1. Identification

Call	Date of submission
C1	26/04/2022

1.1. Full name of the project

Energetic circular fish farms

29 / 250 characters

1.2. Short name of the project

ECFF

4 / 20 characters

1.3. Programme priority

2. Water-smart societies

1.4. Programme objective

2.2 Blue 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

Recent energy prices in BS countries are vital to find renewable energy options for lowering costs of farms. Due to the instability of wind and solar we'll combine those with storage. Using excess energy for hydrogen gives oxygen side-stream necessary for the fish pool. Stored energy enables bringing in the insect feed production from local food-waste and implement a fully circular greenhouse. We can reduce the intake of the oxygen and traditional dry fish feed, replacing them with local recyclable resources and deploying artificial intelligence and machine learning methods in control loops. Emission-free fuel cell type CPH works on hydrogen and generates electricity and heat for the expansion. The project addresses offshore fish farming and novel water purity observation methods - with extensive advanced sensorics on whole BS area relying on ferry mounted devices fulfilling the objectives of BSR program. It relies on cooperation with marine institutes, aquaculture technology providers and marine cargo vessels agencies, involves a broad range of knowledge and geography including key stakeholders in the described sustainable energy efficient fish farming field. The project serves as the demonstration of embedded local sustainable streams for empowering local municipalities, businesses, energy societies and rural communities. The solution will be easily deployable in all BSR countries and captures the potential for joint commercialization of a strengthened BSR blue economy.

1,497 / 1,500 characters

1.8. Summary of the partnership

Pivots Engineering will act as the main executing partner for automation and mechanical items and concepts allocated by other involved parties, holding direct responsibility for technology related to fish farming and its buildings, performing electrical installation, developing, and programming sensor packages for water quality monitoring, and frameworks for automation. Conversio Design is a pilot farm owner and operates the fish farm and related works and handles the process of future commercial identity and marketing. The local government applies bio-waste sorting, collecting, and delivering operations, advises on designing questions of the farm. Aquamind will develop a customized black larva breeding solution for the fish from the bio-waste, delivering mechanical equipment and installation, sharing applied knowledge, and guiding the automation and software development by Cogastro, both helping on-site to establish well-working production during start-up and training local staff. The West Pomeranian partner will develop fish feeding concept procedures using insects, install extruders and assist in developing water quality assurance algorithms for securing the best possible growth. The Marine Research Institute of Klaipeda University will assist Pivots Engineering in developing state of the art sensor solutions for real-time monitoring of the BS, test newly developed sensor packages compared to submerged water, create the system of interpreting measured data, and assist in developing an easily understandable user interface and document the sensor/data package. Measuring the commercial transport fleet and connecting the data via Copernicus Marine Services with the logistics company (Maersk) communication system is an official pilot trial. The University of Tartu will design a full-stack project for integrating hydrogen systems and usage, train technical staff, assist in launching the system and perform documentation of the hydrogen system. TalTech will develop AI-driven models to monitor electric grid pricing and the optimized energy production system, operate the greenhouse using AI as well for testing the growth of exotic species (e.g., bamboo, ginger) locally with surplus energy, instead of importing them, and contribute to the development of mechatronics and automation parts, front end, and back-end server software. All other activities (circular economy model, the greenhouse, energy system operability, software coverage) will be developed with experts by the lead partner from Estonia, Tallinn University of Technology, in collaboration with the farm owner Conversio Design Ltd.

2,627 / 3,000 characters

1.11. Project Budget Summary

Financial resources [in EUR]		Preparation costs	Planned project budget
ERDF	ERDF co-financing	0.00	3,715,692.16
	Own contribution ERDF	0.00	928,923.04
	ERDF budget	0.00	4,644,615.20
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	3,715,692.16
	Total own contribution	0.00	928,923.04
	Total budget	0.00	4,644,615.20

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	Tallinn University of Technology	Tallinna Tehnikaülikool	EE	Higher education and research institution	a)	615,458.00 €	Active	22/09/2022
2	PP	Conversio Design Ltd	Conversio Design OÜ	EE	Small and medium enterprise	b)	1,742,255.60 €	Active	22/09/2022
3	PP	Pivots Engineering Ltd	Pivots Engineering OÜ	EE	Small and medium enterprise	b)	875,783.20 €	Active	22/09/2022
4	PP	Klaipeda University	Klaipėdos universitetas	LT	Higher education and research institution	a)	135,722.40 €	Active	22/09/2022
5	PP	West Pomeranian University of Technology	Zachodniopomorski Uniwersytet Technologiczny w Szczecinie	PL	Higher education and research institution	a)	180,000.00 €	Active	22/09/2022
6	PP	University of Tartu	Tartu Ülikool	EE	Higher education and research institution	a)	58,359.60 €	Active	22/09/2022
7	PP	Aquamind	Aquamind A/S	DK	Small and medium enterprise	b)	880,740.00 €	Active	22/09/2022
8	PP	Saaremaa Municipality	Saaremaa vald	EE	Local public authority	a)	25,937.60 €	Active	22/09/2022
9	PP	Cogastro	Cogastro, UAB	LT	Small and medium enterprise	b)	130,358.80 €	Active	22/09/2022

2.1.2 Associated Organisations

No.	Organisation (English)	Organisation (Original)	Country	Type of Partner
AO 1	A.P. Moller Maersk	A.P. Møller-Mærsk	DK	Large enterprise
AO 2	Energy cooperative	Tulundusühistu Energiaühistu	EE	Small and medium enterprise
AO 3	Polish Trout Breeders Association	Stowarzyszenie Producentów Ryb Łososiowatych	PL	NGO
AO 4	Association of Polish Fish Farmers	Polskie Towarzystwo Rybackie	PL	NGO
AO 5	Association of Estonian Cities and Municipalities	Eesti Linnade ja Valdade Liit	EE	NGO
AO 6	Saare Development Centre	Saare Arenduskeskus	EE	Business support organisation
AO 7	Estonian Ministry of Environment	Keskkonnaministeerium	EE	National public authority
AO 8	Ministry of Rural Affairs	Maaeluministeerium	EE	National 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 Tallinna Tehnikaülikool

23 / 250 characters

Organisation in English Tallinn University of Technology

32 / 250 characters

Department in original language	Kuressaare kolledž (18 / 250 characters)
Department in English	Kuressaare college (18 / 250 characters)

Partner location and website:

Address	Tallinna 19 (11 / 250 characters)	**Country**	Estonia
Postal Code	93811 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Kuressaare (10 / 250 characters)	**NUTS2 code**	Eesti
Website	https://taltech.ee/en/kuressaare-college (40 / 100 characters)	**NUTS3 code**	Lääne-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	74000323
VAT Number Format	EE + 9 digits
VAT Number	**N/A** ☐ EE100224841 (11 / 50 characters)
PIC	999842536 (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:

Management, coordinating and leading the whole project (e.g. publishing progress and results of the project), technical activities coordination, arrangements on pilot fish-farm island, testing the water quality measurement solution on their robot craft, checking the inner energy installations and works, organizing the food supply for the planned insect farm, planning and planting of the greenhouse contents.

411 / 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	Conversio Design OÜ (19 / 250 characters)
Organisation in English	Conversio Design Ltd (20 / 250 characters)
Department in original language	kinnisvara (10 / 250 characters)
Department in English	fish-farming (12 / 250 characters)

Partner location and website:

Address	Kaavi (5 / 250 characters)	**Country**	Estonia
Postal Code	93239 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Saaremaa (8 / 250 characters)	**NUTS2 code**	Eesti
Website	https://www.e-krediidiinfo.ee/14225719-Conversio%20Design%20O%C3%9C (67 / 100 characters)	**NUTS3 code**	Lääne-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	14225719
VAT Number Format	EE + 9 digits
VAT Number	N/A ☐ EE102444629 (11 / 50 characters)
PIC	(0 / 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) 03.22 - Freshwater aquaculture

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)]		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]		0.00
Annual balance sheet total [in EUR]		12,617.00
Operating profit [in EUR]		0.00

Role of the partner organisation in this project:

Owner and operator of the freshwater fish-farm, to be developed into a circular blue economy farm.

98 / 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 3

LP/PP Project Partner

Partner Status Active

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

Partner name:

Organisation in original language Pivots Engineering OÜ

21 / 250 characters

Organisation in English Pivots Engineering Ltd

22 / 250 characters

Department in original language inseneri

8 / 250 characters

Department in English engineering

11 / 250 characters

Partner location and website:

Address Maleva 2g

9 / 250 characters

Country Estonia

Postal Code	11711 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Tallinn (7 / 250 characters)	**NUTS2 code**	Eesti
Website	https://www.e-krediidiinfo.ee/11643066-PIVOTS%20ENGINEERING%20O%C3%9C (70 / 100 characters)	**NUTS3 code**	Põhja-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	11643066
VAT Number Format	EE + 9 digits
VAT Number	N/A ☐ EE101293868 (11 / 50 characters)
PIC	(0 / 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)	26.51 - Manufacture of instruments and appliances for measuring, testing and navigation	

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)]		5.0
	Employees [in AWU]		5.0
	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]		323,823.00
	Annual balance sheet total [in EUR]		702,225.00
	Operating profit [in EUR]		202.00

Role of the partner organisation in this project:

Technology developer and equipment provider for oxygen tanks, fire and pyping systems, sensors, mechatronics, and electrical installations, second fishfarm building renovation.

176 / 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 4

LP/PP Project Partner

Partner Status Active

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

Partner name:

Organisation in original language Klaipėdos universitetas
23 / 250 characters

Organisation in English Klaipeda University
19 / 250 characters

Department in original language Jūros tyrimų institutas
23 / 250 characters

Department in English Marine Research Institute
25 / 250 characters

Partner location and website:

Address Herkaus Manto str. 84
21 / 250 characters

Postal Code LT-92294
8 / 250 characters

Town Klaipeda
8 / 250 characters

Website http://apc.ku.lt/en/
20 / 100 characters

Country Lithuania

NUTS1 code Lietuva

NUTS2 code Vidurio ir vakarų Lietuvos regionas

NUTS3 code Klaipėdos apskritis

Partner ID:

Organisation ID type Legal person's code (Juridinio asmens kodas)

Organisation ID 211951150

VAT Number Format LT + 9 digits

VAT Number N/A ☐ LT119511515
11 / 50 characters

PIC 999904422
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:

Environmental remote sensing and water quality measurement, standardization and deviation alerting.

99 / 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 5

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

Partner name:

Organisation in original language	Zachodniopomorski Uniwersytet Technologiczny w Szczecinie (57 / 250 characters)
Organisation in English	West Pomeranian University of Technology (40 / 250 characters)
Department in original language	Wydział Nauk o Żywności i Rybactwa (34 / 250 characters)
Department in English	Faculty of Food Science and Fisheries (37 / 250 characters)

Partner location and website:

Address	aL Plastow 17 (13 / 250 characters)	**Country**	Poland
Postal Code	PL-70310 (8 / 250 characters)	**NUTS1 code**	Makroregion północno-zachodni
Town	Szczecin (8 / 250 characters)	**NUTS2 code**	Zachodniopomorskie
Website	wnozir.zut.edu.pl/index.php?id=3586&L=2 (39 / 100 characters)	**NUTS3 code**	Miasto Szczecin

Partner ID:

Organisation ID type	Tax identification number (NIP)
Organisation ID	8522545056
VAT Number Format	PL + 10 digits
VAT Number	N/A ☐ PL8522545056 (12 / 50 characters)
PIC	992816050 (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:

Fish feeding, farming technology, freshwater basin status, fish-food quality testing and improvement programs

110 / 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	Tartu Ülikool (13 / 250 characters)
Organisation in English	University of Tartu (19 / 250 characters)
Department in original language	Keemia instituut (16 / 250 characters)
Department in English	Institute of Chemistry (22 / 250 characters)

Partner location and website:

Address	Ravila 14a (10 / 250 characters)	**Country**	Estonia
Postal Code	50411 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Tartu (5 / 250 characters)	**NUTS2 code**	Eesti
Website	chem.ut.ee (10 / 100 characters)	**NUTS3 code**	Lõuna-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	74001073
VAT Number Format	EE + 9 digits
VAT Number	N/A ☐ EE100030417 (11 / 50 characters)
PIC	999895013 (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:

Hydrogen related advise and electrolyzer, hydrogen and oxygen generation and fuel cell intsallation.

