Finland and in Sweden. Raw material availability and quality requirements for procurement as well as their potential as a feedstock for selected valuable applications are evaluated as well. Value Added project is starting point for CEForestry project: novel methods will be optimized and tested and the area will grow from BA region to Baltic Sea region. 559 / 1,000 characters

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation
Tannins for wastewater treatment (Tanwat) 41 / 200 characters	Interreg Botnia-Atlantica 25 / 200 characters	The overall objectives of the project was to develop methods for producing high-value tannins from low-value spruce bark mainly for wastewater treatment as coagulation agent. The work was divided in 5 work packages. In WP1, Luke provided materials to be used in the other WPs and developed pre-treatment methods for bark. In WP2, Luke extracted and purified tannins from spruce bark, first in laboratory scale and later in pilot scale. The produced tannins were actionized by SLU for absorbing particles, phosphorus etc. in wastewater treatment experiments. These tests were done in the lab in WP4 by SLU and later in WP5 as pilot study by SLU. The project results showed that the tannin polymers extracted from spruce bark are active substances after chemical modification (cationization) and can be used instead of commercial flocculating/coagulation agents. The project was coordinated by SLU, started January 2018 and ended October 2021. 941 / 1,000 characters
Disaggregation of conventional vegetable press cakes by novel techniques to receive new products and to increase the yield (Discovery) 134 / 200 characters	SUSFOOD ERA-NET 15 / 200 characters	The Discovery project team was exploring the use of new and innovative techniques such as, ultrasonic wave cavitation and / or enzymatic treatment and bacterial fermentation, for the processing (extraction) of valuable food ingredients from vegetable rest raw materials (press cakes) resulting from the processing of vegetables, in order to increase yields and produce other intermediate value-added products, such as meat analogues. The current proposal team will employ developed biotechnological and technological schemes to develop the meat analogues with ingredients extracted from pine needles. 601 / 1,000 characters

3.10 Horizontal principles

Horizontal principles	Projects's direct impact
Sustainable development	positive
Non-discrimination including accessibility	neutral
Equality between men and women	positive

4. Management

Allocated budget 15%

4.1 Project management

☑ **Please confirm that the lead partner and all project partners will comply with the rules for the project management as described in the Programme Manual.**

If relevant, please indicate any other important aspects of the project management, e.g. external entity supporting the lead partner in the management of the project, advisory board, steering committee, any other relevant working groups, etc.

The management structure will consist of:
• Project Coordination Team (PMT) lead by SLU.
• Advisory Board (AB) from selected target groups consisting of non-research organisations. AB will advise the project's direction, strategy, objectives and goals.
SLU will be responsible for the day-to-day implementation and management of CEForestry with the support of a Project Financial Manager and Communications Coordinator, both employed at SLU. The PMT will monitor the delivery of the WP outputs.

497 / 500 characters

4.2 Project financial management

☑ **Please confirm that the lead partner and all project partners will comply with the rules for the financial management and control as described in the Programme Manual.**

If relevant, please indicate any other important aspects of the financial management, e.g. external entity supporting the lead partner, positions planned for financial management, involvement of special financial experts (e.g. for public procurement), etc.

A Project Financial Manager, at SLU, will perform the financial management of CEForestry.
SLU will undertake full responsibility for all obligations within the grant agreement, including financial responsibility for the project as a whole in accordance with the grant agreement and relevant EU and national regulations and procurement guidelines.
Meetings (on-line and physical) for the financial network will be held every 6 month in relation to the project meetings to monitor project spending.

496 / 500 characters

4.3 Input to Programme communication

☑ **Please confirm that you are aware of the obligatory inputs to Programme communication that must be submitted along the pre-defined progress reports, as described in the Programme Manual.**

If relevant, please describe other important aspects of project communication that you plan to introduce, e.g. a communication plan, opening and closing events, social media channel(s) etc.

The Communication Coordinator at SLU will manage communication. Their responsibilities will include external communications (project website, publications, media relations) and the coordination of internal communications between project participants, i.e. arranging (together with the team members) Kick-off meeting, WPT meetings, project meetings, PMT meetings, Annual meetings and International Stakeholder Conferences (ISC), Internal daily communication of PP and AOP by web-based software.

495 / 500 characters

4.4 Cooperation criteria

Please select the cooperation criteria that apply to your project. In your project you need to apply at least three cooperation criteria. Joint development and joint implementation are the obligatory ones you need to fulfill in your project.

Cooperation criteria	
Joint Development	☑
Joint Implementation	☑
Joint Staffing	☑
Joint Financing	☑

5. Work Plan

Number	Work Package Name
1	WP1 Preparing solutions

Number	Group of Activity Name
1.1	Forestry biomass residue availability and streams in the BSR and processing potential
1.2	Utilization of needles by isolation of active components for food industry
1.3	Development and optimization of forestry biomass residue processing/biorefinery approaches
1.4	Market analysis of forestry biomass processing and biorefinery innovation possibilities
1.5	Bio-ash characterization and development of an ash recycling planning tool

Number	Work Package Name
2	WP2 Piloting and evaluating solutions

Number	Group of Activity Name
2.1	Pre-treatment and extractions of active compounds at pilot plants
2.2	Evaluation of spruce bark extracts as antimicrobial agent in pilot scale investigations
2.3	CE business model and social acceptance of using forestry biomass residues
2.4	Pilot manufacture of functional meat analogues with incorporated active ingredients
2.5	Techno-economic studies for the economic industrial production of selected valuable products

Number	Work Package Name
3	WP3 Transferring solutions

Number	Group of Activity Name
3.1	Activation of target groups and dissemination of project results to target groups
3.2	Preparation of policy recommendations for sustainable utilization of forestry side streams

Work plan overview

Period:	1	2	3	4	5	6	Leader
WP.1: WP1 Preparing solutions							**PP2**
A.1.1: Forestry biomass residue availability and streams in the BSR and processing potential							PP1
D.1.1: Map of unutilized forestry biomass residues				D			
A.1.2: Utilization of needles by isolation of active components for food industry							PP3
D.1.2: Report on isolation of bioactive compounds including methodologies				D			
A.1.3: Development and optimization of forestry biomass residue processing/biorefinery approaches							PP2
D.1.3: Report on forestry biomass residue processing/biorefinery methods: samples (prototypes) of products					D	D	
A.1.4: Market analysis of forestry biomass processing and biorefinery innovation possibilities							PP7
D.1.4: Report on existing and potential forestry biomass processing/biorefinery products			D	D	D	D	
A.1.5: Bio-ash characterization and development of an ash recycling planning tool							PP1
D.1.5: Ash recycling planning tool						D	
WP.2: WP2 Piloting and evaluating solutions							**PP1**
A.2.1: Pre-treatment and extractions of active compounds at pilot plants							PP6
D.2.1: Delivery of optimal fractions of biomass for extractions stage and later extractives		D		D		D	
A.2.2: Evaluation of spruce bark extracts as antimicrobial agent in pilot scale investigations							PP1
D.2.2: Testing of spruce extracts as biocide replacement in a wastewater system and/or industrial process			D		D		
A.2.3: CE business model and social acceptance of using forestry biomass residues							PP5
O.2.3: CE business model for the forestry biomass residues recovery						O	
A.2.4: Pilot manufacture of functional meat analogues with incorporated active ingredients							PP3
D.2.4: Technology for production of functional meat analogues						D	
A.2.5: Techno-economic studies for the economic industrial production of selected valuable products							PP11
D.2.5: Techno-economic feasibility of selected valuable compounds						D	
WP.3: WP3 Transferring solutions							**PP4**
A.3.1: Activation of target groups and dissemination of project results to target groups							PP4
D.3.1: Presentation materials	D	D	D	D	D	D	
A.3.2: Preparation of policy recommendations for sustainable utilization of forestry side streams							PP4
O.3.2: Policy recommendations for utilizing forestry side streams in the Baltic Sea region						O	

Outputs and deliverables overview

Code	Title	Description	Contribution to the output	Output/ deliverable contains an investment
D 1.1	Map of unutilized forestry biomass residues	The deliverable will provide an indication to the target groups and the project partners on the amount of unutilized forestry biomass residues that is available for producing high value green chemicals and thus will provide major contribution to raise the significance of CEforestry and suggested approach. A map of the amounts and availability of residual biomass for isolation of valuable active compounds will be created. Available amounts of residual forest biomass will be collected also from sawmills and pulp mills that are located within the region . Data will be collected from each country by local partners and input in an ArcGIS map will be done by the activity leader. The map will be made available to the target groups at the end of the project period and will be available also after the project period. Furthermore, an inventory of the biomass processing technologies will be done in order to prepare for the piloting in WP2. The mapping of the biomass amounts will have direct impact on approaches selected in Work Package 2 for piloting trials. The evaluation of the biomass potential will be used as input information in Activity 1.3. (analysis of biorefinery and valorisation potential) as well as elaborating market analysis. The partners that participate in this group of activities will test the functionality of the GIS map before it is published.	O 3.2 Policy recommendations for utilizing forestry side streams in the Baltic Sea region	
D 1.2	Report on isolation of bioactive compounds including methodologies	The developed methodologies for the extraction of bioactive compounds such as proanthocyanidins and shikimic acid as well as fermented biomass of pine needles will be applied in WP2 for the development of functional foods. It is planned to produce pilot batches of meat analogues with incorporated bioactive compounds in collaboration with business enterprise “FRUCTUS AG”. The application of methodology of shikimic acid for the inactivation of viral infections in fruits, vegetables and crops will be developed and applied for the needs of associated partners. These methods will be recommended for further use by R&D sections since all the results will be available for all interested groups. Also extracts obtained by other project partners using, for example, bark will be provided for testing. Activities will be coordinated with A 1.3. Enterprises will be able to use tested methodologies in developing functional foods.	O 2.3 CE business model and social acceptance of using forestry biomass residues	
D 1.3	Report on forestry biomass residue processing/biorefinery methods: samples (prototypes) of products	Deliverable will support selection of optimal solutions for pilot experiments in the WP and thus this activity will be elaborated in close cooperation with Activity 1.4. and associated partners. The deliverable will include forestry biomass residue processing options looking from biorefinery cascading perspective - starting with the use for energy production, including use of refined biomass but ending up with fine chemicals for biopharmacy, food industry and other sectors. The deliverable will provide direct outputs for the pilot experiments, but at the same time will inform about most prospective elaborated products, planned for pilot testing conditions and properties of elaborated products complying with market needs and application possibilities. Deliverable will include also experimental samples for further testing of functional properties of samples prospective for pilot experiments. Characterization results of extracts will give information to the target enterprises interested in novel product development. Another dimension of the deliverable - demonstration of the high potential of circular economy concepts integrating it in the forestry sector. Deliverables of activity 1.3. will reveal actual potential of bioeconomy orienting towards replacement of fossil materials with biomass residue based substances.	O 2.3 CE business model for the forestry biomass residues recovery	
D 1.4	Report on existing and potential forestry biomass processing/biorefinery products	The aim of the research is to provide insight into the full biorefinery process: from the biomass collection and processing to a successful conclusion of an innovative product business. 1. Development of detailed green forestry biomass side stream processing and biorefinery chain. 2. Identification and classification of existing and potential biorefinery products. 3. Compliance of products with industrial segments and market segments and biorefinery ingredient strategy. 4. Summary of existing and potential innovative finished products, SWOT analysis and strategy building. 5. New product Market segments and their future potential analysis. 7. Key recommendations for commercialization strategies and key success factors. 8. Key recommendations for marketing strategies, marketing materials and messages. 9. Analysis of possible commercial opportunities and key lessons from the experience of companies involved thus far in commercialization of similar products. Companies involved can choose from many different commercialization strategies, e.g., work with pharmaceutical ingredients, cosmetics, dietary supplements, animal supplements and agricultural products. The more versatile the strategies are – the better are the companies’ possibilities to succeed on the market.	O.2.4 CE business model for the forestry biomass residues recovery	