100 / 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	Aquamind A/S (12 / 250 characters)
Organisation in English	Aquamind (8 / 250 characters)
Department in original language	Akvakultur løsninger (20 / 250 characters)
Department in English	aquaculture solutions (21 / 250 characters)

Partner location and website:

Address	Gersonsvej 7A, 2.tv (19 / 250 characters)	**Country**	Denmark
Postal Code	2900 (4 / 250 characters)	**NUTS1 code**	Danmark
Town	Hellerup (8 / 250 characters)	**NUTS2 code**	Hovedstaden
Website	https://www.aquamind.dk/ (24 / 100 characters)	**NUTS3 code**	Byen København

Partner ID:

Organisation ID type	Civil registration number (CPR)
Organisation ID	35141936
VAT Number Format	DK + 8 digits
VAT Number	**N/A** ☐ DK35 14 19 36 (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)	03.22 - Freshwater aquaculture	

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)]			5.0
	Employees [in AWU]			4.0
	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]			400,000.00
	Annual balance sheet total [in EUR]			288,000.00
	Operating profit [in EUR]			53,000.00

Role of the partner organisation in this project:

Aquamind will develop a customised black larvae breeding solution for the fish from the bio-waste, delivering mechanical equipment and installation, sharing applied knowledge and guiding the automation and software development, helping on-site to establish well-working production during start-up and training local staff.

322 / 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	Saaremaa vald (13 / 250 characters)
Organisation in English	Saaremaa Municipality (21 / 250 characters)
Department in original language	Keskkonnaosakond (16 / 250 characters)
Department in English	Department of Environment (25 / 250 characters)

Partner location and website:

Address	Tallinna 10 (11 / 250 characters)	**Country**	Estonia
Postal Code	93819 (5 / 250 characters)	**NUTS1 code**	Eesti
Town	Kuressaare (10 / 250 characters)	**NUTS2 code**	Eesti
Website	https://www.saaremaavald.ee/ (28 / 100 characters)	**NUTS3 code**	Lääne-Eesti

Partner ID:

Organisation ID type	Registration code (Registrikood)
Organisation ID	77000306
VAT Number Format	EE + 9 digits
VAT Number	N/A ☐ EE102037395 (11 / 50 characters)
PIC	(0 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Local public authority	Municipality, city, etc.
Sector (NACE)	84.11 - General public administration activities	

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:

Arranging bio-waste sorting, collecting and delivering to the farm for the feedstock of insects. Issuing the building permit for the expansion works. Attaching water quality sensor boxes to the municipality operated small ferries.

231 / 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	Cogastro, UAB (13 / 250 characters)
Organisation in English	Cogastro (8 / 250 characters)
Department in original language	plėtra (6 / 250 characters)
Department in English	development (11 / 250 characters)

Partner location and website:

Address	Pusyno g. 14 (12 / 250 characters)	**Country**	Lithuania

Postal Code	LT-33344 (8 / 250 characters)	**NUTS1 code**	Lietuva
Town	Paseksčių k, Moletu r. (22 / 250 characters)	**NUTS2 code**	Vidurio ir vakarų Lietuvos regionas
Website	https://cogastro.com/ (21 / 100 characters)	**NUTS3 code**	Utenos apskritis

Partner ID:

Organisation ID type	Legal person's code (Juridinio asmens kodas)
Organisation ID	305196545
VAT Number Format	LT + 12 digits
VAT Number	**N/A** ☐ LT100012497814 (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)	62.01 - Computer programming activities	

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)]		7.0
	Employees [in AWU]		6.0
	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]		21,023.00
	Annual balance sheet total [in EUR]		225,063.35
	Operating profit [in EUR]		0.00

Role of the partner organisation in this project:

Cogastro develops farm management software for insect farm that connects distributed information and provides a farm performance monitoring system to ensure better control of the production and sustainable usage of resources, develops and adjusts the software to facilitate the continuous insect-based waste processing and the production of insect-based fish feed.

To achieve this goal Cogastro will take the following steps:
1. Coordinate and draw integrations requirements together with [partners name] based on hardware and third-party software.
2. Build and adjust main information gathering and display interfaces according to the needs of Aquamind.
3. Consult and advise on standard operation protocol for efficient insect operations.
4. Onboard and support parties in applying the software technology in the operating environment.
5. Support the technology and ensure its highest performance.
6. Consult on the analysis of production results.

956 / 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: A.P. Møller-Mærsk
17 / 250 characters

Organisation in English: A.P. Moller Maersk
18 / 250 characters

Department in original language: logistikløsninger
17 / 250 characters

Department in English: logistics solutions
19 / 250 characters

Legal status: b) Private

Type of associated organisation: Large enterprise — ≥ 250 employees

Associated organisation location and website:

Address: Esplanaden 50
15 / 250 characters

Country: Denmark

Postal Code: 1263
4 / 250 characters

Town: Copenhagen K
12 / 250 characters

Website: www.maersk.com
14 / 100 characters

Role of the associated organisation in this project:

Attaching water testing sensor boxes onto vessels and connecting them to internal network for data transfer.
108 / 1,000 characters

2.3 Associated Organisation Details - AO 2

Associated organisation name and type:

Organisation in original language: Tulundusühistu Energiaühistu
28 / 250 characters

Organisation in English: Energy cooperative
18 / 250 characters

Department in original language: arendus
7 / 250 characters

Department in English: development
11 / 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: Masti 17
8 / 250 characters

Country: Estonia

Postal Code: 11911
5 / 250 characters

Town: Tallinn
7 / 250 characters

Website: https://energiayhistu.ee/
25 / 100 characters

Role of the associated organisation in this project:

Estonian first energy cooperative is the renewable energy investments promoting non-governmental society with the membership of energy investments' interested people around the country, looking for local projects to support them with our knowledge and financial capacity. This is particularly important in the areas with little interconnectivity capacity. Energy cooperative is interested to widen the initiatives from mainly solar energy usage to other means like wind, thermal, and storage applications.
Energy cooperative is fully supporting the implementation of the project and is willing to provide the coordination with interested cooperative members and other stakeholders to encourage them to replicate and adjust the solutions to similar opportunities. They will share the progress with all interested through various communication channels.
Competent membership takes part in the project meetings for designing the optimal energy system for the circular farm.

974 / 1,000 characters

2.3 Associated Organisation Details - AO 3

Associated organisation name and type:

Organisation in original language: Stowarzyszenie Producentów Ryb Łososiowatych
44 / 250 characters

Organisation in English: Polish Trout Breeders Association
33 / 250 characters

Department in original language: Stosunki zagraniczne
20 / 250 characters

Department in English: foreign relations
17 / 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: Al. Wolności 30/105
21 / 250 characters

Country: Poland

Postal Code: 84-300
6 / 250 characters

Town: Lębork
6 / 250 characters

Website: www.sprl.pl
11 / 100 characters

Role of the associated organisation in this project:

As an association operating in the fish industry, bringing together a significant part of trout farmers, we believe that the activities consisting in the development and implementation into breeding practice of a project self-sufficient in terms of energy and partly raw materials aimed at optimizing feed consumption during production are the most basic and will enjoy considerable interest of the breeding industry.
The increasing demand for fish from aquaculture and limited water resources force farmers to look for solutions to increase production while reducing the adverse impact on the environment, and the proposed project 'Energetic Circular Fish Farm' fits perfectly into these realities.

699 / 1,000 characters

2.3 Associated Organisation Details - AO 4

Associated organisation name and type:

Organisation in original language: Polskie Towarzystwo Rybackie
28 / 250 characters

Organisation in English: Association of Polish Fish Farmers
34 / 250 characters

Department in original language: Stosunki zagraniczne
20 / 250 characters

Department in English: foreign relations
17 / 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: ul. Winiarska 1
15 / 250 characters

Country: Poland

Postal Code: 60-654
6 / 250 characters

Town: Poznań
6 / 250 characters

Website: www.ptryb.pl
12 / 100 characters

Role of the associated organisation in this project:

As an association operating in the fish industry, bringing together a significant part of polish fish farmers, we believe that the activities consisting in the development and implementation into breeding practice of a project self-sufficient in terms of energy and partly raw materials aimed at optimizing feed consumption during production are the most basic and will enjoy considerable interest of the breeding industry.
The increasing demand for fish from aquaculture and limited water resources force farmers to look for solutions to increase production while reducing the adverse impact on the environment, and the proposed project 'Energetic Circular Fish Farm' fits perfectly into these realities.
Polish fish farmers will give the feedback to project's outcomes related to the fishery and water quality improvements.

826 / 1,000 characters

2.3 Associated Organisation Details - AO 5

Associated organisation name and type:

Organisation in original language: Eesti Linnade ja Valdade Liit
29 / 250 characters

Organisation in English: Association of Estonian Cities and Municipalities
49 / 250 characters

Department in original language: Personaliarenduse kompetents
28 / 250 characters

Department in English: Competencies of staff development
33 / 250 characters

Legal status: a) Public

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

Associated organisation location and website:

Address: Roosikrantsi 12/1
17 / 250 characters

Country: Estonia

Postal Code: 10119
5 / 250 characters

Town: Tallinn
7 / 250 characters

Website: https://www.elvl.ee/
20 / 100 characters

Role of the associated organisation in this project:

For local authorities smart energy systems leading to creation of jobs are relevant to follow. Municipalities are looking for the opportunities to increase renewable share in the energy generation and study the exmaples helping by this getting re-use to the community's bio-waste as the feedstock for the insect part of the circular farm. The circularity of the farm establishes a model for the Green Deal developments in small rural locations, and municipalities' association is the best to share it for the whole network.
Each summer and winter special workshop is arranged to the municipalities - this is the perfect event for introducing the results of the EFCC. Also, the association can take the project to national government level for incentifying similar needs of local authorities by national regulatives and support schemes.

838 / 1,000 characters

2.3 Associated Organisation Details - AO 6

Associated organisation name and type:

Organisation in original language: Saare Arenduskeskus (19 / 250 characters)

Organisation in English: Saare Development Centre (25 / 250 characters)

Department in original language: arendus (7 / 250 characters)

Department in English: development (11 / 250 characters)

Legal status: a) Public

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: Torni 1 (7 / 250 characters)

Country: Estonia

Postal Code: 93812 (5 / 250 characters)

Town: Kuressaare (10 / 250 characters)

Website: https://sasak.ee/eng (20 / 100 characters)

Role of the associated organisation in this project:

Saare Development Center as the entrepreneurship, business and regional development hub on the Estonian biggest island has been looking for a solution to islands' bio-waste today transported to the mainland, instead of using locally. Saaremaa is a favourable place for aquaculture, but the sector is struggling with high energy prices and too small scale for offshore market demands. In coastal areas, the electricity distribution grid has little interconnectivity capacity and renewables have seldom been applied to support the SMEs.
Gladly the ECFF project addresses all the above-mentioned challenges. Hence SDC is fully supporting the implementation of the project and is provides coordination with interested SMEs on the island and shares the progress through various communication channels.
SDC engages a larger number of energy communities, farmers, and other companies through the network of the Estonian development centres (15) to make sure the good practice is well transferred.

995 / 1,000 characters

2.3 Associated Organisation Details - AO 7

Associated organisation name and type:

Organisation in original language: Keskkonnaministeerium (21 / 250 characters)

Organisation in English: Estonian Ministry of Environment (32 / 250 characters)

Department in original language: vee (3 / 250 characters)

Department in English: water (5 / 250 characters)

Legal status: a) Public

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

Associated organisation location and website:

Address: Paldiski mnt 96 (15 / 250 characters)

Country: Estonia

Postal Code: 13522 (5 / 250 characters)

Town: Tallinn (7 / 250 characters)

Website: www.envir.ee (12 / 100 characters)

Role of the associated organisation in this project:

Monitor the development of the project and its sustainability and resiliance. Draw respective results for the aquculture policy as described in the letter of support attached. (175 / 1,000 characters)

2.3 Associated Organisation Details - AO 8

Associated organisation name and type:

Organisation in original language: Maaeluministeerium
18 / 250 characters

Organisation in English: Ministry of Rural Affairs
25 / 250 characters

Department in original language: Kalamajandusosakond
19 / 250 characters

Department in English: Fischeries Economics Department
31 / 250 characters

Legal status: a) Public

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

Associated organisation location and website:

Address: Lai tn 39 // Lai tn 41
22 / 250 characters

Country: Estonia

Postal Code: 15056
6 / 250 characters

Town: Tallinn
7 / 250 characters

Website: https://www.agri.ee/en
22 / 100 characters

Role of the associated organisation in this project:

The Ministry of Rural Affairs of Estonia is a government ministry of Estonia responsible for policies regarding agriculture, food market and food safety, animal health, welfare and breeding, bioeconomy and fishing industry in Estonia. The role of the associated partner The Ministry of Rural Affairs is to support the project by ideas and active dissemination of project results during the whole project.