D 1.5	Ash recycling planning tool	Returning ashes and remaining nutrients in them originating from combustion of forest biomass to the forest site is considered as a good biomass harvesting practice. In order to recycle ashes they must be of high quality to avoid pollution. The costs of returning ashes to the forest (collection, pre-treatment, transport of the ashes from the producers to the forest, the costs of the actual spreading in the forest and remoteness of suitable forest stands to the ash producer) are the primary obstacles to an increased annual spread volume. Attempts have so far been made to find cheaper solutions and find new use areas for the ashes. The ash recycling planning tool that will be developed here will help heat and electricity producers to identify to which forest site they could return the ash and also help them plan all the available resources needed for returning the ash at a specific location. Discrete event simulations in combination with multiple-criteria decision analyses of machine systems and methods for improved ash recycling logistics of the ash will be done. Integration of ash spreading with other forestry operations will also be evaluated. Very well managed biomass and ash handling could make ash utilization as fertilizer a much more attractive alternative.	O.2.4 CE business model for the forestry biomass residues recovery, O 3.2 Policy recommendations for	
D 2.1	Delivery of optimal fractions of biomass for extractions stage and later extractives	The pilot plant (BTC at SLU) will provide optimal size and fractions of selected bark from spruce, pine and birch for the upcoming extractions at the pilot plants at Luke and at Centria. The material properties will be adjusted to maximize the yield as well as the quality of the extractions processes. The deliveries will be done in at least three occasions to monitor the seasonal variations. Delivery of several batches of aqueous and hydrophobic fractions of extractives from the biomass will help target enterprises to evaluate the business potential in novel product development. The whole process from pretreatment of biomass, extractions and separations techniques, as well as isolations of the active compounds will be recorded. The concept/method will be shared with the target groups in the project for using directly or after some adjustments/modifications and developments as green products.	O 2.3 CE business model for the forestry biomass residues recovery	
D 2.2	Testing of spruce extracts as biocide replacement in a wastewater system and/or industrial process	Development and description of methods for using spruce extract as biocides in industrial wastewater system for two different purposes/applications. The activity will describe and demonstrate the effect of the extract on mitigation of gas generation in pulp storage tower as pilot- and large-scale investigations. A recipe/method will be presented for the optimal reduction of hydrogen gas generation. In the second activity, we will monitor and/or simulate municipal waste water system by using different bark extractives as biocides to eliminate hydrogen sulfide gas generation in transfer lines and in the final destination of the wastewater for purification steps. One antimicrobial product based on spruce bark is developed and evaluated in two different industrial processes as described above.	O 2.3 CE business model for the forestry biomass residues recovery	
O 2.3	CE business model for the forestry biomass residues recovery	The purpose of the CE business model is to propose solutions to utilize forestry side streams in different partner countries in the Baltic Sea Region in order to meet the EU Green Deal, EU Circular Economy and Baltic Sea region bioeconomy strategy goals. Countries in the Baltic Sea region are in a different development phases in relation to the utilization of forestry side streams and therefore it is beneficial for the Baltic Sea region to optimize and propose CE business models including the country-specific features. The CE business model will be developed based on the solutions designed during the project such as: - map of unutilized forestry biomass residues, - report on existing and potential forestry biomass processing/biorefinery products, - report on forestry biomass residue processing/biorefinery methods, - techno-economic feasibility report. The business model will focus on providing the highest possible level of sustainability and material efficiency in all taken activities. It will address various environmental footprints that are accompanying forestry biomass residues processing. According to the CE concept, the developed products from the recovered biomass should be durable and have the possibility for further reuse or recycling. The developed business model will count the high diversity of markets present in the countries of the Baltic region with a special focus on the level of social acceptance of using/buying goods made of recovered forestry biomass residues. Moreover, the business analysis will cover the country-specific differences in the most desired method of application of the forestry biomass such as: 1) a biofuel for heating, electricity production or mobility needs, 2) alternative construction material, 3) biomaterials for the paper or chemical industry 4) ingredients for health food, food supplements and cosmetics. The output will also include developing a sales and distribution model for the forestry biomass processing products in order to minimize distribution costs and adjust sales techniques for the market and product characteristics.		
D 2.4	Technology for production of functional meat analogues	Enterprise will benefit from the technological parameters intended for production of vegetarian products with increased nutritional value. The incorporated active compounds will also improve the quality of the products with prolonged shelf-life. The deliverable gives benefit for the production of vegetarian products with increased shelf-life and nutritional value	O 2.3 CE business model for the forestry biomass residues recovery	

D 2.5	Techno-economic feasibility of selected valuable compounds	The deliverable is a comprehensive document that establishes the techno-economic potential of the designed commercial production processes designed and assessed. An issue in the industrial use of forest side streams has been the lack of financial support and incentives to the entrepreneurs due to quite a low priority that governments and banks have put on these industries often considered to act on low-volume, niche markets. This is also what this work package is aiming at. There are many cases where these obstacles have been overcome and industrial production of products for health, nutritional, nutraceutical, pharmaceutical and cosmetic purposes has been established. Along with challenges in front-end harvesting and back-end marketing of product value chain, there are many processing problems to overcome. The processing techniques are often inefficient leading to low yields, due to lack of proper process development and downstream processing facilities. The quality control procedures are not appropriate due to shortages in equipment, trained personnel and know how, and access to up-to-date technological and market information. In addition to practices and facilities, one has to have a sound basis for starting business and investments to establish a nourishing processing industry for these side streams.	O 2.3 CE business model for the forestry biomass residues utilization	
D 3.1	Presentation materials	Posters, abstracts and power point presentations to be presented in events such as seminars, webinars, conferences and exhibitions. Articles in journals, posts in social media.	O 3.2 Policy recommendations for utilizing forestry side streams in the Baltic Sea region	
O 3.2	Policy recommendations for utilizing forestry side streams in the Baltic Sea region	Countries in the Baltic Sea region are in different development phases in relation to the utilization of forestry side streams. The total forest land area varies from country to country and therefore volumes of annual forest biomass utilization and volumes of forestry side streams vary. The purpose of the output is to help Baltic Sea Region countries to optimize sustainable utilization of forestry side streams in each Baltic Sea country in order to meet EU Green Deal, EU circular economy and Baltic Sea region bioe-conomy strategies The policy recommendations will be based on the deliverables of this project: a map of available forestry biomass residues, developed and tested extraction methods, market analysis results of forestry biomass processing and biorefinery innovation possibilities, techno-economic feasibility studies.		

Work package 1

5.1 WP1 Preparing solutions

5.2 Aim of the work package

The aim of this work package is to prepare solutions to help address the identified challenge. You can either develop entirely new solutions or adapt existing solutions to the needs of your target groups. Prepare your solutions in a way that you can pilot them in Work Package 2. Consider how you involve your target groups in preparation of the solutions.
Organise your activities in up to five groups of activities to present the actions you plan to implement. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 2 - University of Latvia

Work package leader 2 PP 3 - Kaunas University of Technology

5.4 Work package budget

Work package budget 30%

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?

	Target group	How do you plan to reach out to and engage the target group?
1	Interest group Interest groups such as BioFuel Region assist their members with technical, economic and administrative issues and to represent the interests of the members in negotiations with authorities and other organisations on regulations. Entrepreneurship associations are interested in novel business opportunities related to forestry side streams. 342 / 500 characters	Interest groups represent differing types of interests, beginning with environmental protection issues (reduction of forestry wastes, left in forests), enthusiasts of circular economy (recycling of wastes, new environmental technologies) and ending up with non-formal education (in this respect the project partner universities are especially strong). Interest groups of major concern are entrepreneurship associations interested in development of new product lines and replacement of fossil resources with natural ones. Activation events will be organised to inform about project plans and demonstrate the aims and their topicality to wider public. Representatives of interest groups will be invited to public events of the project and at the same time will be direct target of project dissemination activities and results are communicated to interest groups. Major tools for reach out: personal contacts, invitation to project events, information during exhibitions, conferences, web page, others. 999 / 1,000 characters
2	Infrastructure and public service provider District heating plants are providing heat, electricity and cooling in many countries within the region. A big part of that is produced through combusting forest biomass. This target group is interested in getting added value from the biomass (e.g. though extracting valuable chemicals) and then combust the biomass. Also they are interested in find new uses for the ash that is produced during the combustion of the biomass. 426 / 500 characters	Infrastructure and public service providers are interested in the further development of forestry and support to bioeconomy. This target group will produce heat, electricity and ash from the forestry biomass residues that remain after the extraction of the green chemicals. It will assist on developing the tool for planning ash recycling to the forest. Representatives of interest groups will be invited to public events of the project and at the same time will be direct target of project dissemination activities. and results are communicated to interest groups. Major tools for reach out: personal contacts, invitation to project events, information during exhibitions, conferences, web page, others. 704 / 1,000 characters
3	Small and medium enterprise The Finnish startup Montinutra is interested in novel business opportunities (optimized and feasible extraction methods for selected valuable compounds in forestry side streams in lab and pilot scale). The following SME`s are interested in novel-end use applications: Innomost, ForestSpaFInland, Team Rasweet, ArcticWarriors (Finland), SilvExpo, Alternative Plants, Madara Cosmetics (Latvia), GreenBack (Poland). 412 / 500 characters	SME's, which are interested in the project results, represent small enterprises active in biopharma, cosmetics, food and similar industries and the interests are related to 2 aspects: 1) providing information on their needs, market actualities, participation in surveys; 2) receiving information about results of the project, elaborated products, their property and application studies. SME's are contacted directly and their needs are discussed and included in the planning of the activities. Representatives of target groups will be invited to participate in project webinars and seminars, conferences, project Advisory Board. Number of SME's will be increased after project approval. Target group SME's will be actively involved in the analysis of results of pilot experiments and they will be one of major actors of dissemination activities. 849 / 1,000 characters
4	Large enterprise Enterprises are interested in novel end use applications. Atria and Raisio are interested in novel animal feed applications. Latvias Forests (Latvijas Valsts Meži) have a major interest in the utilization of forestry waste products (biomass), such as needles, to make the timber production more sustainable. Wibax is interested in development of forest based biocides for production in BSR countries. SCA Forest have interest in new products from bark, a side product of pulp and paper production. 498 / 500 characters	Enterprises, representing forestry business (for example, Latvia State Forests, Latvia Plywood) are interested at first in 2 aspects: sustainable forestry management and reduction of wastes left after timber production and possibilities to promote new product lines from forestry biomass and thus accordingly to circular economy principles, production of forest biomass as a new product type. Enterprises, involved in forestry activities expressed interest about forestry biomass resource mapping (A 1.1.) as well as in market analysis of potential of application of biomass processing products (A 1.4.). Enterprises from food production, biopharma, cosmetics sectors are most interested in development of new products and their application potential (A 1.3. 1 1.2.). 767 / 1,000 characters
5	International governmental organisation Field of responsibility: legislation and implementation of legislation economic sectors: forestry Representatives of target groups: from all participating countries. Target groups can be ministries, organisations led by governments, other non-research organisations or associations 281 / 500 characters	Bioeconomy and circular economy are directions of strategic development of EU and forestry one of significant sectors of industry. Thus results of CEforestry will be directly addressed also to international governmental organizations both through members of advisory board representing governmental organizations, both directly. Members of the advisory board will be informed about the progress of the project and about the results of the project. In the advisory board meeting plans and results are discussed and guidance from the advisory board is expected. Besides to that deliverables of the WP1 will be disseminated to reach as wide auditorium as possible, including also authorities at EU level. Especial target group will be EU programs related to bio-based industries. Activities of WP1 most topical of intergovernmental bodies will include forestry biomass residue mapping, recommendations for valorisation and biorefinery of biomass streams and results of demonstration. 981 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
1.1	Forestry biomass residue availability and streams in the BSR and processing potential
1.2	Utilization of needles by isolation of active components for food industry
1.3	Development and optimization of forestry biomass residue processing/biorefinery approaches
1.4	Market analysis of forestry biomass processing and biorefinery innovation possibilities
1.5	Bio-ash characterization and development of an ash recycling planning tool

WP 1 Group of activities 1.1

5.6.1 Group of activities leader

Group of activities leader PP 1 - Swedish University of Agricultural Sciences

A 1.1

5.6.2 Title of the group of activities

Forestry biomass residue availability and streams in the BSR and processing potential

85 / 100 characters

5.6.3 Description of the group of activities

Information on the available unutilized forestry biomass residues in the Baltic Sea countries is incomplete. In the BalticForbio project spatially-explicit estimates of forest biomass for energy use resulting from wood harvesting operations were created but no indication was given on how much of this biomass is currently unutilized and in that way available for producing high value green chemicals. In this project, access to reliable estimates of unutilized forestry biomass residues will enhance the capacity of our target groups to make reliable feasibility analysis of large scale projects with significant demand for biomass. Available amounts of biomass residues from sawmills and pulpmills will also be estimated (never done before). Data will be collected from each country by local partners and input in an ArcGIS map by the activity leader. The map will be made available to the target groups during the project period. Furthermore, an inventory of the biomass processing technologies will be done in order to prepare for the piloting in WP2. The evaluation of biomass potential will be used as input information in Activity 1.3. (analysis of biorefinery and valorisation potential) as well as elaborating market analysis.