404 / 1,000 characters

3. Relevance

3.1 Context and challenge

Recent electricity costs have challenged primary sector units' operational costs to stay competitive. The project suggests a model of a low-cost no-grid-sales energy system with carbon-cutting, integration of renewable energy and storage. With a reduced fish-catching quota, aquaculture provides the continuation of the conventional fishery sector in less developed areas. Scaling up the produced biomass gives the opportunity to turn the hobby into an export-driven business. In many BSR regions the grid interconnectivity is missing, and "island"-type complex energy applications are the best possible solutions. Often grid reinforcement costs are not justified. Along with electrolyzing the hydrogen, every onshore fish farm needs an oxygen supply. Protein-rich insect feed can be generated from local bio/food waste, avoiding expensive transport from islands to the mainland and being dependent on global supplier conditions. Stored excess energy supports the widening of horticulture products, fertilized by the biomass filtered from fish farming - circular use of by-products and residues is sustainable and maximizes the usage of local resources. Offshore aquaculture is dependent on the vulnerable status of the BS, which so far has been monitored by sampling and environmental impact assessments in marked sea areas only. A permanent online sensor-based water quality monitoring system enables not only to see the best farming parameters but creates an alert system for bigger dangerous deviations (such as cyanobacteria blooms). Environmental protection of the BS will be supported by the latest IoT sensing and communication technologies. However, fish farming relying on food production and local renewable energy sources is a complex task and requires sophisticated solutions for closed-loop control. The project pilots such solutions relying on extensive use of sensors, including novel ones like water flow grid sensors by TalTech, and AI/ML-based system control.

1,978 / 2,000 characters

3.2 Transnational value of the project

All solutions and challenges described above are replicable in the BSR countries. Cooperation between size-limited onshore farms gives the opportunity to grow the fish for large scale offshore farms, leading the way for the BSR region to follow Norway's success on the global markets. Digital embedded solutions lead to minimizing the human error effect in farming. Reducing the need to import and include bio-waste streams into the supply chain is an expected development in major rural regions transnationally. Sharing the data about the BS water quality serves the value of maintaining in good order the biggest common resource of the BSR. Later, the solution can be taken over globally.
Some parts of the project will be implemented in close relation by different country partners. For instance, the insect breeding and rearing output depend on the well-moderated cooperation of the Lithuanian, Danish, and Polish partners. The whole setup of activities serves to strengthen the ability of the BSR joint activities also after the project. Different stages in software developments link digital solutions to the demands of the circular economy.

1,149 / 2,000 characters

3.3 Target groups

Target group	Sector and geographical coverage	Its role and needs
Regional public authority	Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education. 177 / 500 characters	Explain the similar challenges of coastal regions and disseminate the results to regions' stakeholders. They need the guidance on determing likely similar circular economy business perspectives. 195 / 1,000 characters
Higher education and research instituti	BSR National marine institutes examining the marine biology dynamics, developing new technologies for monitoring the content of main nutrients. BSR intitutes focusing for circular energy flow systems, as well biology, zoology and botany departments of BSR research instutes focusing on novel food supplies, green and blue economy and circular economy. 353 / 500 characters	Provide expertise for standardizing BS water parameters and gathered data interpretation methods. Will be given access to the data collected. Experimental studies 164 / 1,000 characters
National public authority	Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives. 155 / 500 characters	Examining the introduced results for designing national and regional programs as enablers of replication of the initiatives alike. 130 / 1,000 characters
Small and medium enterprise	BSR Fisheries see the change at the catch quota reduce conditions. 70 / 500 characters	Fishing communities and companies across the BS will be informed about new circular farming opportunities for the continuity and competitivity of the sector, complimentary to the traditional fish catching. 205 / 1,000 characters
Interest group	Partner country Energy societies get a good example of smart off-grid solution. 79 / 500 characters	Rural and coastal municipalities will be engaged to present the means of supporting developments in less grid-connected or interconnectivity capacity provided areas, for the development of island-type energy society solutions, helping to implement renewable energy applications in the collaboration. 299 / 1,000 characters

3.4 Project objective

Your project objective should contribute to:

Blue economy

Regional authorities will see the potential of the blue economy - the business model is supported by bringing in renewable energy supply and its storage, the synergy between three farms by using the mutual side of waste streams presents an effective and sustainable complex model of the circular economy. For municipalities it is important to see local resources maximizing business models, bringing jobs, and aiming for exports. The example of investing in renewables and following hydrogen usage for regenerating electricity and heat through fuel cells shows how new energy carriers can be used in island-type applications in all sectors (not just aquaculture). The BS water quality and stream monitoring help coastal areas to launch local alert systems in case of pollution and take quick actions against threatening changes (for instance cyanobacteria blooms). Improving water quality can also be the source of attracting responsible aquaponic entrepreneurs to invest in the region and combine the power of onshore and offshore farming.
National governments get valuable information about the Baltic Sea condition for transnational marine spatial planning and permanent awareness of offshore activities' impacts. The latter is largely supported by the research of marine institutes, getting online tools for measuring the critical parameters. Higher educational institutions will get a strong case to be included in study and research programs to strengthen the sectors of the blue economy, sustainable energy, climate action plans and regional policy. Circular farming contains a big potential for valorizing more residues, turning problematic bio/food waste into demanded raw material and studying the possibilities of replacing imported goods with local products.
SMEs and energy communities follow profitable undertakings by other entrepreneurs. They can take up the model by extending it to become more circular, by upscaling with the help of the increase in low-cost energy supply.

1,993 / 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.

PA Bio-economy aims at reinforcing the sustainability of agriculture, forestry, and fisheries by promoting an integrated approach. Actions concentrate on pursuing the bioeconomy actually and practically by improving policy coherence and policy learning and by engaging the private sector. In fisheries management emphasis is on improving coordination among the Member States and stakeholders in the region.
The ECFF project integrates fisheries and agriculture. Bamboo planting success of testing cold-climate resistant species, the first of its kind 'forest' will be launched. In addition, whether they are side streams of insect or fish farms, or the residual electricity and heat, the priority is their usage in the circular farm. For example, fish farming out-filtered biomass will be converted to insect feed or agricultural fertilizer (compost). Island's bio/food waste is fed to insects, forming a protein-rich feedstock for fish. Electrolyzing hydrogen, the released oxygen is consumed by fish. Greenhouse leftovers can be recycled for insect feed. Usage, storage, and re-usage of on-site produced renewable energy support strongly to reach the goal 'climate neutral fish farm'.
Replicating the model, BSR countries can form a strong blue economy cluster as an excellence hub. The seawater quality monitoring platform contributes to HELCOM goals and sea area joint planning. The project contributes to EU Marine Data Services for an All Atlantic and Global Ocean Data Space.

1,482 / 1,500 characters

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

The project improves the capture of accurate online expert-level analyzed data for marine activities mapping under PA Spatial Planning.
The water quality monitoring system forms a transparent basis for encouraging visitors to enjoy sea-related activities, contributing to PA Tourism. Also, the more we can provide tourists with locally produced food, the bigger the competitiveness index of the BSR.
Small scale hydrogen production leads the way to stop the use of fossil fuels by fisheries, hence important at PA Transport.
New technologies and energy applications are a perfect input for amending study programs on all levels, following the guidelines of PA Education.
PA Energy is strongly present in the project, increasing the renewable energy generation, and introducing its maximum consumption at the site through new hydrogen storage technologies.
The project's idea of an integrated sustainable approach in PPP-mood deserves to be classified under PA Innovation.
Delivering more local healthy food lists the project under PA Health and Secure.
The ambition of introducing the BS water quality monitoring online system is to quickly inform relevant parties about increasing levels of nitrogen, phosphorus, and other indicators, to give an opportunity for a quick reaction for avoiding the worst. This is a direct response to the PA Nutri strategy.
The monitoring system also enables operational alerts in case of ship-based pollution - PA Ship.

1,465 / 1,500 characters

3.6 Other political and strategic background of the project

Strategic documents

EU Green deal – The goal of ECFF ´climate neutral fish farm´ matches exactly the main goal of EU Green deal (by using, storing and re-using of on-site produced renewable energy). Fish feed generated from local waste minimizes long-distance transport, thus reducing greenhouse gas emissions. ECFF contributes to the main aims of EU Green deal - reducing pollution, moving towards a circular economy, improving waste management, ensuring the sustainability of blue economy and fisheries sectors.

493 / 500 characters

HELCOM Baltic Sea Action Plan goals are supported primarily by the project aims about developing novel water quality monitoring system that enables to quickly inform relevant parties about increasing levels of nitrogen, phosphorus and other indicators and to give an opportunity for a quick reaction for avoiding the worst, as well enables alerts in case of ship-based pollution). Thereby the goal of HELCOM "BS ecosystem is healthy and resilient and BS unaffected by eutrophication" is achieved.

497 / 500 characters

EU Circular Economy Action Plan - the circular energy flow generated to manage the fish farm is perfect example of circular economy and fully realising the action plan main goals. Project aims match the action plan goals - to increase recycled content in products, while ensuring their performance and safety; to reduce carbon and environmental footprints, ensure circularity in production, ensure less waste,
make circularity work for people and regions.

455 / 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
Project Z-271 Energetic fish farm 33 / 200 characters	The New Energy Solutions Optimized for Islands, Second open call. European Islands Facility. 93 / 200 characters	Grant just in sum of 60,000€ will be contracted to develop the business plan for combining the energy investment with the aim to obtain the Aquaculture Stewardship Council standard certification. The outcome of NESOI project well supports preparing the feasibility study for carrying out the major developments introduced in current Interreg application. 356 / 1,000 characters
Sensors for LArge scale HydrodynaMic Imaging of ocean floor 59 / 200 characters	Horizon 2020 research and innovation programme under grant agreement No 635568 78 / 200 characters	Sensors developed by TalTech within the project LAkHsMi opposed to the currently available technological solutions for flow measurements, are low- cost and can be installed in various configurations and amounts at the fish-farm pools and BS water quality measurement installations. 283 / 1,000 characters
EXCELLENCE HUBS FOR SUSTAINABLE BLUE ECONOMY 44 / 200 characters	HORIZON-WIDERA-2022-ACCESS-04-01 Call 37 / 200 characters	The outcomes of the Blue-Hubs project can be experimented on the circular farm, particularly discovering seaweed growth opportunities to enrich the BS aquaculture sector. Thus in Green building of the farm as part of the greenhouse seaweed aquariums will be placed. On the other hand, the regional innovation system creation for the blue economy need development projects like ECFF to map the role of stakeholders and success factors in the interest of launching the next range of projects. 492 / 1,000 characters
The SUBMARINER Network 23 / 200 characters	A flagship project under the priority area “Innovation” of the EU Strategy for the Baltic Sea Region (EUSBSR) 109 / 200 characters	ECFF encompasses Network's transnational and cross-border regional development potential, benchmark with other innovation and research projects, learn through it from the various initiatives at local and business level. Our partners can attend related meetings, workshops, conferences and a comprehensive set of dissemination tools, network platform for communication, exchanges of experience, joint project development and implementation. 439 / 1,000 characters
BIOECONOMY FOR BLUE GROWTH IN THE BALTIC SEA REGION – A PLATFORM PROJECT TO CAPITALIZE ON THE OUTPUTS OF COMPLEMENTARY TRANSNATIONAL PROJECTS 141 / 200 characters	A platform project under the PA innovation of the EUSBSR 2018-2022 66 / 200 characters	Blue Platform increases ECFF partners awareness of existing blue bioeconomy knowledge, and focuses on streamlining activities. The platform helps us understand on how further funding and legislation could be better aligned. We will join a Blue Platform Roadmap. Working out ECFF solutions during wp1 we shall examine the best practices of more than 25 past and on-going transnational products developed by more than 10 projects database of Baltic blue bioeconomy activities, projects, products and actors. ECFF becomes involved with the Blue Platform, leading the Baltic Blue Bioeconomy Community through a dynamic website, as well as by bringing people together face-to-face. During ECFF wp3 while disseminating our outcomes we'll select from the platform transnational workshops best fitting for our project and use their #BluePlatform on social media. 855 / 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	neutral

4. Management

Allocated budget 5%

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.

TalTech Kuressaare College as the lead partner is supported by the TalTech Research Administration Office and pilot farm owner Conversio Design Ltd. Also, a steering committee of the project partners will be created at the beginning, the committee meets regularly during the whole project to evaluate progress, accordance with the schedule etc. Each project partner has its own work group which has meetings during their activity period, lead partner takes part, if necessary.

476 / 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.

TalTech Kuressaare College as lead partner is supported internally by the TalTech Finance Office, the whole financial documentation of the project will be coordinated and validated by the TalTech Finance Office. A financial manager will be appointed, to assist partners with financial management and compile the reports of expenditure. University can advise with procurement requirements.

390 / 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.

At the end of work packages all partners physical meetings on the piloting site will be arranged and communicated. LinkedIn project account and web page (Wordpress) will be set for sharing news about major developments during the whole project. For transferring results, seminars at each partner will be held with the involvement of all target groups. Social media platforms (e.g. Facebook, Instagram, Youtube channel), newspapers and TV will be used to increase the impact of the project.

489 / 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	Technical design for the building permit
1.2	Energy system solution design
1.3	Baltic Sea water quality measurement design

Number	Work Package Name
2	WP2 Piloting and evaluating solutions

Number	Group of Activity Name
2.1	Construction of the circular farm
2.2	Power to fish
2.3	Producing and testing BS water quality monitoring

Number	Work Package Name
3	WP3 Transferring solutions

Number	Group of Activity Name
3.1	LinkedIn account
3.2	Final workshop
3.3	Tested Baltic Sea water quality monitoring workshop
3.4	Resources for you

Work plan overview

Period:	1	2	3	4	5	6	Leader
WP.1: WP1 Preparing solutions							**PP2**
A.1.1: Technical design for the building permit							PP2
D.1.1: building permit		D					
A.1.2: Energy system solution design							PP1
D.1.2: Building permit		D					
A.1.3: Baltic Sea water quality measurement design							PP3
D.1.3: Water testing design	D						
WP.2: WP2 Piloting and evaluating solutions							**PP2**
A.2.1: Construction of the circular farm							PP2
O.2.1: Completion of circular farm					O		
A.2.2: Power to fish							PP1
O.2.2: New energy system					O		
A.2.3: Producing and testing BS water quality monitoring							PP3
O.2.3: Tested water quality monitoring				O			
WP.3: WP3 Transferring solutions							**PP1**
A.3.1: LinkedIn account							PP1
D.3.1: LinkedIn account						D	
A.3.2: Final workshop							PP1
D.3.2: Final workshop						D	
A.3.3: Tested Baltic Sea water quality monitoring workshop							PP4
D.3.3: Water quality monitoring workshop					D		
A.3.4: Resources for you							PP2
O.3.4: Communication materials						O	

Outputs and deliverables overview

Code	Title	Description	Contribution to the output	Output/ deliverable contains an investment

D 1.1	building permit	Right for implementing, preparation for installments and related works. Two buildings include the water basin, while one of them needs full upgrade. Both need oxygen supply. Third building's first floor is planned for the insect farming and receive the bio-waste as an insect feed. It also needs the solution 'from insect to fish'. The second floor utilizes the residual heat and roof exchange against glasses enables to capture the sunshine power. All buildings need electricity, lightening, heating and ventilation solutions, based on the power generated by at least 330 kW wind turbine and 50 kW solar plant.	completion of the circular farm	Yes
D 1.2	Building permit	A solution for selecting the best equipment, planning installment works and adapting the solution with the whole farm upgrade design.	New energy system	
D 1.3	Water testing design	In the form of drawing the model of the testing box for attaching to vessels, showing the components and their working principles. The solution of transmitting the data over the vessel companies connection platforms to the cloud for further processing and interpreting. Understanding the need of data usage and scope by the marine institutes of the BSR.	Tested sensor-based water quality monitoring	
O 2.1	Completion of circular farm	In section 5.6.3 described equipment is installed and through construction works connected into properly functioning circular farm for fish, insect, and greenhouse farming. Nordic bamboo forum will be established to serve potential farmers and involve building material producers for product development purposes. Next the greenhouse nursery 5 ha bamboo forest will be planned. Together with the municipality bio-waste separate sorting, collecting and delivery to the farm as insect feed is functional. Contracts with island food producers are in place to top up their residues. Side-streams of insect and fish farming are converted to fertilizers of the greenhouse and surrounding agriculture. New research areas have been marked for aquaponics products as source of food for humans, biomass for insects, the sludge from mechanical cleaning as a food ingredient for insect farming. Farm management software for insect farms is developed to connect distributed information and provide a farm performance monitoring system to ensure better control of the production and sustainable usage of resources, to facilitate the continuous insect-based waste processing and the production of insect-based fish feed. For the joint use by the Pomeranian University and Lead partner the laboratory is set up.		Yes
O 2.2	New energy system	Working system of renewable energy generation, production of oxygen for fish pools, electrolyzing hydrogen for fuel cells heat and electricity co-generation, smart control of priorities and day ahead market electricity purchases from the grid (selling electricity 'back' is not possible).		Yes
O 2.3	Tested water quality monitoring	The interpretation of the Baltic Sea water quality assessments, compiled automatically using the data collected by sensor systems attached to the vessels on various locations of the BS. Open API for non-commercial use. AI alert system for subscribers. Maersk promoting the concept. Measured parameters: Chlorophyll-a, phycocyanins, O2, PH, Humidity, Salinity, CO2, Ammonia, Photosynthetically, Nitrogen, Phosphorus.		Yes
D 3.1	LinkedIn account	Chosen social media for the dissemination of results and main findings useful for all marked target groups.	Information spreading helps contributing in the benefits of all outputs.	
D 3.2	Final workshop	Well-organized workshop at the Lead partner and site-visiting.	All outputs will be explained for their better understanding and replicability.	
D 3.3	Water quality monitoring workshop	Klaipeda University hosts one-day seminar with the focus on achievement of expected results and the validity of the developed system. Target is to agree upon further steps of improving and/or extending the solution.	Tested Baltic Sea water quality monitoring.	
O 3.4	Communication materials	Digital project poster. Economy factsheets - Key strategies to link economic development and aquaculture, How to finance circular farming investments, Applying a life-cycle approach to smart micro-grid energy investment decisions, Economic benefits of multi-functional circular economy projects. Planning and procurement factsheets - Private and public sectors as equal development partners, Making your procurements more sustainable, EU Green Public Procurement (GPP) guidelines on blue economy, How to get started – Going Green in Public Procurement, Key criteria for a green energy system. Social acceptance factsheets - Affected biodiversity, Regional development impacts, The role of the private sector in public energy and and blue economy planning. Technology factsheets - What to consider in designing a circular farm (energy) control system, Energy efficiency of hydrogen-based storage systems, Improving the reliability of off-grid systems, The importance of power quality, Supporting technologies – the key to software control, The need for water quality system verification measurement. Publications - Island-type remote energy solutions in rural development, Technology – state of the art, Assessment of environmental aspects of smart water monitoring systems in selected pilot areas of the Baltic Sea, Replication Report, Co-creating aquaculture solutions – Lessons learned report, Local expert workshops – economic aspects of partner regions, Documentation of the ECFF mid-term webinar series, Pilot Site Documentations and summaries. Materials will be promoted on 1-2 major importance EU events dedicated to similar attempts, chosen by partners at the end of wp3. As soon as first results of projects enable to produce communication materials, they will be integrated into the communication actions as described under the Management section of the project (dissemination of results via project web page, social media etc).		

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 - Conversio Design Ltd
Work package leader 2	PP 1 - Tallinn University of Technology

5.4 Work package budget

Work package budget	10%

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	Regional public authority Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education. 177 / 500 characters	Each partner at their region explains the initiative and gathers region's respective interest and challenges. 109 / 1,000 characters
2	Higher education and research institution BSR National marine institutes examining the marine biology dynamics, developing new technologies for monitoring the content of main nutrients. BSR intitutes focusing for circular energy flow systems, as well biology, zoology and botany departments of BSR research instutes focusing on novel food supplies, green and blue economy and circular economy. 353 / 500 characters	PP 4 informs about the project and collects the parameters of water to be measured and standardized. 100 / 1,000 characters
3	National public authority Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives. 155 / 500 characters	Lead partner, Polish and Lithuanian partners inform respective ministries and systemize their expectations for the input of policy compiling. 143 / 1,000 characters
4	Small and medium enterprise BSR Fisheries see the change at the catch quota reduce conditions. 70 / 500 characters	Partners investigate the interest for the circular (fish) farming in their regions. 83 / 1,000 characters
5	Interest group Partner country Energy societies get a good example of smart off-grid solution. 79 / 500 characters	Through regional authorities the grid interconnectivity capacity and hence the need/interest for off-grid solutions will be clarified. 134 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
1.1	**Technical design for the building permit**
1.2	**Energy system solution design**
1.3	**Baltic Sea water quality measurement design**

WP 1 Group of activities 1.1

5.6.1 Group of activities leader

Group of activities leader PP 2 - Conversio Design Ltd

A 1.1

5.6.2 Title of the group of activities

Technical design for the building permit

40 / 100 characters

5.6.3 Description of the group of activities

The analysis of the best circular model of the farm will be the basis of composing the farm design according to the requirements of the Construction Code of Estonia. Designing takes place in the framework of the conditions applied in the preparation phase of the project, issued by the local government of Saaremaa Island. Detail planning from 2013 authorized the installation of the windmill to support the activities of the fish farm. Estonian, Danish, and Polish partners contribute the technological, energy and space demands to PP 2, whose task is to summarize this into one complex assignment for the procured designing service provider.
According to the recent price increase in all construction and raw materials, partners innovatively look for sustainable solutions. An example of the synergy is already agreed on joint usage of the laboratory in the Green building by the Lead partner and PP 5, as feedstock analysis (basic chemical analyses) and best ingredients ratio development consist of similar activities and equipment needs.

1,047 / 3,000 characters

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

D 1.1

Title of the deliverable

building permit

15 / 100 characters

Description of the deliverable

Right for implementing, preparation for installments and related works. Two buildings include the water basin, while one of them needs full upgrade. Both need oxygen supply. Third building's first floor is planned for the insect farming and receive the bio-waste as an insect feed. It also needs the solution 'from insect to fish'. The second floor utilizes the residual heat and roof exchange against glasses enables to capture the sunshine power. All buildings need electricity, lightening, heating and ventilation solutions, based on the power generated by at least 330 kW wind turbine and 50 kW solar plant.

613 / 2,000 characters

Which output does this deliverable contribute to?

completion of the circular farm

31 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.1: Technical design for the building permit						
D.1.1: building permit						

5.6.7 This deliverable/output contains productive or infrastructure investment ☑

	Investment no.	I1.1_1	

Title
Farm development technical design.
34 / 100 characters

Description
Design solution according to the Estonian Building Code, necessary for obtaining the building permit.
102 / 500 characters

Country
Estonia

Responsible project partner(s)
PP 1 - Tallinn University of Technology
PP 2 - Conversio Design Ltd
PP 3 - Pivots Engineering Ltd
PP 7 - Aquamind

Justification
PP 1 is contributing to the initial assignment for the designing company, providing also engineering input for the technical part of the targeted design. PP 2 represents the interests to the selected designer on behalf of the site owner. Aquamind and Cogastro deliver the layout and needs of the insect farm.
309 / 500 characters

Transitional relevance
Solutions are needed for the installment, connecting smart housing functions with energy supply and planning automated (remote) control system.
144 / 500 characters

Benefits
All partners will get a solution design in principle replicable elsewhere. For the interest of the whole project this deliverable is crucial to proceed with the entire concept of the project, hence benefiting all partners and target groups.
241 / 500 characters

Location
The farm is located in Kaavi village on Sõrve peninsula of Saaremaa island.
75 / 250 characters
Lääne-Eesti

Location ownership
PP 2 - Conversio Design Ltd
27 / 250 characters

Ownership
PP 2 Conversio Design Ltd
25 / 500 characters

Maintenance
PP 2 will take care of the designed solution functionality to be kept and developed.
84 / 500 characters

Climate proofing
☑ Ensured ☐ N/A

WP 1 Group of activities 1.2

5.6.1 Group of activities leader

Group of activities leader PP 1 - Tallinn University of Technology

A 1.2

5.6.2 Title of the group of activities

Energy system solution design

29 / 100 characters

5.6.3 Description of the group of activities

Attached Figure 1 describes the overall energy system covering the electrical and heating sectors. The electrical part consists of a wind turbine (50m hub height) and solar panels to meet the average demand of 821 MWh/year. According to CFSR2 2021 data, the wind speed average at the farm is 7,2 m/s and the peak solar irradiance on June 13th is 870 W/m2. To offset the variability in the resources, green hydrogen is planned as an energy storage medium. The heating demand is on average 359 MWh/year. Two water basins are planned to serve as thermal storage as water has a high specific heat capacity.
The objective of this WP is to cost-optimally allocate size for generation, storage and demand-side flexibility. The secondary objective is the optimal operation of the electrical system to buy from the electricity market through the grid. The tertiary aim is to identify and mitigate potential cyber threats for resilient operations.
Among the key constraints is uncertainty associated with renewable resources such as wind and solar power generation. Then the challenge is to optimally size the unit sizes to maximize the capacity factor and thereby profitability. The seasonality in fish farming in terms of high consumption in winter and overcapacity in summer adds to the complexity of the problem.
The methodology to be adopted in this problem is prescriptive analytics. A combination of machine learning and optimization models to render optimal decisions. The former is utilized in prediction tasks and the latter is used in decision making. Software tools such as HOMERpro and WINDpro will be used in the process. Besides, that general-purpose programming language will be used for modelling where applicable.
Procurement of the windmill will be launched.