1,235 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.1

Title of the deliverable

Map of unutilized forestry biomass residues

44 / 100 characters

Description of the deliverable

The deliverable will provide an indication to the target groups and the project partners on the amount of unutilized forestry biomass residues that is available for producing high value green chemicals and thus will provide major contribution to raise the significance of CEforestry and suggested approach. A map of the amounts and availability of residual biomass for isolation of valuable active compounds will be created. Available amounts of residual forest biomass will be collected also from sawmills and pulp mills that are located within the region . Data will be collected from each country by local partners and input in an ArcGIS map will be done by the activity leader. The map will be made available to the target groups at the end of the project period and will be available also after the project period. Furthermore, an inventory of the biomass processing technologies will be done in order to prepare for the piloting in WP2. The mapping of the biomass amounts will have direct impact on approaches selected in Work Package 2 for piloting trials. The evaluation of the biomass potential will be used as input information in Activity 1.3. (analysis of biorefinery and valorisation potential) as well as elaborating market analysis. The partners that participate in this group of activities will test the functionality of the GIS map before it is published.

1,374 / 2,000 characters

Which output does this deliverable contribute to?

O 3.2 Policy recommendations for utilizing forestry side streams in the Baltic Sea region

89 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.1: Forestry biomass residue availability and streams in the BSR and processing potential						
D.1.1: Map of unutilized forestry biomass residues						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.2

5.6.1 Group of activities leader

Group of activities leader PP 3 - Kaunas University of Technology

A 1.2

5.6.2 Title of the group of activities

Utilization of needles by isolation of active components for food industry

74 / 100 characters

5.6.3 Description of the group of activities

Every year 600 million pine trees are cut down in the EU only. Pine needles contribute to about 30 percent of the trees mass and still billions of needles are left for drying or rotting after trees have been cut down. In order to make targeted use of forestry waste, valuable compounds, such as proanthocyanidins and shikimic acid will be extracted from pine needles. Since proanthocyanidins have a wide range of biological activities including antioxidative, cardioprotective, antitumor, antibacterial, antiviral effects it is planned to apply extracted compounds for the development of meat analogues to increase nutritional value, reduce fatty acid oxidation and to increase the shelf life of product. The methodology will be developed for the extraction and purification of proanthocyanidins. For the identification and analysis of the extracted compounds, the high performance liquid chromatography (HPLC) as well as preparative chromatography will be applied. Pine needles is rich in chlorophyll, carotene and vitamins such as C, K, P, E, PP, B1, B2, B3, B6, bacteriostatic agents, starch. Fermentation of the biomass modifies the existing radio of bioactive components, enriches it with new fermentation products and changes sensory properties. After the selection of probiotic cultures, the fermentation process of needle biomass composition will be optimized. Qualitative and quantitative changes in the biomass composition will be evaluated, and the methods of application of fermented biomass will be modeled for the development of novel health-friendly functional food. For the piloting in WP2, technologies for incorporation of the extracted compounds and fermented biomass from pine needles will be prepared. Shikimic acid have the ability to fight with viral, bacterial and fungal diseases, also help to restore bacteria and fungi balance in the intestinal tract. Controlling the spread of the phytoviruses is a major challenge in the agriculture sector since the viral diseases induce the significant decrease of raw material yield. Therefore, the innovative measures should be taken to develop a sustainable tool allowing to avoid viral infections common for vegetables, fruits and crops. To address this issue, it is planned to develop the methodology for the extraction of the shikimic acid from the pine needles. The extracted compound as a natural antiviral agent will be applied for the treatment of the fruits, vegetables and crops in order to prevent the viral diseases of various foods and food raw materials of plant origin. Qualitative identification of the extracted compounds by HPLC will be used. Evaluation of the antibacterial properties of the extracted shikimic acid against food borne bacteria pathogens such as Salmonella, Listeria, E. Coli, Bacillus Subtilis will be evaluated. Antiviral properties of the extracted shikimic acid against selected viruses common for fruits, vegetables and crops will be evaluated by Enzyme-Linked ImmunoSorbent Assay (ELISA).

2,998 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.2

Title of the deliverable

Report on isolation of bioactive compounds including methodologies

66 / 100 characters

Description of the deliverable

The developed methodologies for the extraction of bioactive compounds such as proanthocyanidins and shikimic acid as well as fermented biomass of pine needles will be applied in WP2 for the development of functional foods. It is planned to produce pilot batches of meat analogues with incorporated bioactive compounds in collaboration with business enterprise “FRUCTUS AG”. The application of methodology of shikimic acid for the inactivation of viral infections in fruits, vegetables and crops will be developed and applied for the needs of associated partners. These methods will be recommended for further use by R&D sections since all the results will be available for all interested groups. Also extracts obtained by other project partners using, for example, bark will be provided for testing. Activities will be coordinated with A 1.3.

Enterprises will be able to use tested methodologies in developing functional foods.

930 / 2,000 characters

Which output does this deliverable contribute to?

O 2.3 CE business model and social acceptance of using forestry biomass residues

80 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.2: Utilization of needles by isolation of active components for food industry						
D.1.2: Report on isolation of bioactive compounds including methodologies						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.3

5.6.1 Group of activities leader

Group of activities leader PP 2 - University of Latvia

A 1.3

5.6.2 Title of the group of activities

Development and optimization of forestry biomass residue processing/biorefinery approaches

91 / 100 characters

5.6.3 Description of the group of activities

First task within this Activity will include analysis of known forestry biomass residue processing/biorefinery approaches from 2 perspectives: suggested (elaborated at least at TRL 2 level) and implemented in the BSR industries or elsewhere. At the same time in this task results of the Activity 2.1. will be used to identify the most prospective groups of biorefinery. Based on analysis of known solutions most prospective forestry biomass processing/biorefinery approaches will be selected, considering biorefinery cascading concept (lowest position - waste to energy, fuels, highest ranking for productions of pharmaceuticals, fine chemicals), need to reduce impact on environment and climate as well as market needs in corresponding products. At least 5 solutions of forestry biomass processing/biorefinery will be offered and optimised. Groups of substances of major interest to be obtained includes: from bark - suberin, betulin, tannines, lignans, polyphenolics and others, from coniferous needles - vitamin and chlorophyl extracts, polyphenolics, terpenes, lipids and waxes, polyprenols and others. Also possibilities to use cones and other biomass types will be considered. For extraction only environmentally friendly extractant systems will be considered: aqueous, ethanolic or similar systems, intensive extraction methods, such as treatment with ultrasound, extraction with supercritical liquids and similar. When needed the extraction process will be optimised, for example, using Response Surface Methodology. Obtained extracts or individual substances will be characterised using chromatographic methods (GC-MS, GC-MS/MS, Orbitrap, UHPLC-MC, other detectors, HPLC), spectroscopic analysis methods, NMR and other methods, to characterise composition of extracts and support further standardization of extraction process and product composition. The next step of obtained product/extract/individual substance characterisation will include functional characterisation in compliance with the expected application fields. To do the mentioned tests, preparative samples will be obtained and provided for testing/standartisation. Characterisation of products obtained from forestry biomass will include, for example, antimicrobial, antiviral activity tests, sun protection factor estimation, enzyme activity inhibition tests, indicating the prospective areas of extract applications and other biological, chemical and pharmaceutical activity tests.

2,459 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.3

Title of the deliverable

Report on forestry biomass residue processing/biorefinery methods: samples (prototypes) of products

99 / 100 characters

Description of the deliverable

Deliverable will support selection of optimal solutions for pilot experiments in the WP and thus this activity will be elaborated in close cooperation with Activity 1.4. and associated partners. The deliverable will include forestry biomass residue processing options looking from biorefinery cascading perspective - starting with the use for energy production, including use of refined biomass but ending up with fine chemicals for biopharmacy, food industry and other sectors. The deliverable will provide direct outputs for the pilot experiments, but at the same time will inform about most prospective elaborated products, planned for pilot testing conditions and properties of elaborated products complying with market needs and application possibilities. Deliverable will include also experimental samples for further testing of functional properties of samples prospective for pilot experiments. Characterization results of extracts will give information to the target enterprises interested in novel product development. Another dimension of the deliverable - demonstration of the high potential of circular economy concepts integrating it in the forestry sector. Deliverables of activity 1.3. will reveal actual potential of bioeconomy orienting towards replacement of fossil materials with biomass residue based substances.

1,336 / 2,000 characters

Which output does this deliverable contribute to?

O 2.3 CE business model for the forestry biomass residues recovery

66 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.3: Development and optimization of forestry biomass residue processing/biorefinery approaches						
D.1.3: Report on forestry biomass residue processing/biorefinery methods: samples (prototypes) of products						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.4

5.6.1 Group of activities leader

Group of activities leader PP 7 - JSC BIOLAT

A 1.4

5.6.2 Title of the group of activities

Market analysis of forestry biomass processing and biorefinery innovation possibilities

87 / 100 characters

5.6.3 Description of the group of activities

The objective of the market study is to create an understanding and summarize existing knowledge about the green forestry biomass processing and biorefinery products, to support identification of most promising innovations, find appropriate market segments, look for benchmark examples in the World and analyze the best known commercialization strategies used by the major biomass processing companies. The aims are:
1. Explore green forestry biomass side-stream processing and biorefinery chain. Identify most promising biorefinery products.
2. Study target industries and market segments for each product (biopharmaceuticals, food, cosmetics, nutricocosmetics, agriculture, animal food).
3. Identify the most promising finished products, perform a SWOT analysis.
4. Choose the best market positioning for the new innovative products.
5. Explore market segments and their future potential.
6. Research and recommend a commercialization strategy.
7. Prepare examples of marketing strategies and marketing materials and key messages.
Activity will summarize the key lessons from the experience of companies involved thus far in commercializing of similar products. Companies involved can, e.g., work with pharmaceutical ingredients, cosmetics, dietary supplements, animal supplements and agricultural products. The more versatile the strategies are – the better are the companies' possibilities to succeed on the market. New ingredients (Lipid complex; provitamins – carotenoids, tocopherols; terpenes; sterols; polyprenols etc.) are seen as important drivers for the forestry biomass side stream extract market development.
The cosmetic market is very attractive for high performance innovative natural ingredients that are proven to be effective and safe. Marketing is a key issue for green biomass processing companies. A huge challenge for the companies is to better utilize the tools of marketing. Opportunities for market segmentation can be significant and should not be ignored nor assumed. The more limited the marketing resources are, the more important it is to target them. Not to forget, consumer insight is an essential ingredient for successful product and market development. Conifer and bark extracts are set to become one of the main beneficiaries of healthy product trends, specially for anti-aging products. Anti-aging products have proven themselves a successful strategy for many plant extracts. It is a niche strategy where companies try to command high value and low volume market niches through health platforms, novelty and convenience.
Methodology
The presentation of our findings will be based on the following methodology:
• Project partner research into biomass waste stream biorefinery strategy and strategy for other natural extracts
• Searches through scientific and commercial databases
• Telephone interviews with selected industry executives
• Attending Global Health Ingredients and Food Ingredients events (e.g., Vitafoods Europe and Asia).