1,772 / 3,000 characters

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

D 1.2

Title of the deliverable

Building permit

15 / 100 characters

Description of the deliverable

A solution for selecting the best equipment, planning installment works and adapting the solution with the whole farm upgrade design.

134 / 2,000 characters

Which output does this deliverable contribute to?

New energy system

18 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.2: Energy system solution design						
D.1.2: Building permit						

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 3 - Pivots Engineering Ltd

A 1.3

5.6.2 Title of the group of activities

Baltic Sea water quality measurement design

43 / 100 characters

5.6.3 Description of the group of activities

This activity focuses on both fish farm and open seawater quality monitoring to maximize the farm productivity and minimize the environmental footprint related to extensive water nutrition (including those related to offshore fish farming).
To our understanding, Chlorophyll-a and phycocyanin's, are the most relevant parameters for the project, as they indicate harmful algal blooms that may cause fish farms and other ecosystem elements (including humans). The other parameters such as temperature, salinity, and oxygen are basic parameters that are important for the physiology of growing fishes. The rest of the parameters are perhaps more relevant for primary producers (phytoplankton and macroalgae) as they show the light climate properties in the water column. They also indicate the level of eutrophication. Although the concentration of nutrients is the main indicator of eutrophication, they cannot be derived directly from the satellite data in the case of open sea condition observation.
The complete technical design of water directed into the air and measuring parameters with sensors is needed. The test boxes' attachment to vessels, energy supply and wireless connectivity will be agreed upon with cargo and passenger operators for smooth cooperation during the implementation phase. In the project, a new generation of Ferrybox sensor system will be developed that previously has been successfully piloted on Tallink ferries providing data to the BOOS marine information system. The sensor system may use low power wide-area network (LPWAN) connectivity making it deployable on buoys.
Marine institutes are valuable partners for competent feedback on parameters. Threshold agreements overall parameters will be agreed on to set the safety interval - exceeding those will activate the automatic alert system. Method preparation for data analysis in the testing stage is planned.
In the context of fish farm operations monitoring the optimal water flow is crucial for farm operation and its energy efficiency. Besides conventional/commercial water sensors it is planned to deploy a novel low-cost flow monitoring grid system to minimize the energy consumption for farm operations and food waste. The sensor has been developed by TalTechUT within the H2020 project LAkHsMi and is patent protected (US10215601B2). As opposed to the currently available technological solutions for flow measurements, sensors are low cost and can be installed in various configurations and amounts.

2,498 / 3,000 characters

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

D 1.3

Title of the deliverable

Water testing design

20 / 100 characters

Description of the deliverable

In the form of drawing the model of the testing box for attaching to vessels, showing the components and their working principles. The solution of transmitting the data over the vessel companies connection platforms to the cloud for further processing and interpreting. Understanding the need of data usage and scope by the marine institutes of the BSR.

355 / 2,000 characters

Which output does this deliverable contribute to?

Tested sensor-based water quality monitoring

44 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: WP1 Preparing solutions						
A.1.3: Baltic Sea water quality measurement design						
D.1.3: Water testing design						

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 2 - Conversio Design Ltd
Work package leader 2	PP 1 - Tallinn University of Technology

5.4 Work package budget

Work package budget	70%

5.4.1 Number of pilots

Number of pilots	3

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	Regional public authority Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education. 177 / 500 characters	The solution for using bio/food-waste to feed the insects will be besides food industry companies agreed with local authorities, responsible for the waste management. Depending on the selection of insects (mealworm or black soldier fly larvae) during wp1, municipalities will work out the sorting and collecting system of waste and arrange it accordingly. The delivery of it to the (insect) farm need to find the mutually fit solution. 440 / 1,000 characters
2	Higher education and research institution BSR National marine institutes examining the marine biology dynamics, developing new technologies for monitoring the content of main nutrients. BSR intitutes focusing for circular energy flow systems, as well biology, zoology and botany departments of BSR research instutes focusing on novel food supplies, green and blue economy and circular economy. 353 / 500 characters	Water quality monitoring system development is regularly discussed with marine institutes, to achieve the best output possible. Among implementation of the testing, national environmental boards are contacted to place the new approach into the legal framework and take into consideration the governmental requirements. 322 / 1,000 characters
3	National public authority Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives. 155 / 500 characters	Based on the expectations and agreements achieved with ministries over the wp1, the contact regarding the progress of the project is kept. Necessary information is delivered by the project coordinator and if necessary, in the interest of the development of blue economy (aquaculture), meetings with governmental bodies of environment and energy arranged through the ministries responsible for the rural/coastal economic development. 433 / 1,000 characters
4	Small and medium enterprise BSR Fisheries see the change at the catch quota reduce conditions. 70 / 500 characters	Conventional fisheries and onshore fish-farms, who have shown up their interest during information exchange over the wp1, will be able to follow the developments at the implementation stage. However, their biggest involvement will be during the wp3. 249 / 1,000 characters
5	Interest group Partner country Energy societies get a good example of smart off-grid solution. 79 / 500 characters	Above mentioned applies for the energy societies and energy-interested communities - they are welcome to collect the project development information, but the main importance for them would be in wp3. 201 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
2.1	**Construction of the circular farm**
2.2	**Power to fish**
2.3	**Producing and testing BS water quality monitoring**

WP 2 Group of activities 2.1

5.6.1 Group of activities leader

Group of activities leader PP 2 - Conversio Design Ltd

A 2.1

5.6.2 Title of the group of activities

Construction of the circular farm

33 / 100 characters

5.6.3 Description of the group of activities

The obtained building permit enables the construction of the pilot farm. Section 2.1 covers all general investments and activities necessary for renovating the existing buildings, including all technical systems (electricity, lighting, heating, water supply and sewage). On the Green building (greenhouse), the roof is exchanged against the glass in relevant and construction parts; the most eco-efficient material, bamboo, is used if needed. The building will be insulated since good heat-saving in the Nordic climate is needed. Additional costs are ventilation/heating system, fish waste separator (wet to dry), grow light, and electrical and mechanical works. The second fish-farm building needs to be brought on the same capacity level as the existing one by renovating the following: the airlift system, new feeding and lighting, painting of raceways, new air-piping, cone lift systems, biofilter automatization, sensor systems, water quality system, heating, and overall control system. The whole complex needs to be connected to an automatic rescue (fire resistance) and piping system.
Green building will get the investment for the insect farming, necessary storage rooms for insect feed (mainly food waste, at the first stage), and the processing capacity of turning the output into the fish feed. The residual heat from the first floor supports the heat supply for the above second-floor greenhouse, serving as a nursery for many plants and seedlings on the BSR market (only indoor growable in a Nordic climate). However, bamboo seedlings planned to be planted later on the site prepared a special field to launch the first "Baltic bamboo forest" as research on the area forecasts the resilience of three species in the colder climate conditions. The premises have described sensor systems deployed to provide input for AI-driven processes operations control.
Evaluating the results and lessons learned will be based on the success of reaching all set technical parameters of the wp1 designed solutions. It is critical to ensure the demands of the humidity, temperature, lighting, air and water quality, embedding the fish-farming out filtered biomass as fertilizer or compost in the Greenhouse.
Target groups will be kept informed of the developments as described at the beginning of wp2.
After completion of all investments and activities, the testing period will give the best real flow of outputs. Based on the preliminary results, adjustments in the piloted solutions will be made to be sure the same is ready for transfer in WP3 for introduction to other PP regions and BSR countries.
Planned activities lead to the development of output by achieving the targeted functionality of the circular sustainable farm. The biomass smart usage will be implemented on the site and as the island-scale application for widening.
The activities will be carried out by partners from Denmark, Poland, Lithuania and Estonia according to the relevant competencies described previously.

2,999 / 3,000 characters

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

O 2.1

Title of the output

Completion of circular farm

27 / 100 characters

Description of the output

In section 5.6.3 described equipment is installed and through construction works connected into properly functioning circular farm for fish, insect, and greenhouse farming. Nordic bamboo forum will be established to serve potential farmers and involve building material producers for product development purposes. Next the greenhouse nursery 5 ha bamboo forest will be planned.
Together with the municipality bio-waste separate sorting, collecting and delivery to the farm as insect feed is functional. Contracts with island food producers are in place to top up their residues. Side-streams of insect and fish farming are converted to fertilizers of the greenhouse and surrounding agriculture. New research areas have been marked for aquaponics products as source of food for humans, biomass for insects, the sludge from mechanical cleaning as a food ingredient for insect farming.
Farm management software for insect farms is developed to connect distributed information and provide a farm performance monitoring system to ensure better control of the production and sustainable usage of resources, to facilitate the continuous insect-based waste processing and the production of insect-based fish feed.
For the joint use by the Pomeranian University and Lead partner the laboratory is set up.

1,300 / 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 Regional public authority Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education.	Regions can arrange the collection of bio-waste for maximizing its value as a local resource, instead of transporting it out with some extra costs financially and environmentally. Municipalities can lead the way towards similar solutions. 240 / 1,000 characters
Target group 2 Higher education and research institution BSR National marine institutes examining the marine biology dynamics, developing new technologies for monitoring the content of main nutrients. BSR intitutes focusing for circular energy flow systems, as well biology, zoology and botany departments of BSR research instutes focusing on novel food supplies, green and blue economy and circular economy.	Marine institutes of the BSR can use the water data for their monitoring and research purposes. 95 / 1,000 characters
Target group 3 National public authority Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives.	The output shows the barriers for wider reach of solutions alike, being the source for policy making and incentives for the blue economy. 137 / 1,000 characters
Target group 4 Small and medium enterprise BSR Fisheries see the change at the catch quota reduce conditions.	SMEs and start-ups of fisheries, farmers, horticulture get the tested solution of combining various local resources to reduce the operational costs and increase volume/quality for the export sales. Region's SMEs have the potential for sharing renewable energy sources and/or perform joint undertakings for export or further processing of the primary products. Through innovative solution the oxygen generated by electrolyzer shows the possibility of producing it on your own, relieving it of need to purchase. 510 / 1,000 characters
Target group 5 Interest group Partner country Energy societies get a good example of smart off-grid solution.	Energy societies get the lesson for utilizing the renewable energy, particularly in the storage and reuse of the excess energy in the form of hydrogen, so far just theoretically explored opportunity. 200 / 1,000 characters

Durability of the output

Maximizing the competitivity of the whole farm, with regional authorities and partner food-industries best availability of the bio-waste regular intake helps sourcing for the insect farming. German partner knowledge helps adopting the insect growing technology with the raw material available and according to needs of fish feed. The latter is taken care by the West-Pomeranian University along with the research-based fish feeding system and requirements put in place. Long-time engineering experience of Pivot's Engineering controls achieving targeted technical parameters, to gain from installing the peak power of 380 kW wind and solar. In summary, the feasibility and duration of the project comes from lowered energy costs, relieved need of purchasing oxygen and all fish-feed, improved growth rate of the fish and increased sales of fish and greenhouse products.