2,981 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.4

Title of the deliverable

Report on existing and potential forestry biomass processing/biorefinery products

81 / 100 characters

Description of the deliverable

The aim of the research is to provide insight into the full biorefinery process: from the biomass collection and processing to a successful conclusion of an innovative product business.

1. Development of detailed green forestry biomass side stream processing and biorefinery chain.
2. Identification and classification of existing and potential biorefinery products.
3. Compliance of products with industrial segments and market segments and biorefinery ingredient strategy.
4. Summary of existing and potential innovative finished products, SWOT analysis and strategy building.
5. New product Market segments and their future potential analysis.
7. Key recommendations for commercialization strategies and key success factors.
8. Key recommendations for marketing strategies, marketing materials and messages.
9. Analysis of possible commercial opportunities and key lessons from the experience of companies involved thus far in commercialization of similar products.

Companies involved can choose from many different commercialization strategies, e.g., work with pharmaceutical ingredients, cosmetics, dietary supplements, animal supplements and agricultural products. The more versatile the strategies are – the better are the companies' possibilities to succeed on the market.

1,286 / 2,000 characters

Which output does this deliverable contribute to?

O.2.4 CE business model for the forestry biomass residues recovery

66 / 100 characters

5.6.6 Timeline

	Period: 1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.4: Market analysis of forestry biomass processing and biorefinery innovation possibilities						
D.1.4: Report on existing and potential forestry biomass processing/biorefinery products						

5.6.7 This deliverable/output contains productive or infrastructure investment

☐

WP 1 Group of activities 1.5

5.6.1 Group of activities leader

Group of activities leader PP 1 - Swedish University of Agricultural Sciences

A 1.5

5.6.2 Title of the group of activities

Bio-ash characterization and development of an ash recycling planning tool

74 / 100 characters

5.6.3 Description of the group of activities

In district heating plants, sawmills and pulpmills, residual forest biomass is converted into heat and electricity through combustion. During the combustion process two ash streams are produced: bottom ash which is taken out at the bottom of the boiler and fly ash which is captured from the flue gases using different kind of filters. The bottom ash is composed mainly of sand and is as a rule used as material at landfill coverage while the fly ash (is generally finer than bottom ash) is at a very low degree returned to the forest to compensate for nutrient (potassium, magnesium, calcium, phosphorus) removal and partly is used as covering material for landfills. The challenge of the energy sector is how to increase the amount of ash that is returned to the forest and subsequently reduce the amount of ash that is landfilled. To adress this challenge we will i) firstly analyze ash samples that we obtain from heat and electricity producers in the region, ii) secondly identify best suited stands for ash recycling (stands on nutrient rich soils and drained peat soils as well as stands with high acidity). In order to locate these stands and their proximity to the ash producers GIS analyses will be undertaken. GIS datasets on forest site indexes, soil types and ash producing facilities will be used and iii) thirdly use simulation techniques for investigating/evaluating different logistic pathways of bringing the ash to the forest. This simulation- based tool will take into consideration all the available resources needed throughout the supply chain, like transport, storage, spreading and needed ash fertilizer volumes at a specific location. The tool will consider pull principle from the forest management side in order to incorporate ash deliveries into forest operations. The tool will be developed as concept of proof to make ash recycling simpler and more digital.

1,889 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable

☑

D 1.5

Title of the deliverable

Ash recycling planning tool

27 / 100 characters

Description of the deliverable

Returning ashes and remaining nutrients in them originating from combustion of forest biomass to the forest site is considered as a good biomass harvesting practice. In order to recycle ashes they must be of high quality to avoid pollution. The costs of returning ashes to the forest (collection, pre-treatment, transport of the ashes from the producers to the forest, the costs of the actual spreading in the forest and remoteness of suitable forest stands to the ash producer) are the primary obstacles to an increased annual spread volume. Attempts have so far been made to find cheaper solutions and find new use areas for the ashes. The ash recycling planning tool that will be developed here will help heat and electricity producers to identify to which forest site they could return the ash and also help them plan all the available resources needed for returning the ash at a specific location. Discrete event simulations in combination with multiple-criteria decision analyses of machine systems and methods for improved ash recycling logistics of the ash will be done. Integration of ash spreading with other forestry operations will also be evaluated. Very well managed biomass and ash handling could make ash utilization as fertilizer a much more attractive alternative.

1,283 / 2,000 characters

Which output does this deliverable contribute to?

O.2.4 CE business model for the forestry biomass residues recovery, O 3.2 Policy recommendations for

100 / 100 characters

5.6.6 Timeline

	Period: 1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.5: Bio-ash characterization and development of an ash recycling planning tool						
D.1.5: Ash recycling planning tool						

5.6.7 This deliverable/output contains productive or infrastructure investment

☐

Work package 2

5.1 WP2 Piloting and evaluating solutions

5.2 Aim of the work package

The aim of this work package is to pilot, evaluate and adjust solutions. Plan one or several pilots to validate the usefulness of the solutions prepared in Work Package 1. Start Work Package 2 early enough to have time to pilot, evaluate and adjust solutions, together with your target groups. By the end of this work package implementation the solutions should be ready to be transferred to your target groups in Work Package 3.
The piloted and adjusted solution should be presented in one project output.
Organise your activities in up to five groups of activities. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 1 - Swedish University of Agricultural Sciences

Work package leader 2 PP 6 - Natural Resources Institute Finland

5.4 Work package budget

Work package budget 40%

5.4.1 Number of pilots

Number of pilots 5

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	Interest group Interest groups such as BioFuel Region assist their members with technical, economic and administrative issues and to represent the interests of the members in negotiations with authorities and other organisations on regulations. Entrepreneurship associations are interested in novel business opportunities related to forestry side streams. 342 / 500 characters	Interest groups of major concern are entrepreneurship associations interested in development of new product lines and replacement of fossil resources with natural ones. Our discussions with Swedish water reveal an unsolved problem regarding generation of hydrogen sulfide gas in wastewater cleaning process. A natural biocide will help with blocking of film formation in the transfer lines and reduction of gas formation. Swedish Water here will be the direct link to a number of wastewater treatment facilities to be able to do 1-2 pilot tests with biocide replacement originated from forest extracts. Activation events will be organised to inform about project plans. Representatives of interest groups will be invited to public events of the project and at the same time will be direct target of project dissemination activities and results are communicated to interest groups. A final report about the pilot tests will be available for municipal wastewater facilities and by the project website. 1,000 / 1,000 characters
2	Infrastructure and public service provider District heating plants are providing heat, electricity and cooling in many countries within the region. A big part of that is produced through combusting forest biomass. This target group is interested in getting added value from the biomass (e.g. though extracting valuable chemicals) and then combust the biomass. Also they are interested in find new uses for the ash that is produced during the combustion of the biomass. 426 / 500 characters	To burn bark as biofuel for energy production is not an easy task because of high amount of minerals/metals. The minerals often cause formation of sludge during combustion as negative impact. After extraction of valuable chemicals and products from bark the solid rest material will be a resource for using as dry biomass for energy production, in fact, this solid part will have no or minimal minerals left. Umeå Energy have heat and power production facilities there they are using some wood in combination with burning of the household garbage in district central heating system. Vakin is a municipal wastewater facility in Umeå city (Sweden), they are working with cleaning wastewater from household and industries in the area. The extract from spruce bark as biocide is an important product for Vakin instead of several other toxic and fossil-based chemicals that today must be used to prevent hydrogen sulfide gas formation in the wastewater cleaning process. 967 / 1,000 characters
3	Small and medium enterprise The Finnish startup Montinutra is interested in novel business opportunities (optimized and feasible extraction methods for selected valuable compounds in forestry side streams in lab and pilot scale). The following SME`s are interested in novel-end use applications: Innomost, ForestSpaFInland, Team Rasweet, ArcticWarriors (Finland), SilvExpo, Alternative Plants, Madara Cosmetics (Latvia), GreenBack (Poland). 412 / 500 characters	Researchers will communicate about the project activities with other partners and food industry companies involved in project about the possibilities to obtain nutritionally valuable components from forest waste. SME “Fructus AG” will produce novel functional food products of premium level (pilot batches) based on the methodologies developed by scientific team in WP1. The pilot products of premium quality will be produced from secondary raw material maintaining the value of the circular economy. All information will be publicity available to all interested groups by sharing the obtained results in conferences, meetings, seminars, press articles and websites. 666 / 1,000 characters

	Target group	How do you plan to reach out to and engage the target group?
4	Large enterprise Enterprises are interested in novel end use applications. Atria and Raisio are interested in novel animal feed applications. Latvias Forests (Latvijas Valsts Meži) have a major interest in the utilization of forestry waste products (biomass), such as needles, to make the timber production more sustainable. Wibax is interested in development of forest based biocides for production in BSR countries. SCA Forest have interest in new products from bark, a side product of pulp and paper production. 498 / 500 characters	Large companies like Wibax (AO4) are interesting in the results from WP2 since the company deliver several industrial chemicals to many wastewater treatment processes and they want be in the front line when a new more environmental friendly chemical (e.g. biocide) will be presented or ready for production. We have discussed the possibilities to replace fossil based biocides like Fennosan R20 A with tannin based biocide produced from spruce bark and they are informed about our primary data at laboratory level. When the data from our pilot tests will be ready, they have expressed to evaluate the data and ultimately consider large-scale production of the biocide from extraction of spruce bark in the near future. Pilot plant extraction of tannins at Luke will demonstrate the techno economical aspects of the extraction. An optimization of extraction and the process parameters in pilot scale will be very helpful for the large-scale production later. 958 / 1,000 characters
5	International governmental organisation Field of responsibility: legislation and implementation of legislation economic sectors: forestry Representatives of target groups: from all participating countries. Target groups can be ministries, organisations led by governments, other non-research organisations or associations 281 / 500 characters	Members of the advisory board are informed about the progress of the project and the results of the project. In the advisory board meeting plans and results are discussed and guidance from the advisory board is expected. The results are discussed in order to evaluate if the current regulations are appropriate in all parts of the Baltic Sea Region and what kind of recommendations could be given in order to meet EU CIrcular EConomy, EU Green Deal and other relevant strategies. 479 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
2.1	**Pre-treatment and extractions of active compounds at pilot plants**
2.2	**Evaluation of spruce bark extracts as antimicrobial agent in pilot scale investigations**
2.3	**CE business model and social acceptance of using forestry biomass residues**
2.4	**Pilot manufacture of functional meat analogues with incorporated active ingredients**
2.5	**Techno-economic studies for the economic industrial production of selected valuable products**

WP 2 Group of activities 2.1

5.6.1 Group of activities leader

Group of activities leader PP 6 - Natural Resources Institute Finland

A 2.1

5.6.2 Title of the group of activities

Pre-treatment and extractions of active compounds at pilot plants

65 / 100 characters

5.6.3 Description of the group of activities

The aim of this group activity is to prepare biomass for extraction of valuable compounds, then extract, and isolate the specific compounds for utilization in other activities in the project. Pre-treatment of fresh biomass (bark) will be applied at a pilot plant (Biomass Technology Center) at SLU (Umeå, Sweden). Just in time logistic of biomass is crucial since bark chemical content will change by time. The aim is to reduce the size and optimize the moisture content of the biomass before the extractions. Additional screening may be applied if certain fractions will be used. BTC is equipped with several instruments as moving belts, shredder, dryer, separations and additive tanks, etc. with capacity from 10 to 1000 kg per hour. The pretreated material will be delivered to Luke and Centria for different activities. There are two pilots for extraction at Luke pilot plant (Finland, Espoo) which will produce large enough batches of extracts to support the activities which need the chemicals. The first pilot has 300 liters capacity for aqueous extractions, the second pilot is 10-liter using supercritical fluid technique for lipophilic (organic compounds) extracts. Several purification steps will be applied e.g. ultra-filtration (UF) and nano-filtration (NF) at Luke. Chemical characterizations of the extracted material is essential for quality control and will be done by Luke and Centria. There are gas chromatographic and liquid chromatographic methods for the chemical characterization. Luke has several in vitro methods for analyzing total phenolics and chemical antioxidant activity such as Folin-Ciocalteu reducing capacity, 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free-radical scavenging activity and ferric reducing antioxidant power (FRAP). In addition, Centria is utilizing the following antioxidant capacity method: CUPRAC (copper ion reducing antioxidant capacity). The antibacterial activity will be measured using microbial biosensors. An optimization of process parameters will be performed to maximize the yield and quality and minimize the cost of the production at pilot level. Other (semi)pilot scale infrastructure at Centria include 5-liter glass reactor, 80 liter and 200-liter stainless steel reactors, which could be modified if needed. The pilot plant Biolat will work with the extraction of needles. Chemical characterizations, concentration and purification steps will be done for quality control at Biolat. The methodology of logistic, preparation of fresh raw biomass for subsequent extractions and characterizations and isolation of the bioactive compounds will be monitored/recorded by SLU, Luke and Centria as an output/recipe for possible large-scale extractions/isolations of the compounds by the interested target groups in the project as new valuable products.

2,810 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 2.1

Title of the deliverable

Delivery of optimal fractions of biomass for extractions stage and later extractives

84 / 100 characters

Description of the deliverable

The pilot plant (BTC at SLU) will provide optimal size and fractions of selected bark from spruce, pine and birch for the upcoming extractions at the pilot plants at Luke and at Centria. The material properties will be adjusted to maximize the yield as well as the quality of the extractions processes. The deliveries will be done in at least three occasions to monitor the seasonal variations.
Delivery of several batches of aqueous and hydrophobic fractions of extractives from the biomass will help target enterprises to evaluate the business potential in novel product development.
The whole process from pretreatment of biomass, extractions and separations techniques, as well as isolations of the active compounds will be recorded. The concept/method will be shared with the target groups in the project for using directly or after some adjustments/modifications and developments as green products.

911 / 2,000 characters

Which output does this deliverable contribute to?

O 2.3 CE business model for the forestry biomass residues recovery

66 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.1: Pre-treatment and extractions of active compounds at pilot plants						
D.2.1: Delivery of optimal fractions of biomass for extractions stage and later extractives						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 2 Group of activities 2.2

5.6.1 Group of activities leader

Group of activities leader PP 1 - Swedish University of Agricultural Sciences

A 2.2

5.6.2 Title of the group of activities

Evaluation of spruce bark extracts as antimicrobial agent in pilot scale investigations

88 / 100 characters

5.6.3 Description of the group of activities

The aim is to evaluate the potential for replacing currently used biocides, in industry processes and wastewater systems, with spruce/pine extracts. The cellulose industry consumes large amounts of synthetic biocides to control microbial growth in the processes, causing environmental and occupational health problems. Development of new and less harmful products is required from e.g. ECHA, REACH. Conifer bark extracts/tannins have a general antimicrobial activity and most studies have been done with commercial tannins e.g., acacia. Here, we will evaluate the antimicrobial potential of extracts from indigenous spruce bark, for various applications. Based on previous studies on different types of tannins - including spruce tannins - we have selected two specific areas to investigate.
A) Mitigation of unwanted gas formation in paper production. The paper production process constitutes excellent environments for microbial growth and is therefore regularly treated with synthetic biocides. One important aspect is hydrogen gas production in storage towers with negative impact on the product quality and risk for explosion. Previous lab-scale experiments have shown that acacia and spruce tannins can decrease bacterial production of hydrogen in recycled pulp. The project activities:
1- Describe specific effects of spruce/pine extracts on bacteria previously isolated from recycled pulp and process water.
2- Monitoring of gas production and the effects of different tannins. Description of dose-effect relationships is important for calculation of the actual amounts needed and costs in larger scale applications.
3- Evaluation of gas production in larger pilot scale. To confirm the primary tests, we will evaluate the gas production in pilot scale (>m3-scale). The practical considerations will be discussed with the paper industry.
4- Monitoring gas production in full-scale operation. As a necessary background information, we need to know the relation between gas production in stored pulp and production parameters in the industry. This will be achieved by correlating gas formation in the storage tower (600 m3) and registered process data from the production.
B) Mitigation of hydrogen sulfide (H2S) in municipal wastewater networks. Formation of toxic and bad smelling hydrogen sulfide is a common problem in wastewater treatment facilities. This problem is often handled by adding different types of fossil-based chemicals. The objective is to evaluate the effect of spruce extracts, especially on hydrogen sulfide in wastewater tubing and the linings therein.
1- Describe the dose-effect relationships of spruce extracts on hydrogen sulfide producing bacteria.
2- Full scale tests. Spruce extracts will be added to a distant part of the wastewater-system and gases will be measured before, during, and after the treatment.

2,844 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 2.2

Title of the deliverable

Testing of spruce extracts as biocide replacement in a wastewater system and/or industrial process

99 / 100 characters

Description of the deliverable

Development and description of methods for using spruce extract as biocides in industrial wastewater system for two different purposes/applications. The activity will describe and demonstrate the effect of the extract on mitigation of gas generation in pulp storage tower as pilot- and large-scale investigations. A recipe/method will be presented for the optimal reduction of hydrogen gas generation. In the second activity, we will monitor and/or simulate municipal waste water system by using different bark extractives as biocides to eliminate hydrogen sulfide gas generation in transfer lines and in the final destination of the wastewater for purification steps.

One antimicrobial product based on spruce bark is developed and evaluated in two different industrial processes as described above.

806 / 2,000 characters

Which output does this deliverable contribute to?

O 2.3 CE business model for the forestry biomass residues recovery

66 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.2: Evaluation of spruce bark extracts as antimicrobial agent in pilot scale investigations						
D.2.2: Testing of spruce extracts as biocide replacement in a wastewater system and/or industrial process						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 2 Group of activities 2.3

5.6.1 Group of activities leader

Group of activities leader PP 5 - Mineral and Energy Economy Research Institute of the Polish Academy of Sciences

A 2.3

5.6.2 Title of the group of activities

CE business model and social acceptance of using forestry biomass residues

74 / 100 characters

5.6.3 Description of the group of activities

The aim of this group of activities is to develop a circular economy business model for the forestry biomass residues recovery and utilization opportunities, including determination of fundamental areas of the company's target group`s activity: Customers, Offer, Infrastructure, Financial position.
Moreover, the tasks will include the identification of key stakeholders and the evaluation of social acceptance of key stakeholders in three areas - attitudes, perception and opinions regarding the forestry biomass residues recovery. The evaluation will be made based on the questionnaire that will be prepared in the following order: 1) questionnaire development and testing, 2) survey research conducting - distribution of questionaires and collection, 3) data analysis.

The development of a CE business model utilizes results from the project activities such as: a map of unutilized forestry biomass residues, a report on existing and potential forestry biomass processing/biorefinery products, a report on forestry biomass residue processing/biorefinery methods, a techno-economic feasibility report, evaluation of extracts as potential novel products, ash recyling tool.
The project activity results (deliverables) will be evaluated together during the project partner meetings as well as with the target groups in order to create a reasonable understanding of various business model options suitable for different partner countries.
CE business model will be discussed and evaluated in A3.2 in the transnational advisory board.

Based on the obtained results the individual strategies of further dissemination and education for analyzed stakeholders will be proposed (Education Roadmap).

1,696 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☐

O 2.3

Title of the output

CE business model for the forestry biomass residues recovery

60 / 100 characters

Description of the output

The purpose of the CE business model is to propose solutions to utilize forestry side streams in different partner countries in the Baltic Sea Region in order to meet the EU Green Deal, EU Circular Economy and Baltic Sea region bioeconomy strategy goals. Countries in the Baltic Sea region are in a different development phases in relation to the utilization of forestry side streams and therefore it is beneficial for the Baltic Sea region to optimize and propose CE business models including the country-specific features.
The CE business model will be developed based on the solutions designed during the project such as:
- map of unutilized forestry biomass residues,
- report on existing and potential forestry biomass processing/biorefinery products,
- report on forestry biomass residue processing/biorefinery methods,
- techno-economic feasibility report.

The business model will focus on providing the highest possible level of sustainability and material efficiency in all taken activities. It will address various environmental footprints that are accompanying forestry biomass residues processing. According to the CE concept, the developed products from the recovered biomass should be durable and have the possibility for further reuse or recycling.
The developed business model will count the high diversity of markets present in the countries of the Baltic region with a special focus on the level of social acceptance of using/buying goods made of recovered forestry biomass residues.

Moreover, the business analysis will cover the country-specific differences in the most desired method of application of the forestry biomass such as: 1) a biofuel for heating, electricity production or mobility needs, 2) alternative construction material, 3) biomaterials for the paper or chemical industry 4) ingredients for health food, food supplements and cosmetics.
The output will also include developing a sales and distribution model for the forestry biomass processing products in order to minimize distribution costs and adjust sales techniques for the market and product characteristics.

2,103 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 Small and medium enterprise The Finnish startup Montinutra is interested in novel business opportunities (optimized and feasible extraction methods for selected valuable compounds in forestry side streams in lab and pilot scale). The following SME`s are interested in novel-end use applications: Innomost, ForestSpaFInland, Team Rasweet, ArcticWarriors (Finland), SilvExpo, Alternative Plants, Madara Cosmetics (Latvia), GreenBack (Poland).	SME`s are interested in developing novel business opportunities by utilizing forestry side streams. The project results will give input to enterprises for further idea/business development. 189 / 1,000 characters
Target group 2 Large enterprise Enterprises are interested in novel end use applications. Atria and Raisio are interested in novel animal feed applications. Latvias Forests (Latvijas Valsts Meži) have a major interest in the utilization of forestry waste products (biomass), such as needles, to make the timber production more sustainable. Wibax is interested in development of forest based biocides for production in BSR countries. SCA Forest have interest in new products from bark, a side product of pulp and paper production.	Large enterprises are interested in developing novel business opportunities by utilizing forestry side streams. Enterprises are interested in upcycling unutilized side streams in high value added products. 206 / 1,000 characters
Target group 3 International governmental organisation Field of responsibility: legislation and implementation of legislation economic sectors: forestry Representatives of target groups: from all participating countries. Target groups can be ministries, organisations led by governments, other non-research organisations or associations	Members of the advisory board representing ministries and other public organisations can introduce CE business models in their own organisations and can initiate public discussions related circular economy and green economy aspects. 232 / 1,000 characters

Durability of the output

Results will be published on the project web pages and all partners will disseminate results on their web pages. Results will be presented in the final event and in social media. Publications of the results in open access journal will be another way to share the output with target groups and policymakers.
The Baltic Sea Forestry Residue map will be sent to relavant forestry authories in partner countries. Market analysis reports will be sent to local chambers of commerce and entrepreneurship associations in partner countries.
The ash recycling tool will be distributed to forestry and agricultural organisations and power plants.