872 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.1: Construction of the circular farm						
O.2.1: Completion of circular farm						

5.6.7 This deliverable/output contains productive or infrastructure investment ☑

	Investment no.	I2.1_1

Title
Insect farm
12 / 100 characters

Description
Equipment for using bio-waste and other feed for growing insects to turn them into the protein-rich fish feed. Reactors need permanent working environment around 25 C. The area planned for the insect farm is 500 m2. Insects, like black soldier fly larvae are among the most efficient organisms when it comes to convert food by-products into highly digestible feed. Compared with a Kg of beef, farming a Kg of mealworm requires: 5x less food, 14x less water, 5x less land. Software developed.
491 / 500 characters

Country
Estonia

Responsible project partner(s)
PP 7 - Aquamind
PP 9 - Cogastro

Justification
Our mission is to make the complex insect farming a mainstream feed production, installed closer to its demand. Insect based proteins and oils can successfully replace current unsustainable feed sources (dry wheat-based Fish feed) without entering in competition with food productions. Black Soldier Fly Larvae can feed on residuals from the food production industry and convert it into healthy and sustainable ingredients for feed and food. Cogastro will develop and adjust the software.
489 / 500 characters

Transitional relevance
By decentralizing the farming of insects between a network of partner farmers, high quality proteins can be produced and transformed closer to food by-products sources and closer to clients. This proximity allows to increase the sustainable aspect of products as well as making the supply of farmed insects more flexible. Our technology reduces the complexity of insect farming while including farmers in this new industry.
423 / 500 characters

Benefits
The insect meal is a highly digestible, high quality protein rich powder (>60%) suitable to replace the current sources of animal protein. The main by-product is actually a valuable natural fertilizer rich in NPK (Nitrogen, Phosphorous and Potassium). Currently, NPK fertilizers are sourced from chemical and mining industries. Our autonomous farming module is monitored by an individual and will be installed in existing building.
432 / 500 characters

Location
Kaavi village, Saaremaa island, Estonia
39 / 250 characters
Lääne-Eesti

Location ownership
Conversio Design
16 / 250 characters

Ownership
Conversio Design
16 / 500 characters

Maintenance
Aquamind in cooperation with Pivots Engineering, software by Cogastro.
70 / 500 characters

Climate proofing
☑ Ensured ☐ N/A

	Investment no.	I2.1_2

Title

Feedstock unit

14 / 100 characters

Description

Insects need to be processed into the final fish feed. The equipment and room for that will be installed. It will be the 'chemical' heart of the farm with the capacity of mixing different ingredients. The only viable solution, taking into account the prices of industrial feed and the price of fish, is the production of extruded feed based on insect meal. For that on site small extruder is required and a storage of the feed. Feed preparation needs a basic laboratory.

472 / 500 characters

Country

Estonia

Responsible project partner(s)

PP 5 - West Pomeranian University of Technology

Justification

PP 5 is holding the rich knowledge and skills on the field of fish feeding biology, chemistry and technology.

110 / 500 characters

Transitional relevance

Conceptual activities cover the selection of aquaponic technology for a pilot farm. In WP2 3 experiments will be conducted with feeds including the grown insects. Cooperation between the Estonian farm and insect farm developer is essential for reaching the best outcome. Feedstock unit connects in the supply chain the insect farm with the fish farm and supports circularity by using fish-farms out filtered biomass in its treatment.

435 / 500 characters

Benefits

Turning the bio-waste locally sourced protein-rich insects into the valuable fish feed, increasing the growth speed and fish meal quality serves in reducing the ecological footprint of the food sector. It not only improves the economy in the BSR, but limits the dependency of imported proteins on the European scale.

320 / 500 characters

Location

Kaavi village, Sõrve peninsula, island Saaremaa, Estonia

56 / 250 characters

Lääne-Eesti

Location ownership

Conversio Design

16 / 250 characters

Ownership

PP 2

4 / 500 characters

Maintenance

Pivots Engineering in cooperation with PP 5.

44 / 500 characters

Climate proofing

☑ Ensured ☐ N/A

	Investment no.	I2.1_3	

Title

Greenhouse

10 / 100 characters

Description

The greenhouse (500 m2), located above the insect farm, will be operated by the Lead Partner. The building's old roof will be replaced in relevant parts with solar transparent glass. The inner sections will be built to separate the crops and seedlings, which are selected during the wp1. The main target is to test the growth of exotic species, using fish and insect farm side-streams as fertilizers (appropriate mixture is worked out). In addition, algae curtains are also tested.

482 / 500 characters

Country

Estonia

Responsible project partner(s)

PP 1 - Tallinn University of Technology
PP 2 - Conversio Design Ltd

Justification

PP 1 TalTech Kuressaare College on Saaremaa is interested in cultivating and experimenting with the crops, plants and other seedlings demanded in the BSR markets. Also, the greenhouse will serve as a nursery for plants and operate as a testing unit for the growth of exotic species (e.g. bamboo, ginger) locally with surplus energy, instead of importing them because of being in the experimental phase for adopting the Nordic climate.

434 / 500 characters

Transitional relevance

The greenhouse will act as an incubator for the BSR, playing a crucial role in determining new possibilities of species enriching local food markets with articles only imported so far. In addition, it is important to research the technical suitability of algal curtains for offshore fish growing as a remedial step for pollution derived from fish farms.

354 / 500 characters

Benefits

Smaller dependency on imported ingredients, richer local food supply attracting tourists, circular usage of streams - fertilisers produced on-site, smart utilisation of excess renewable energy, totally emission-free operation, potentially new biotechnological solutions for offshore fish farms, also knowledge building for the college strategic goal of becoming the centre of excellence in the blue economy.

407 / 500 characters

Location

Kaavi village, Sõrve peninsula, island Saaremaa, Estonia

56 / 250 characters

Lääne-Eesti

Location ownership

Conversio Design

16 / 250 characters

Ownership

PP 2

4 / 500 characters

Maintenance

PP 1 and 2

10 / 500 characters

Climate proofing

☑ Ensured ☐ N/A

	Investment no.	I2.1_4

Title	Green building techno systems 29 / 100 characters
Description	Insect farm, feeding unit and greenhouse building electricity supply, lightening, heating, ventilation, water and sewage works and installations. Cabling and piping. 166 / 500 characters
Country	Estonia
Responsible project partner(s)	PP 3 - Pivots Engineering Ltd
Justification	Experienced engineering and utility company. 44 / 500 characters
Transitional relevance	Extension of the smart energy system can be replicated elsewhere in the BSR. 76 / 500 characters
Benefits	Region's circular economy benefits from having well prepared and automatically controlled facility. 99 / 500 characters
Location	Kaavi village, Sõrve peninsula, island Saaremaa, Estonia 56 / 250 characters Lääne-Eesti
Location ownership	Conversio Design 16 / 250 characters
Ownership	PP 2 4 / 500 characters
Maintenance	Pivots Engineering 18 / 500 characters
Climate proofing	☑ Ensured ☐ N/A

	Investment no.	I2.1_5	

Title

Second fish building

20 / 100 characters

Description

Previously by another entrepreneur operated fish-farm building was lately returned under the control of the property's owner and needs to be put on the same level of the rest of the farm, namely existing fish-farm building, to be able to capture all additional renewable energy generation and scale up the production. The works and equipment for the second fish-farm building are listed in the section 5.6.3.

411 / 500 characters

Country

Estonia

Responsible project partner(s)

PP 3 - Pivots Engineering Ltd

Justification

PP 3 has already carried out the renovation and works for the first building, having all capacities and experiences for the challenge ahead.

140 / 500 characters

Transitional relevance

The way traditional onshore fresh-water fish-farms are converted into state of the art automatically controlled units is a valuable lesson for the whole BSR, especially its eastern and southern coasts.

202 / 500 characters

Benefits

The larger production scale corresponds better to the situations at bigger countries and regions. With high yields of energy generation farm needs more consumption; bio-waste based insect feed cultivation can turn into the fish feed supply first on the second building as the preliminary test site for a new type of feed.

323 / 500 characters

Location

Kaavi village, Sõrve peninsula, island Saaremaa, Estonia

56 / 250 characters

Lääne-Eesti

Location ownership

Conversio Design

16 / 250 characters

Ownership

PP 2

4 / 500 characters

Maintenance

Pivots Engineering

18 / 500 characters

Climate proofing

☑ Ensured ☐ N/A

	Investment no.	I2.1_6

Title
General repair and IT
21 / 100 characters

Description
Fire resistance requirements should be met, energy generation output led to three consuming facilities. Control system of the energy consumption and technical systems functions need software and remote control solutions. Data storage and monitoring are arranged in Cloud.
272 / 500 characters

Country
Estonia

Responsible project partner(s)
PP 1 - Tallinn University of Technology
PP 2 - Conversio Design Ltd

Justification
IT-related competences controlling mechatronics functionality is the capacity of PP 1. Technical solutions pulling the buildings together will be supervised by the lead partner.
177 / 500 characters

Transitional relevance
IoT in aquaculture carries a value of lesson and replicability.
63 / 500 characters

Benefits
Low labor demand, eliminating human error, incorporating the IT applications to control and manage the whole process from one, if needed, remote place.
152 / 500 characters

Location
Kaavi village, Sõrve peninsula, island Saaremaa, Estonia
56 / 250 characters
Lääne-Eesti

Location ownership
Conversio Design
16 / 250 characters

Ownership
PP 2
4 / 500 characters

Maintenance
Pivots Engineering
18 / 500 characters

Climate proofing
☑ Ensured ☐ N/A

WP 2 Group of activities 2.2

5.6.1 Group of activities leader

Group of activities leader PP 1 - Tallinn University of Technology

A 2.2

5.6.2 Title of the group of activities

Power to fish
13 / 100 characters

5.6.3 Description of the group of activities

For power generation, a windmill and 50 kW photovoltaic solar plant against the fish farm wall will be installed. The constant oxygen demand of 100 l/min requires the installation of two electrolyzes, one for each fish building. In case of an emergency (electricity system brake or another alert), the second electrolyze acts as the backup assurance. Excess electricity is converted to hydrogen and stored in tanks. Hydrogen helps re-generating the electricity during windless and sunless periods, CPH-type fuel cells also generate the heat for the whole complex - two fish pools, an insect farm, and a greenhouse. We pre-analyzed the energy demand for the planned circular farm (after the expansion has taken place) and found the annual electricity load of 821 MWh and heat load of 359 MWh. The project's LinkedIn account will be created and actively used, securing the attention of related industries, and sharing information about the developments encouraging SMEs to take up similar projects around the BSR.
1,011 / 3,000 characters

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

O 2.2

Title of the output

New energy system

17 / 100 characters

Description of the output

Working system of renewable energy generation, production of oxygen for fish pools, electrolyzing hydrogen for fuel cells heat and electricity co-generation, smart control of priorities and day ahead market electricity purchases from the grid (selling electricity 'back' is not possible).

288 / 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 Regional public authority Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education.	Adjusting alike solutions for public or residential use in remote areas with limited interconnectivity possibilities. 117 / 1,000 characters
Target group 2 National public authority Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives.	Policy makers adjust incentives based on the project outcomes to empower the blue economy developments. 103 / 1,000 characters
Target group 3 Small and medium enterprise BSR Fisheries see the change at the catch quota reduce conditions.	SMEs apply the same type of solutions to lower the energy costs and cut off imported goods. 91 / 1,000 characters
Target group 4 Interest group Partner country Energy societies get a good example of smart off-grid solution.	Energy societies get in addition to more known renewable energy generation the good lesson for energy storage and hydrogen-based technologies. 142 / 1,000 characters

Durability of the output

The energy system is decisive for the whole farm/project. The feasibility of the project is dependent on the successful realisation of farming products and thereby profitability. As today's aquaculture sector's main concern has been uneconomically high energy costs, the proposed energy system serves the goal to mitigate this. Of course, making investments in new and innovative technology is essential, therefore the grant of Interreg is crucially important. Energy-related equipment shows the tendency of lowering component costs, after its lifetime replacement costs shouldn't be the problem. For the maintenance, the plan is to procure bigger assets backed with service packages and guarantees. The involvement of Taltech Department of Electrical Power Engineering and Mechatronics during the whole project helps in monitoring the system behaviour, upgrading if necessary, and assuring that the system operability stays at its designed condition.

952 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.2: Power to fish						
O.2.2: New energy system						

5.6.7 This deliverable/output contains productive or infrastructure investment ☑

	Investment no.	I2.2_1

Title
Renewable power generation
26 / 100 characters

Description
Detail plan of the site gives right to install 50m hub height wind mill. Given the whole farm energy needs, the turbine should generate maximum possible energy yield. The wind turbine will be chosen through market survey and the procurement. After it the instalment will be executed.
Already installed pv-panels need to be relocated directly south to maximize the power generation, using the design deliverable of wp1 given solution.
436 / 500 characters

Country
Estonia

Responsible project partner(s)
PP 1 - Tallinn University of Technology
PP 2 - Conversio Design Ltd

Justification
The power generation becomes physically a part of the property, thus the owner would be a logical developer.
108 / 500 characters

Transitional relevance
The investment marks the opportunity of building the circular farm behind the increased energy supply.
102 / 500 characters

Benefits
All partners will get the opportunity of learning how a small enterprise can be empowered. Target groups involved benefit from understanding the opportunities and barriers.
173 / 500 characters

Location
Kaavi village, Sõrve peninsula, island Saaremaa, Estonia
56 / 250 characters
Lääne-Eesti

Location ownership
Conversio Design
16 / 250 characters

Ownership
PP 2
4 / 500 characters

Maintenance
In regard with the wind mill the maintenance is the subject to agree upon the purchase. In Baltics, the best capacity is presented by Empower4Wind.
149 / 500 characters

Climate proofing
☑ Ensured ☐ N/A

	Investment no.	I2.2_2

Title

Hydrogen related part

21 / 100 characters

Description

Procurement and installing of two electrolyzes, three fuel cells, oxygen and hydrogen tanks, and their connections is carried out according to the respective design. Storage capacity gives the project extra value as excess energy is wisely used and combined with the need of oxygen by fish, plus heat generation for the whole farm.

331 / 500 characters

Country

Estonia

Responsible project partner(s)

PP 6 - University of Tartu

Justification

Strongly citied knowhow and research between relations of chemistry and energy is held by Department of Chemistry at University of Tartu. Prof. Lust has created a team of talents showing the way towards hydrogen applications. His PhD graduates are the founders of Elcogen (fuel cells) and Skeleton (ultracapacitors).

317 / 500 characters

Transitional relevance

The energy storage through hydrogen enables to bring on circular models of using biomass between different bio-units. Th application makes the energy supply totally carbon free, eliminating the use of fossil fuels.

216 / 500 characters

Benefits

The integration of oxygen and hydrogen generation at the farm shows the way of strengthening the aquaculture business models, bringing smart energy solutions into remote limited grid interconnectivity locations, encouraging coastal communities and energy societies to look for advanced energy solutions for local business development needs.

342 / 500 characters

Location

Kaavi village, Sõrve peninsula, island Saaremaa, Estonia

56 / 250 characters

Lääne-Eesti

Location ownership

Conversio Design

16 / 250 characters

Ownership

PP 2

4 / 500 characters

Maintenance

Maintenance is the subject of procurement conditions, giving the bidder the responsibility of providing the solutions and repair support. Easier connection and operational challenges can be handled by Pivots Engineering (PP 3).

227 / 500 characters

Climate proofing

☑ Ensured ☐ N/A

	Investment no.	I2.2_3

Title

Energy system completeness

26 / 100 characters

Description

Setting controllers and automatic management applications, mechatronics works serve the interest of energy systems integrity. Representing the interest of achieving the best ratio between technical optimization and costs net present value, the whole energy system installation supervision takes place. The instalment takes place hand in hand with the preparation of buildings and their technical systems (placing electrical cables, lighting and heat supply), described in section 2.1.

485 / 500 characters

Country

Estonia

Responsible project partner(s)

PP 1 - Tallinn University of Technology

Justification

Best academic and practical knowledge of power engineering and mechatronics.

76 / 500 characters

Transitional relevance

Smart energy consumption can be integrated in the control of the whole farm's operations.

89 / 500 characters

Benefits

Energy system is the key enabler for the sustainable circular farming, benefiting all partners and described target groups.

123 / 500 characters

Location

Kaavi village, Sõrve peninsula, island Saaremaa, Estonia

56 / 250 characters

Lääne-Eesti

Location ownership

Conversio Design

16 / 250 characters

Ownership

PP 2

4 / 500 characters

Maintenance

After the project the energy system maintenance and repair is carried out by Pivots Engineering.

96 / 500 characters

Climate proofing

☑ Ensured ☐ N/A

WP 2 Group of activities 2.3

5.6.1 Group of activities leader

Group of activities leader PP 3 - Pivots Engineering Ltd

A 2.3

5.6.2 Title of the group of activities

Producing and testing BS water quality monitoring

49 / 100 characters

5.6.3 Description of the group of activities

For a dynamic Baltic Sea water quality measurement solution, a respective sensor package will be developed. Sensors will be connected to a vessel attachable box-style prototype, to conduct the live installation. In collaboration with the vessel operators, the local IT framework will be developed. The biggest partner organization for attaching sensor boxes is Danish cargo operator Maersk. Good coverage over the Baltic Sea has DFDS with regular ferries from Karlshamn and Kiel to Klaipeda and Kappelskär till Paldiski. Besides, local ferry lines will be asked to join the partnership in Lithuania and Estonia. PP 1 tests the pilot prototype on their robot-craft.
The vessel's IT framework will also be used to transfer the data to a cloud-based storage system, most likely Copernicus Marine Service data store will be used. The database is used by the Environmental remote sensing and water quality research group to examine the deviations in water parameters and other changes important to aquaculture companies, environmental boards and marine institutes. The control set of data is obtained from satellites, enabling analysis of the causes of differences. If necessary, the performance of sensors catching the water samples in different places in the Baltic Sea can be changed according to the outcome of the data analysis. Alerting test results will be examined at sea to validate the created system's credibility. In the end, a trustworthy methodology for the permanent BS monitoring, automatic alert system and sharing of the application between the BSR countries will be implemented.
Chlorophyll-a, phycocyanin's, phytoplankton, and macroalgae as relevant for primary producers are measured, the light climate properties in the water and the level of eutrophication.

1,782 / 3,000 characters

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

O 2.3

Title of the output

Tested water quality monitoring

32 / 100 characters

Description of the output

The interpretation of the Baltic Sea water quality assessments, compiled automatically using the data collected by sensor systems attached to the vessels on various locations of the BS. Open API for non-commercial use. AI alert system for subscribers. Maersk promoting the concept. Measured parameters: Chlorophyll-a, phycocyanins, O2, PH, Humidity, Salinity, CO2, Ammonia, Photosynthetically, Nitrogen, Phosphorus.

419 / 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 Regional public authority Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education.	Coastal authorities will get online overview of the water status in the sea. In touristic regions the warning system can be deployed for swimmers and other marine-sport enthusiasts. Offshore aquaculture plans and developments can be supported by regional authorities providing accurate updated data about the content and suitability of the chosen sea area. 357 / 1,000 characters
Target group 2 Higher education and research institution BSR National marine institutes examining the marine biology dynamics, developing new technologies for monitoring the content of main nutrients. BSR intitutes focusing for circular energy flow systems, as well biology, zoology and botany departments of BSR research instutes focusing on novel food supplies, green and blue economy and circular economy.	Marine institutes will get a fundamentally advanced tool for being updated about the changes in the BS. This is crucially important for the monitoring process of the marine life, to regulate by quotas for instance fish catchment limits. In addition, educational institutions running study programs and research can use the application in their activities and research projects. 378 / 1,000 characters
Target group 3 National public authority Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives.	All Baltic Sea governments have contributed to their marine spatial plans with the need to localize different activities in best suitable marine areas. Online water quality system in place would have helped to map the sea area and set constraints accordingly. In the future, national bodies such as environmental boards, always benefit from the updated dynamic information about the impact causing particular deployment. For instance, after a new offshore fish-farm will be commenced, its environmental impact can be monitored permanently without special human interference. 577 / 1,000 characters
Target group 4 Small and medium enterprise BSR Fisheries see the change at the catch quota reduce conditions.	Considering fisheries, they all need fresh info about the water quality, influencing their catch and scheduling their activities. 129 / 1,000 characters
Target group 5 Interest group Partner country Energy societies get a good example of smart off-grid solution.	Green movements in the interest of protecting the sea quality, can get objective technology-based water quality updates ensuring nobody is bluffing or hiding the information regarding possible negative impacts or pollutions. 224 / 1,000 characters

Durability of the output

There are no limits for the durability of the solution. in case the project performs remarkable results, governments can widen the areas monitored by including more sea transport into the system. Pivot Engineering has the continuity capacity, supported by marine institutes in analyzing the collected data.

309 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: WP2 Piloting and evaluating solutions						
A.2.3: Producing and testing BS water quality monitoring						
O.2.3: Tested water quality monitoring						

5.6.7 This deliverable/output contains productive or infrastructure investment ✔

	Investment no.	I2.3_1	

Title
Sensor box
11 / 100 characters

Description
Developed sensor equipped vessel attachable boxes, connected to the vessel local IT framework for transferring the data to Cloud.
131 / 500 characters

Country
Lithuania

Responsible project partner(s)
PP 3 - Pivots Engineering Ltd
PP 4 - Klaipeda University

Justification
Pivots Engineering is the main technology developer and Klaipeda University knows the status of the Baltic Sea water, crucial parameters and data intepreting methodology.
171 / 500 characters

Transitional relevance
For the data analysis, the challenge is to collect it from different points of the sea continuously. This method is transferable to other seas in EU.
149 / 500 characters

Benefits
The dynamic online water quality monitoring system brings helpful information to environmental boards, rescue, marine institutes, offshore wind and fish farm operators. Particularly important could be the output of the pilot for HELCOM network, protecting the sensitive water environment of the BS.
300 / 500 characters

Location
First on main ferry lines of DFDS and other carriers, also on Maersk vessels.
77 / 250 characters
Klaipėdos apskritis

Location ownership
It will be tested and used on public open waters.
49 / 250 characters

Ownership
The development remains the assets of Pivots Engineering. At the end of the project the results will be presented to all BSR for the implementation of the solution on all BS scale.
181 / 500 characters

Maintenance
Pivots Engineering as the competent developer holds the obligation of later maintenance.
89 / 500 characters

Climate proofing
☑ Ensured ☐ N/A

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 1 - Tallinn University of Technology

Work package leader 2 Please select

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	Regional public authority Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education. 177 / 500 characters	Each partner keeps their regional and local authorities aware of the project and its development. Particularly in Poland, Lithuania and Estonia feedback is given after each project period (6 months) - relevant input and/or recommendations given will be shared by the project partners. After wp2 is completed, the results will be introduced on a special workshop at the site of piloting farm on Estonian island Saaremaa. 419 / 1,000 characters
2	Higher education and research institution BSR National marine institutes examining the marine biology dynamics, developing new technologies for monitoring the content of main nutrients. BSR intitutes focusing for circular energy flow systems, as well biology, zoology and botany departments of BSR research instutes focusing on novel food supplies, green and blue economy and circular economy. 353 / 500 characters	4 universities involved take care of the valuable findings dissemination inside their institutions. Klaipeda University has engaged other BSR marine institutes in the solution of testing the sea water quality. After the model has reached necessary reliability, the results will be introduced on a special workshop in Klaipeda, with invitations to the BSR related research and higher education institutions. 406 / 1,000 characters
3	National public authority Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives. 155 / 500 characters	A report of findings during the project in relation with the policies influencing the developments of aquaculture, innovative farming, collecting and reusing of bio-waste, nursing new plants in greenhouse, applying off-grid energy systems, will be presented to all partner governments. They are invited to take part of the final workshop. 340 / 1,000 characters
4	Small and medium enterprise BSR Fisheries see the change at the catch quota reduce conditions. 70 / 500 characters	Partners is Poland, Lithuania and Estonia arrange a special results dissemination day in their own language and region, to engage maximum number possible small companies interested mainly in energetic farming, but with no limits to other sectors. Project partners will prepare these discussions in cooperation with regional/local authorities. In case of wider interest, lead partner will take part for introducing all achieved outputs. 438 / 1,000 characters
5	Interest group Partner country Energy societies get a good example of smart off-grid solution. 79 / 500 characters	Energy interest groups in partner countries will get on overview of the energy system structure, modelling, and first performance figures. They are all invited to the final workshop to demonstrate at site the balance found in renewable power generation, energy storage and smart maximized consumption on site. 313 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
3.1	LinkedIn account
3.2	Final workshop
3.3	Tested Baltic Sea water quality monitoring workshop
3.4	Resources for you

WP 3 Group of activities 3.1

5.6.1 Group of activities leader

Group of activities leader PP 1 - Tallinn University of Technology

A 3.1

5.6.2 Title of the group of activities

LinkedIn account

17 / 100 characters

5.6.3 Description of the group of activities

Lead partner creates and coordinates publicly the development, achievements, results and success stories of the project on a specially designed and obtained LinkedIn account Energetic circular fish farm.