638 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.3: CE business model and social acceptance of using forestry biomass residues						
O.2.3: CE business model for the forestry biomass residues recovery						

5.6.7 This deliverable/output contains productive or infrastructure investment

WP 2 Group of activities 2.4

5.6.1 Group of activities leader

Group of activities leader PP 3 - Kaunas University of Technology

A 2.4

5.6.2 Title of the group of activities

Pilot manufacture of functional meat analogues with incorporated active ingredients

83 / 100 characters

5.6.3 Description of the group of activities

Forestry wastes contain immense amount of proanthocyanidins, exploitation of which can be a sustainable source of dietary supplements and functional ingredients. Food with incorporated proanthocyanidins and fermented pine needle biomass can act as functional food with neutraceutical effect, having disease-preventing or health-promoting benefits in addition to their nutritive value. Extracted proanthocyanidins and sedimented fermented biomass from pine needles will be incorporated into meat analogues made of plant raw material. It is expected that the fermented biomass incorporated into meat analogues will increase their nutritional value. Moreover, an addition of extracted bioactive compounds to meat analogues will improve the stability of lipids and proteins that contain meat analogues.
Proanthocyanidins have antioxidative stress acitivity against cellular injury and also act as antioxidants, which prevent the formation of cancerogenic, compounds (such as nitrozamines), therefore after incorporation of proanthocyanidins, oxidation processes of proteins and lipids of meat analogues will be analyzed to observe their improved oxidation stability. The oxidative stability of the product fats will be assessed on the basis of an oxidative stability method, protein stability will be assessed spectrophotometrically. Evaluation of the antibacterial properties of the meat analogues with extracted compounds against food borne bacteria pathogens such as Salmonella, Listeria, E. Coli, Bacillus Subtilis and Staphylococcus Aureus will be evaluated by microbiological methods. Nutritional value of meat analogues after incorporation of proanthocyanidins and fermented biomass will be analyzed by evaluating regulated indicators such as protein, fat, sugar, dietary fiber (soluble, insoluble fibers), moisture, ash content. Vitamins A, D, C, E, as well as total amount of amino acids and free amino acids will be assessed by HPLC methods. The enterprise “Fructus AG” is interested in manufacturing meat analogues. Therefore, pilot manufacture of such products will be produced in a plant. As a prototype of a commercial product will be developed and subsequently manufactured by “Fructus AG”, KTU Food Institute Sensory Analysis Laboratory will assess the sensory properties in a consumer-controlled environment (according to ISO 11136). In order to help an enterprise launch a novel functional product, microbiological and chemical safety models for product prototype storage conditions will be developed. The microbiological contamination of the developed meat analogues produced in the plant “Fructus AG” will be investigated. This will allow to evaluate and ensure the appropriate hygiene level in the plant during the manufacturing processes of the meat analogues.

2,778 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 2.4

Title of the deliverable

Technology for production of functional meat analogues

54 / 100 characters

Description of the deliverable

Enterprise will benefit from the technological parameters intended for production of vegetarian products with increased nutritional value. The incorporated active compounds will also improve the quality of the products with prolonged shelf-life.

The deliverable gives benefit for the production of vegetarian products with increased shelf-life and nutritional value

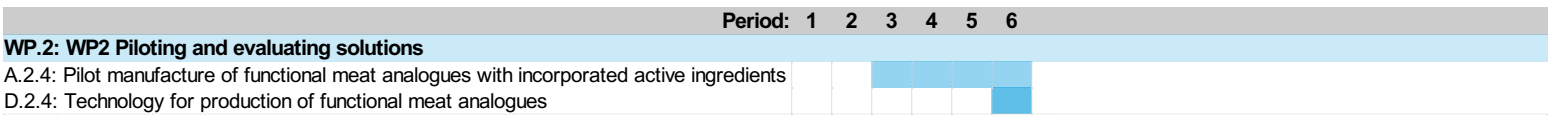
369 / 2,000 characters

Which output does this deliverable contribute to?

O 2.3 CE business model for the forestry biomass residues recovery

66 / 100 characters

5.6.6 Timeline



5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 2 Group of activities 2.5

5.6.1 Group of activities leader

Group of activities leader PP 11 - Aalto University

A 2.5

5.6.2 Title of the group of activities

Techno-economic studies for the economic industrial production of selected valuable products

92 / 100 characters

5.6.3 Description of the group of activities

The techno-economic evaluation (TEA) is a method for analyzing economic performance of industrial processes. It employs various methods to assess modeling to estimate capital and operating costs, revenues and profitability based on technical design and financial input. The desired outcome is to sum up results in a concise and visually coherent form, in order to identify the profitability and feasibility of the designed production process. The requirements for testing and design are based on target group interests in the realization of the commercial production.
The solutions developed can be utilized as such to be applied by the target groups in their plans for investment and extension of their production portfolios. The transnational setting is also strongly present since the designs and techno-economic assessments developed being universal can be modified for all the countries involved in this project.
This TEA methodology has been also utilized in some earlier and on-going projects (NovelBaltic, IoncellTM, www.ioncell.fi) for man-made cellulosic staple fibers, LignoSphereTM , www.lignosphere.fi, for lignin utilization for towards healthy coatings and adhesives, Biowax for sustainable axes from arctic raw materials and HydroCel for carboxylated nanocellulose products that are resulting in notable commercial outcome, e.g., in the form of new entrepreneurships.

1,384 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 2.5

Title of the deliverable

Techno-economic feasibility of selected valuable compounds

59 / 100 characters

Description of the deliverable

The deliverable is a comprehensive document that establishes the techno-economic potential of the designed commercial production processes designed and assessed.

An issue in the industrial use of forest side streams has been the lack of financial support and incentives to the entrepreneurs due to quite a low priority that governments and banks have put on these industries often considered to act on low-volume, niche markets. This is also what this work package is aiming at. There are many cases where these obstacles have been overcome and industrial production of products for health, nutritional, nutraceutical, pharmaceutical and cosmetic purposes has been established. Along with challenges in front-end harvesting and back-end marketing of product value chain, there are many processing problems to overcome. The processing techniques are often inefficient leading to low yields, due to lack of proper process development and downstream processing facilities. The quality control procedures are not appropriate due to shortages in equipment, trained personnel and know how, and access to up-to-date technological and market information. In addition to practices and facilities, one has to have a sound basis for starting business and investments to establish a nourishing processing industry for these side streams.

1,326 / 2,000 characters

Which output does this deliverable contribute to?

O 2.3 CE business model for the forestry biomass residues utilization

70 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.5: Techno-economic studies for the economic industrial production of selected valuable products						
D.2.5: Techno-economic feasibility of selected valuable compounds						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

Work package 3

5.1 WP3 Transferring solutions

5.2 Aim of the work package

In Work Package 3, communicate and transfer the ready solutions to your target groups. Plan at least one year for this work package to transfer your solutions to the target groups, considering their respective needs. Select suitable activities to encourage your target groups to use the solutions in their daily work.
Organise your activities in up to five groups of activities. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 4 - Centria University of Applied Sciences

Work package leader 2 PP 10 - Finnish Forest Centre

5.4 Work package budget

Work package budget 15%

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	Interest group Interest groups such as BioFuel Region assist their members with technical, economic and administrative issues and to represent the interests of the members in negotiations with authorities and other organisations on regulations. Entrepreneurship associations are interested in novel business opportunities related to forestry side streams. 342 / 500 characters	DIrect contacts by email/phone. Meetings can be organised if needed in order to discuss project activities and how to achieve goals. Meetings can be organised if needed in order to discuss project activities and how to achieve goals. Target groups can be invited to webinars as speakers in order to address the importance of circular economy and upcycling. 356 / 1,000 characters
2	Infrastructure and public service provider District heating plants are providing heat, electricity and cooling in many countries within the region. A big part of that is produced through combusting forest biomass. This target group is interested in getting added value from the biomass (e.g. though extracting valuable chemicals) and then combust the biomass. Also they are interested in find new uses for the ash that is produced during the combustion of the biomass. 426 / 500 characters	DIrect contacts by email/phone. Meetings can be organised if needed in order to discuss project activities and how to achieve goals. Meetings can be organised if needed in order to discuss project activities and how to achieve goals. 234 / 1,000 characters
3	Small and medium enterprise The Finnish startup Montinutra is interested in novel business opportunities (optimized and feasible extraction methods for selected valuable compounds in forestry side streams in lab and pilot scale). The following SME`s are interested in novel-end use applications: Innomost, ForestSpaFInland, Team Rasweet, ArcticWarriors (Finland), SilvExpo, Alternative Plants, Madara Cosmetics (Latvia), GreenBack (Poland). 412 / 500 characters	Existing target groups are reached by direct emails and phone calls and by visiting them if needed. Activation webinars and workshops will be organised in order to get new target groups, to inform about the project opportunities and to get guidance from the target groups. Web pages will be created for the project. Social media (Linkedin) will be used to inform about the results and project events. Target enterprises can be visited in different project countries when project meetings are organized. Activation and dissemination of results will be done in live events such as exhibitions and seminars and in webinars. 621 / 1,000 characters

	Target group	How do you plan to reach out to and engage the target group?
4	Large enterprise Enterprises are interested in novel end use applications. Atria and Raisio are interested in novel animal feed applications. Latvias Forests (Latvijas Valsts Meži) have a major interest in the utilization of forestry waste products (biomass), such as needles, to make the timber production more sustainable. Wibax is interested in development of forest based biocides for production in BSR countries. SCA Forest have interest in new products from bark, a side product of pulp and paper production. 498 / 500 characters	Existing target groups are reached by direct emails and phone calls and by visiting them if needed. Activation webinars and workshops will be organised in order to get new target groups, to inform about the project opportunities and to get guidance from the target groups. Web pages will be created for the project. Social media (Linkedin) will be used to inform about the results and project events. Target enterprises can be visited in different project countries when project meetings are organized. Activation and dissemination of results will be done in live events such as exhibitions and seminars and in webinars. 621 / 1,000 characters
5	International governmental organisation Field of responsibility: legislation and implementation of legislation economic sectors: forestry Representatives of target groups: from all participating countries. Target groups can be ministries, organisations led by governments, other non-research organisations or associations 281 / 500 characters	Representatives from public organisations from each participating country will be invited to an advisory board which gives directions and guidance for the project work. Results from this project are presented to the advisory board and recommendations for guidelines will be discussed in the advisory board. Advisory board meetings will be held 1-2 times /year. Project results are discussed in order to evaluate if the current guidelines are up-to-date in all parts of the Baltic Sea Region and what kind of recommendations could be given in order to meet EU CIrcular Economy, EU Green Deal and other relevant strategies. 625 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
3.1	**Activation of target groups and dissemination of project results to target groups**
3.2	**Preparation of policy recommendations for sustainable utilization of forestry side streams**

WP 3 Group of activities 3.1

5.6.1 Group of activities leader

Group of activities leader PP 4 - Centria University of Applied Sciences

A 3.1

5.6.2 Title of the group of activities

Activation of target groups and dissemination of project results to target groups

83 / 100 characters

5.6.3 Description of the group of activities

Existing target groups and new target groups will be informed about the project activities and invited to project events such as webinars. Detailed needs of target groups will also be discussed directly with by organising meetings.
Project results will be disseminated to target groups such as enterprises, entrepreneurship associations and innovation centers in order to create increased knowledge on the business potential of forestry biomass residues.
Existing target groups will be contacted directly and the results will be communicated and discussed with the target groups. Seminars and/or webinars will be organised in order to distribute the results cross border. Results will be published on the project web site and in social media. Information on the results will be distributed to entrepreneurship associations. Articles and publications will be written during the project.

Forest owners in Finland can be reached by the Finnish Forest Centre. The main task of Finnish Forest Centre is to disseminate the results and information of the project in Finland to forestry SMEs, and also to the SMEs working with non-timber forest products. Finnish Forest Centre's corporate customer advisers can share the results of the project when they are in contact with the SMEs and entrepreneurs working in the forestry sector and non-wood forest product sector. Finnish Forest Centre also has contacts to forest owners (600 000; private and public) to disseminate the results of the project.
Finnish Forest Centre can share the ideas and information from SMEs to the other project partners when attending to the advisory board.
Finnish Forest Centre will inform the target groups about the project activities and invite them to project events such as webinars in Finland/Baltic Sea region. Finnish Forest Centre will work to reach new target groups, to inform about the project results and to get guidance from the target groups. Dissemination of results will be done in events such as exhibitions, seminars and webinars.

Forest owners in other partner countries will be reached by SLU in Sweden, xx in Latvia, yy in Lithuania and xz in Poland.

2,147 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 3.1

Title of the deliverable

Presentation materials

23 / 100 characters

Description of the deliverable

Posters, abstracts and power point presentations to be presented in events such as seminars, webinars, conferences and exhibitions. Articles in journals, posts in social media.

177 / 2,000 characters

Which output does this deliverable contribute to?

O 3.2 Policy recommendations for utilizing forestry side streams in the Baltic Sea region

89 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.1: Activation of target groups and dissemination of project results to target groups						
D.3.1: Presentation materials						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 3 Group of activities 3.2

5.6.1 Group of activities leader

Group of activities leader PP 4 - Centria University of Applied Sciences

A 3.2

5.6.2 Title of the group of activities

Preparation of policy recommendations for sustainable utilization of forestry side streams

91 / 100 characters

5.6.3 Description of the group of activities

Countries in the Baltic Sea region are in different development phases in relation to the utilization of forestry side streams. The total forest land area varies from country to country and therefore volumes of annual forest biomass utilization and volumes of forestry side streams vary. The potential volume of logging residues can be 20-30 % of the total logging biomass (Finnish Forest Centre). The map of forest residue volumes and business potential would help EU policy makers to understand the differences in each country and would help to develop guidelines for sustainable utilization of forestry side streams in the BSR region.

An advisory board consisting of representatives from each participating country will be established. The board members represent governmental organisations, local or national authorities and are often closely connected with policy makers.

1-2 advisory board meetings/year will be organised. In the first meeting the challenge, sustainable utilization of forestry side streams in participating countries, is discussed in order to get a better understanding of current circular economy practices in each country. In the second meeting (2nd year of the project) preliminary results of the project are evaluated and proposed draft guidelines are discussed. In the third year meeting the draft recommended guidelines are discussed and based on the comments from the advisory board recommended guidelines are finalised.

Between the meetings project partners involved in this activity work on getting background information from participating countries and start writing draft recommendations.

After the advisory board has given their comments the recommended guidelines will be finalised and disseminated to EU policy makers by email. Local politicians can be contacted and the guidelines can be discussed with them.

The recommended guidelines will be published on the project web pages and in social media. The guidelines will also be sent directly to selected members of national parliaments.

Members:Sirkku Wacklin, Centre for Economic Development, Transport and the Environment, Ostrobothnia (FInland); Anne Vehviläinen, Ministry of Agriculture and Forestry (Finland); Markku Granander, FInnish Forest Centre; Arvids Ozols - Head of the Forest Department of Ministry of Agriculture of Latvia; Martins Boroduskis - Member of Board Alternative Plants LTD, Latvia; Jolita Martutaitytė, ; Egidijus Mackevičius, Director of Lithuanian Association of Meat Processing Enterprises; Deimantė Biknerytė, the State Food and Veterinary Service (Lithuania); Magnus Matisons, project manger bioeconomy, Biofuel Region (Sweden); Hans Thoren, Laboratory manager, SCA Packaging (Sweden); Prof. Anna Grobelak, from the Częstochowa University of Technology, Poland; Mr. Bartosz Dąbek, Head of a Municipal Department in Małobądz (Municipal public unit), Poland.

2,897 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable

O 3.2

Title of the output

Policy recommendations for utilizing forestry side streams in the Baltic Sea region

83 / 100 characters

Description of the output

Countries in the Baltic Sea region are in different development phases in relation to the utilization of forestry side streams. The total forest land area varies from country to country and therefore volumes of annual forest biomass utilization and volumes of forestry side streams vary. The purpose of the output is to help Baltic Sea Region countries to optimize sustainable utilization of forestry side streams in each Baltic Sea country in order to meet EU Green Deal, EU circular economy and Baltic Sea region bioe-conomy strategies

The policy recommendations will be based on the deliverables of this project: a map of available forestry biomass residues, developed and tested extraction methods, market analysis results of forestry biomass processing and biorefinery innovation possibilities, techno-economic feasibility studies.

840 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 Small and medium enterprise The Finnish startup Montinutra is interested in novel business opportunities (optimized and feasible extraction methods for selected valuable compounds in forestry side streams in lab and pilot scale). The following SME`s are interested in novel-end use applications: Innomost, ForestSpaFInland, Team Rasweet, ArcticWarriors (Finland), SilvExpo, Alternative Plants, Madara Cosmetics (Latvia), GreenBack (Poland).	Enterprise are interested in increasing utilization of forestry side streams which would enhance circular economy goals of enterprises and societies in the Baltic Sea region. Recommendations for utilizing forestry side streams would support enterprises to set circular economy goals. 284 / 1,000 characters
Target group 2 Large enterprise Enterprises are interested in novel end use applications. Atria and Raisio are interested in novel animal feed applications. Latvias Forests (Latvijas Valsts Meži) have a major interest in the utilization of forestry waste products (biomass), such as needles, to make the timber production more sustainable. Wibax is interested in development of forest based biocides for production in BSR countries. SCA Forest have interest in new products from bark, a side product of pulp and paper production.	Enterprise are interested in increasing utilization of forestry side streams which would enhance circular economy goals of enterprises and societies in the Baltic Sea region. Recommendations for utilizing forestry side streams would support enterprises to set circular economy goals. 284 / 1,000 characters
Target group 3 International governmental organisation Field of responsibility: legislation and implementation of legislation economic sectors: forestry Representatives of target groups: from all participating countries. Target groups can be ministries, organisations led by governments, other non-research organisations or associations	Members of the advisory board represent ministries and other public organisations from different partner countries. Discussions in the advisory board would help to understand the current situation and possibilites to utilize forestry side streams in different countries. Advisory board work can promote different utilization possibilities of forestry side streams in different countries. 387 / 1,000 characters

Durability of the output

The durability of the output is ensured by disseminating recommendations first to the board members and also to organisations they represent. Recommendations will be published on web pages and sent to local public authorities and other relevant organisationsl. The recommendations will be presented in the final event.

319 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.2: Preparation of policy recommendations for sustainable utilization of forestry side streams						
O.3.2: Policy recommendations for utilizing forestry side streams in the Baltic Sea region						

5.6.7 This deliverable/output contains productive or infrastructure investment

6. Indicators

Indicators

Output indicators				Result indicators		
Output indicators	**Total target value in number**	**Project outputs**	**Please explain how the solution presented in this output serves the target group(s).**	**Result indicator**	**Total target value in number**	**Please explain how organisations in the target groups within or outside the partnership will take up or upscale each solution.**
RCO 84 – Pilot actions developed jointly and implemented in projects	5	N/A	N/A	**RCR 104 - Solutions taken up or up-scaled by organisations**	2	The associated partner Montinutra is interested in testing the developed extractions methods for lignane and tannins from bark. Project partners and target groups from Latvia are interested in development of environmentally friendly technologies for forestry biomass processing as well as in development of new products (formulations) from coniferous needles and cones. Cosmetics and health food enterprises can utilize quality characterisation results in their own product development work. The cosmetic company Lumene is interested in testing extracts in cosmetic formulations. Biocide products could be utilized by water treatment plants. Optimized ash utilization as fertilizer can be taken up by forest/land owners. However the main output of the CEforestry will be a contribution in the change of forestry practices in the partner countries and development of an understanding that forestry biomass waste is a valuable ingredient for many industries and can be up-cycled in high value added products. 1,012 / 2,000 characters
RCO 116 – Jointly developed solutions	2	O.2.3: CE business model for the forestry biomass residues recovery	Output support development of new business model (tool to support changes) relevant for forestry as well as biomass processing sector. Solutions contributing to CE business model: optimized and tested extraction methods (4), techno-economic studies, biocide products (2), meat analogue (1), ash. Target enterprises get new information in general regarding circular economy opportunities and knew knowledge about potential novel products and process feasibilities which they can utilize in their own development work when aim at enhancing circular economy activities. 566 / 1,000 characters			
		O.3.2: Policy recommendations for utilizing forestry side streams in the Baltic Sea region	Countries in the Baltic Sea region are in different development phases in relation to the utilization of forestry side streams. The total forest land area varies from country to country and therefore volumes of annual forest biomass utilization and volumes of forestry side streams vary. The purpose of the policy recommendations is to help Baltic Sea Region countries to enhance sustainable utilization of forestry side streams quantifying them in each Baltic Sea country, addressing practices in forestry as well as proposing added value products for local industries. Policy recommendations will support implementation of circular economy principles in forestry and strengthen bioeconomy and resilience of the BSR suggesting replacement of fossil (oil based bioactives) substances with forestry biomass products. 816 / 1,000 characters			

Output indicators		Result indicators			
Output indicator	**Total target value in number**	**Result indicator**	**Total target value in number**	**Please describe what types of organisations are planned to actively participate in the project. Explain how this participation will increase their institutional capacity. These types of organisations should be in line with the target groups you have defined for your project.**	
RCO 87 - Organisations cooperating across borders	29	**PSR 1 - Organisations with increased institutional capacity due to their participation in cooperation activities across borders**	27	Project partners and associated organisations	Wibax (AO4) is chemical company that have business activities in several BSR countries and interested in the results for possible production of several products like biocides from bark extracts, they are expert in logistic of the chemicals. Biolat JSC, Alternative Plants Ltd. (Latvia) are SME working on processing of forest products (coniferous trees) and elaboration of substances for biopharmaceutical products as well as creation of new products using environmentally friendly technologies. Lumene is interested in utilizing forestry side streams in cosmetic products. The business of Montinutra is based on utilizing forestry side streams and Montinutra is interested in developing new extraction methods for currently unutilized forestry side streams. Innomost is utilizing outer birch bark and they would like to find solutions for utilizing inner birch bark as well. Forest SPa Finland is looking for new forestry based raw materials for their nutrico cosmetics product portfolio. Panevezio aruodas is farmers cooperative having the production facilities with extraction line and willing to get knowledge on chemical and bio-extration technologies to be applied for plant origin rest raw materials and possible production of nutraceutics and food ingredients. 1,270 / 1,500 characters
				Other organisations	SCA forest company have pulp and paper production and can help with test of biocides in pulp tower fro mitigation of gas generation. Silvekspo Ltd, Madara Cosmetics Ltd., LEV Extracts JSC and other companies (Latvia) interested in the production and use of products from natural sources for application in biopharmaceutical industry, cosmetics, healthcare, food industry. Members of the advisory board from non-research organisations, e.g. from ministries, can introduce policy recommendations to their own organisations and policy recommendations could be discussed widely in partner organisations and transnationally in order to make the changes in utilizing forestry side streams to take place. 700 / 1,500 characters

7. Budget

7.0 Preparation costs

Preparation Costs

Would you like to apply for reimbursement of the preparation costs?	Yes

Other EU support of preparatory cost

Did you receive any other EU funds specifically designated to the development of this project application?	No

7.1 Breakdown of planned project expenditure per cost category & per partner

No. & role	Partner name	Partner status	CAT0 - Preparation costs	CAT1 - Staff	CAT2 - Office & administration
1 - LP	Swedish University of Agricultural Sciences	Active 22/09/2022	14,000.00	452,461.00	67,869.15
2 - PP	University of Latvia	Active 22/09/2022	1,000.00	206,400.00	30,960.00
3 - PP	Kaunas University of Technology	Active 22/09/2022	1,000.00	160,820.00	24,123.00
4 - PP	Centria University of Applied Sciences	Active 22/09/2022	1,000.00	263,160.00	39,474.00
5 - PP	Mineral and Energy Economy Research Institute of the Polish Academy of Sciences	Active 22/09/2022	1,000.00	102,310.00	15,346.50
6 - PP	Natural Resources Institute Finland	Active 22/09/2022	1,000.00	294,120.00	44,118.00
7 - PP	JSC BIOLAT	Active 22/09/2022	1,000.00	123,840.00	18,576.00
8 - PP	Fructus AG, LTD	Active 22/09/2022	1,000.00	34,687.00	5,203.05
9 - PP	Umea University	Active 22/09/2022	1,000.00	109,466.00	16,419.90
10 - PP	Finnish Forest Centre	Active 22/09/2022	1,000.00	56,760.00	8,514.00
11 - PP	Aalto University	Active 22/09/2022	1,000.00	165,120.00	24,768.00
12 - PP	GreenBack Ltd.	Active 22/09/2022	0.00	22,736.00	3,410.40
Total			24,000.00	1,991,880.00	298,782.00

No. & role	Partner name	CAT3 - Travel & accommodation	CAT4 - External expertise & services	CAT5 - Equipment	Total partner budget
1 - LP	Swedish University of Agr	67,869.15	93,800.00	38,330.50	734,329.80
2 - PP	University of Latvia	30,960.00	18,500.00	30,000.00	317,820.00
3 - PP	Kaunas University of Tec	24,123.00	12,800.00	27,000.00	249,866.00
4 - PP	Centria University of Appl	39,474.00	12,800.00	29,000.00	384,908.00
5 - PP	Mineral and Energy Econ	15,346.50	16,164.00	0.00	150,167.00
6 - PP	Natural Resources Institu	44,118.00	6,000.00	6,000.00	395,356.00
7 - PP	JSC BIOLAT	18,576.00	500.00	19,600.00	182,092.00
8 - PP	Fructus AG, LTD	5,203.05	0.00	3,900.00	49,993.10
9 - PP	Umea University	16,419.90	35,000.00	0.00	178,305.80
10 - PP	Finnish Forest Centre	8,514.00	7,000.00	0.00	81,788.00
11 - PP	Aalto University	24,768.00	13,000.00	10,000.00	238,656.00
12 - PP	GreenBack Ltd.	3,410.40	0.00	0.00	29,556.80
Total		298,782.00	215,564.00	163,830.50	2,992,838.50

7.1.1 External expertise and services

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value
1. Swedish Universi	Events/meetings	CAT4-PP1-A-0	Three project meetings,/workshops, one kick-off meeting, three WP leader meetings (82 / 100 characters)	No	1.1 1.2 1.3 1.4 2.1 2.2 2.3 2.4 3.1 3.2 N/A	16,000.00
3. Kaunas Universit	National control	CAT4-PP3-F-0	Audit of projects by the responsible authorities (48 / 100 characters)	No	1.2 2.4	4,800.00
4. Centria Universit	Events/meetings	CAT4-PP4-A-0	seminars, exhibitions, webinars, participation fees (51 / 100 characters)	No	1.1 1.2 1.3 1.4 1.5 2.1 2.2 2.3 2.4 2.5 3.1 3.2	7,300.00
2. Universitv of Latv	Events/meetings	CAT4-PP2-A-0	participation fees, conferences, project partner meetings, workshops (69 / 100 characters)	No	1.2 1.3 2.1 3.1	7,500.00
2. Universitv of Latv	Communication	CAT4-PP2-C-0	Open-access publishing (22 / 100 characters)	No	1.2 1.3 1.4 2.1 3.1	6,000.00
4. Centria Universit	Specialist support	CAT4-PP4-E-0	maintenance services for lab equipment (38 / 100 characters)	No	1.3 2.1	3,000.00
	Total					215,564.00

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
4. Centria Universit	Communication	CAT4-PP4-C-0	dissemination material, publications 36 / 100 characters	No	1.1 1.2 1.3 1.4 1.5 2.1 2.2 2.3 2.4 2.5 3.1 3.2	2,500.00	
6. Natural Resource	Communication	CAT4-PP6-C-0	publication open access 23 / 100 characters	No	2.2	6,000.00	
3. Kaunas Universit	Events/meetings	CAT4-PP3-A-0	Workshop in Lithuania for 20-30 participants (room, catering, equipment) 72 / 100 characters	No	1.4	3,000.00	
9. Umea University	Other	CAT4-PP9-G-1	laboratory costs 10 , chemicals 5, Culture media 12, consumables 3, 68 / 100 characters	No	2.2	30,000.00	
9. Umea University	Communication	CAT4-PP9-C-1	Open access journal, dissemination 34 / 100 characters	No	2.1	5,000.00	
10. Finnish Forest	Communication	CAT4-PP10-C-	dissemination material, translations 36 / 100 characters	No	3.1 3.2	3,000.00	
10. Finnish Forest	Events/meetings	CAT4-PP10-A-	seminars, exhibitions, webinars, participation fees 51 / 100 characters	No	3.1 3.2	4,000.00	
5. Mineral and Ener	Specialist support	CAT4-PP5-E-1	External support in conducting the survey on the social acceptance of forestry residues recovery 96 / 100 characters	No	2.3	6,000.00	
5. Mineral and Ener	Events/meetings	CAT4-PP5-A-1	Organisation of a project workshop in Poland for 20-30 participants (room, catering, equipment) 95 / 100 characters	No	N/A	2,664.00	
	Total					215,564.00	

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value
5. Mineral and Ener	Communication	CAT4-PP5-C-1	Scientific and promotion papers fee (open access) (49 / 100 characters)	No	1.1 1.2 1.3 1.4 2.1 2.2 2.3 2.4 3.1 3.2	2,500.00
5. Mineral and Ener	Specialist support	CAT4-PP5-E-1	External support in developing the Education Roadmap (52 / 100 characters)	No	2.3	5,000.00
1. Swedish Universi	Specialist support	CAT4-PP1-E-1	Consulting, expert in industrial processes (44 / 100 characters)	No	2.2	12,000.00
1. Swedish Universi	Other	CAT4-PP1-G-1	Cost of pilot plant activities at SLU pilot plant (50 / 100 characters)	No	2.2	58,800.00
1. Swedish Universi	Communication	CAT4-PP1-C-2	Dissemination: website, publications open access, Final report (64 / 100 characters)	No	1.1 1.2 1.3 1.4 2.1 2.2 2.3 2.4 3.1 3.2 N/A	7,000.00
2. University of Latv	Other	CAT4-PP2-G-2	External laboratory services (28 / 100 characters)	No	1.2 1.3 2.1	5,000.00
7. JSC BIOLAT	Communication	CAT4-PP7-C-2	Publishing (10 / 100 characters)	No	1.4	500.00
11. Aalto University	Other	CAT4-PP11-G-	External laboratory testing (27 / 100 characters)	No	2.3	8,000.00
11. Aalto University	Communication	CAT4-PP11-C-	Dissemination, project meetings (31 / 100 characters)	No	2.3	5,000.00
3. Kaunas Universit	Communication	CAT4-PP3-C-2	Dissemination: Open access journals, participation fees, conferences (68 / 100 characters)	No	1.2 2.4	5,000.00
	Total					215,564.00

7.1.2 Equipment

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
1. Swedish Universi	Laboratory equipmen	CAT5-PP1-D-0	Chemicals, gas analyses, consumable, lab cost, extractions tests 64 / 100 characters	No	2.2	38,330.50	
2. University of Latv	Laboratory equipmen	CAT5-PP2-D-0	Laboratory consumables, chemicals and gases 43 / 100 characters	No	1.2 1.3 2.1	30,000.00	
3. Kaunas Universit	Laboratory equipmen	CAT5-PP3-D-0	Lab chemicals, standarts, consumables,spare parts, HPLC columns, gases 70 / 100 characters	No	1.2 2.4	27,000.00	
4. Centria Universit	Laboratory equipmen	CAT5-PP4-D-0	lab chemicals, standard solutions, lab gases, spare parts, upgrading Chemplant with equipment 93 / 100 characters	No	1.3 2.1	29,000.00	
6. Natural Resource	Laboratory equipmen	CAT5-PP6-D-0	spec needed 12 / 100 characters	No	1.1 1.2 1.3 1.4 2.1 2.2 3.1 3.2 N/A	6,000.00	
7. JSC BIOLAT	Laboratory equipmen	CAT5-PP7-D-0	Chemicals, fuel (for steam generation), solvents, filters, laboratory analyses 81 / 100 characters	No	2.1	19,600.00	
11. Aalto University	Machines and instru	CAT5-PP11-E-	Modification and instrumentation of equipment 45 / 100 characters	No	2.3	10,000.00	
8. Fructus AG, LTD	Laboratory equipmen	CAT5-PP8-D-0	Chemicals, ingredients for food analogues, laboratory analyses 62 / 100 characters	No	2.4	3,900.00	
	Total					163,830.50	

7.1.3 Infrastructure and works

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
Please select	Please select	CAT6-PP--01	0 / 100 characters	Please select		0.00	
	Total					0.00	

7.2 Planned project budget per funding source & per partner

No. & role	Partner name	Partner status	Country	Funding source	Co-financing rate [in %]	Total [in EUR]	Programme co-financing [in EUR]	Own contribution [in EUR]	State aid instrument
1-LP	Swedish University of Agricultural Sciences	Active 22/09/2022	SE	ERDF	80.00 %	734,329.80	587,463.84	146,865.96	For each partner, the State aid relevance and applied aid measure are defined in the **State aid section**
2-PP	University of Latvia	Active 22/09/2022	LV	ERDF	80.00 %	317,820.00	254,256.00	63,564.00	
3-PP	Kaunas University of Technology	Active 22/09/2022	LT	ERDF	80.00 %	249,866.00	199,892.80	49,973.20	
4-PP	Centria University of Applied Sciences	Active 22/09/2022	FI	ERDF	80.00 %	384,908.00	307,926.40	76,981.60	
5-PP	Mineral and Energy Economy Research Institute of the Polish Academy of Sciences	Active 22/09/2022	PL	ERDF	80.00 %	150,167.00	120,133.60	30,033.40	
6-PP	Natural Resources Institute Finland	Active 22/09/2022	FI	ERDF	80.00 %	395,356.00	316,284.80	79,071.20	
7-PP	JSC BIOLAT	Active 22/09/2022	LV	ERDF	80.00 %	182,092.00	145,673.60	36,418.40	
8-PP	Fructus AG, LTD	Active 22/09/2022	LT	ERDF	80.00 %	49,993.10	39,994.48	9,998.62	
9-PP	Umea University	Active 22/09/2022	SE	ERDF	80.00 %	178,305.80	142,644.64	35,661.16	
10-PP	Finnish Forest Centre	Active 22/09/2022	FI	ERDF	80.00 %	81,788.00	65,430.40	16,357.60	
11-PP	Aalto University	Active 22/09/2022	FI	ERDF	80.00 %	238,656.00	190,924.80	47,731.20	
12-PP	GreenBack Ltd.	Active 22/09/2022	PL	ERDF	80.00 %	29,556.80	23,645.44	5,911.36	
Total ERDF						2,992,838.50	2,394,270.80	598,567.70	
Total						2,992,838.50	2,394,270.80	598,567.70	

7.3 Spending plan per reporting period

	EU partners (ERDF)		Total	
	Total	Programme co-financing	Total	Programme co-financing
Preparation costs	24,000.00	19,200.00	24,000.00	19,200.00
Period 1	477,525.00	382,020.00	477,525.00	382,020.00
Period 2	490,880.00	392,704.00	490,880.00	392,704.00
Period 3	499,162.00	399,329.60	499,162.00	399,329.60
Period 4	493,610.00	394,888.00	493,610.00	394,888.00
Period 5	517,046.00	413,636.80	517,046.00	413,636.80
Period 6	490,615.50	392,492.40	490,615.50	392,492.40
Total	2,992,838.50	2,394,270.80	2,992,838.50	2,394,270.80