204 / 3,000 characters

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

✔

D 3.1

Title of the deliverable

LinkedIn account

16 / 100 characters

Description of the deliverable

Chosen social media for the dissemination of results and main findings useful for all marked target groups.

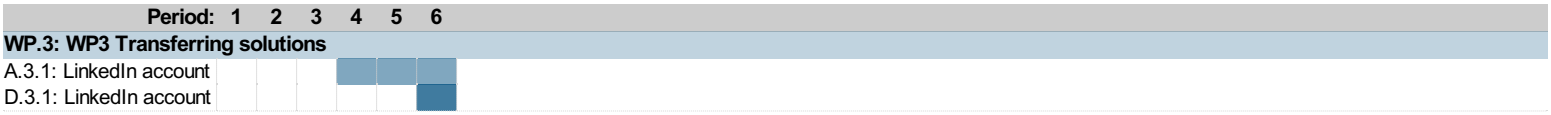
108 / 2,000 characters

Which output does this deliverable contribute to?

Information spreading helps contributing in the benefits of all outputs.

72 / 100 characters

5.6.6 Timeline



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 1 - Tallinn University of Technology

A 3.2

5.6.2 Title of the group of activities

Final workshop

14 / 100 characters

5.6.3 Description of the group of activities

In autumn 2025 a two-day open workshop is planned, which begins with visiting the site for demonstrating results and operability in detail. Following in the premises of TalTech Kuressaare College of the Lead partner on Saaremaa island the three development directions will be explained, analysed, and evaluated in terms of expected and achieved results. All partners present their contributions according to planned roles. The goal of the workshop is to draw further development opportunities and share recommendations with stakeholders and target groups.

558 / 3,000 characters

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

D 3.2

Title of the deliverable

Final workshop

14 / 100 characters

Description of the deliverable

Well-organized workshop at the Lead partner and site-visiting.

62 / 2,000 characters

Which output does this deliverable contribute to?

All outputs will be explained for their better understanding and replicability.

79 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.2: Final workshop						
D.3.2: Final workshop						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 3 Group of activities 3.3

5.6.1 Group of activities leader

Group of activities leader PP 4 - Klaipeda University

A 3.3

5.6.2 Title of the group of activities

Tested Baltic Sea water quality monitoring workshop

51 / 100 characters

5.6.3 Description of the group of activities

Dissemination of the Baltic Sea water quality monitoring system development results. Day in spring 2025 starts with the demonstration of the sensor box in operation at the port of Klaipeda. All related authorities and agencies from all BSR will be invited to discuss the possibility of legal initiatives for applying the method as an official tool for regulations. HELCOM is an intergovernmental organisation bridging policy and science on matters related to the environment of the Baltic Sea will be engaged in the preparations of the workshop, to ensure its constructive arrangement in the framework of official activities.

626 / 3,000 characters

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

D 3.3

Title of the deliverable

Water quality monitoring workshop

33 / 100 characters

Description of the deliverable

Klaipeda University hosts one-day seminar with the focus on achievement of expected results and the validity of the developed system. Target is to agree upon further steps of improving and/or extending the solution.

218 / 2,000 characters

Which output does this deliverable contribute to?

Tested Baltic Sea water quality monitoring.

43 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.3: Tested Baltic Sea water quality monitoring workshop						
D.3.3: Water quality monitoring workshop						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 3 Group of activities 3.4

5.6.1 Group of activities leader

Group of activities leader PP 2 - Conversio Design Ltd

A 3.4

5.6.2 Title of the group of activities

Resources for you

17 / 100 characters

5.6.3 Description of the group of activities

Preparing the ECFF resources on energetic circular farming.
To learn more about the ECFF project, summary of our project will be compiled in the communication materials. The ECFF factsheets summarise the key economic, social acceptance and technological aspects of sustainable and smart energetic, circularity solutions, and water quality monitoring outcomes in a concise way. The ECFF publications and reports provide more in-depth background information. The economic assessment tool helps interested with an indicative assessment of economic and environmental impacts of investments into the renewable energy generation and storage.

636 / 3,000 characters

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

O 3.4

Title of the output

Communication materials

23 / 100 characters

Description of the output

Digital project poster. Economy factsheets - Key strategies to link economic development and aquaculture, How to finance circular farming investments, Applying a life-cycle approach to smart micro-grid energy investment decisions, Economic benefits of multi-functional circular economy projects. Planning and procurement factsheets - Private and public sectors as equal development partners, Making your procurements more sustainable, EU Green Public Procurement (GPP) guidelines on blue economy, How to get started – Going Green in Public Procurement, Key criteria for a green energy system. Social acceptance factsheets - Affected biodiversity, Regional development impacts, The role of the private sector in public energy and and blue economy planning. Technology factsheets - What to consider in designing a circular farm (energy) control system, Energy efficiency of hydrogen-based storage systems, Improving the reliability of off-grid systems, The importance of power quality, Supporting technologies – the key to software control, The need for water quality system verification measurement.
Publications - Island-type remote energy solutions in rural development, Technology – state of the art, Assessment of environmental aspects of smart water monitoring systems in selected pilot areas of the Baltic Sea, Replication Report, Co-creating aquaculture solutions – Lessons learned report, Local expert workshops – economic aspects of partner regions, Documentation of the ECFF mid-term webinar series,
Pilot Site Documentations and summaries.
Materials will be promoted on 1-2 major importance EU events dedicated to similar attempts, chosen by partners at the end of wp3. As soon as first results of projects enable to produce communication materials, they will be integrated into the communication actions as described under the Management section of the project (dissemination of results via project web page, social media etc).

1,941 / 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 Regional public authority Coastal area economic sustainable development, creating jobs and distributed renewable energy supply, using local bio-waste as resource in all coastal regions, public education.	Planning and procurement, Social Acceptance factsheets. Spreading the results of projects on their web pages, invite to the organized events as an excellent example of green energy project. 190 / 1,000 characters

Target groups	How will this target group apply the output in its daily work?
Target group 2 Higher education and research institution BSR National marine institutes examining the marine biology dynamics, developing new technologies for monitoring the content of main nutrients. BSR intitutes focusing for circular energy flow systems, as well biology, zoology and botany departments of BSR research instutes focusing on novel food supplies, green and blue economy and circular economy.	Technology factseets, publications. 35 / 1,000 characters
Target group 3 National public authority Aquaculture potential is not used and responsible ministries in Poland and the Baltic states get proof for compiling respective policies and incentives.	Economy and Social acceptance factsheets, publications 54 / 1,000 characters
Target group 4 Small and medium enterprise BSR Fisheries see the change at the catch quota reduce conditions.	How to get started, Economy and technology factsheets 53 / 1,000 characters
Target group 5 Interest group Partner country Energy societies get a good example of smart off-grid solution.	Technology factsheets and publications, planning and procurement. 65 / 1,000 characters

Durability of the output

Project partners can easlly adjust the materials, while the technology advances or regulation changes. The durability of the output is partly secured by the public sector, engaging the results of general interest into the procedures and requirements of the similar following initiatives.

288 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: WP3 Transferring solutions						
A.3.4: Resources for you					■	■
O.3.4: Communication materials						■

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	3	N/A	N/A	**RCR 104 - Solutions taken up or up-scaled by organisations**	4	Farms can be expanded and/or extended. Fish farms can add circularity elements, or the focus can be on upscaling. Project partners with regional authorities address the opportunities to the companies with the biggest potential to follow the project approach, especially strengthening the business models with low-cost renewable energy and storage supply. Estonian partners will also target Latvian coastal regions and the Blue Platform in the final workshop to make sure the attempt of building a transnational network of blue economy companies is within the project. Energy system uptake is not dependent on the sector. With the cooperation of regional authorities and business promotion organisations, the communities and societies with the need of improving energy supply, lowering energy costs or just investing in renewable (climate neutrality) projects will be targeted and invited to examine the project as a case study. A combination of the first two outputs would be energy societies investing in blue economy farming projects. Upscaling of the Baltic Sea water quality monitoring system depends on the success of the pilot. With the support of the network of BSR marine institutes, the results will be presented to HELCOM and with the approval, for data-gathering technology and interpretation, it is a good option for officially being widened to cover the whole Baltic Sea. Following the methodology of automatic water quality monitoring could be introduced everywhere in the EU. 1,492 / 2,000 characters

Output indicators	Total target value in number	Project outputs	Please explain how the solution presented in this output serves the target group(s).
		O.2.1: Completion of circular farm	Regional authorities will get a business model of a circular farm, showing the way to strengthen SMEs. Developed sensor solutions and AI/ML-driven control with achievable energy savings and environmental impact reduction can be demonstrated by the pilot circular fish farm. The example gives the possibility of advising other companies in the region and attracting new ones. Crucial is finding the solution for biowaste, helping authorities to motivate sorting the waste for circular usage. National governments will get best practices to empower the blue economy projects, establishing the potential for national scale cooperation of fish farms to jointly grow the fish for offshore farms and make the sector ready to meet international market demands. Feedstock production from biowaste is something BSR governments can see as an important milestone in implementing national green deal policies. For SMEs, this is an opportunity to get the lesson of the smart energy solution lowering costs. 998 / 1,000 characters

Output indicators	Total target value in number	Project outputs	Please explain how the solution presented in this output serves the target group(s).
RCO 116 – Jointly developed solutions	4	O.2.2: New energy system	Regional authorities can encourage SMEs to invest in energy islands and attract investors to explore regions with limited grid capacities. Similar systems can be installed for public or residential use, also PPP is applicable. National authorities see the bottlenecks of the grid and analyse alternative off-grid solutions' incentives and public leadership justifications as a replacement for expensive grid reinforcements in remote areas (islands). Universities related to energetics and engineering get the example for monitoring energy outputs and suggesting efficiency improvements. Energy communities, fisheries, and SMEs can adjust the solution to their needs and capacity, and replicate the solution, paying particular attention to the energy storage behaviour of the system. 784 / 1,000 characters
		O.2.3: Tested water quality monitoring	Authorities benefit the most - a locally transparent alert online system will be developed, saving people from infections in case of pollution. On the national level, the analysed deviations in water parameters can be used for marine spatial plans and tracking the impacts of installed offshore facilities (wind and fish farms, floating platforms). All SMEs, including fisheries, can schedule their marine activities according to the water status. HELCOM network is welcome to validate the output for the official accreditation and source of official analysed data. The assumption for accreditation is the success of incorporating BSR marine institutes into the testing and evaluation stage of the project. 707 / 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	17	**PSR 1 - Organisations with increased institutional capacity due to their participation in cooperation activities across borders**	21	Project partners and associated organisations	Regional authorities from active aquaculture regions will be an important included group; they can act as moderators linking the interest to the project. All three expected outputs form an important advancement of the information leading to the region's development. Hence the periodical (half-year) reports of activities will be shared with them and asked for feedback. If they need ad-hoc workshops to introduce the idea and modelling, project partners are willing to contribute. Lead partner prepares the special report addressing to national governments the lessons learned for the regulation, to suggest policy challenges. Environmental boards will be better prepared for dynamical tracking of the impacts of marine applications and hence can avoid any major negative impacts from happening. Universities and research institutions in respective fields increase their know-how within the development of tailor-made technological innovation, helping in the future to include the case study in programs and focus on further research to improve possible findings. SMEs and energy societies form the sector of potential successors, applying the project's approach to similar challenges and needs, looking for companies with the extension/expansion potential. Authorities find the appropriate cases. 1,301 / 1,500 characters
				Other organisations	For water quality monitoring there are a sufficient number of ferry lines and other vessels planned to be involved, to cover a reasonable sea area for getting a relevant amount of data. In regard to energy system development, distribution system operators will be consulted, depending on the grid status at the chosen site of the possible following to take up the project. Hydrogen part of the energy system brings the question of providing the supplier opportunities locally, for instance delivering storage tanks not from metal, but carbon fibre. With the success of the project, the teaching of the new aquaculture technology and energy combination with circular principles in the applied studies will be a new approach. 724 / 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	Tallinn University of Technology	Active 22/09/2022	4,000.00	374,100.00	56,115.00
2 - PP	Conversio Design Ltd	Active 22/09/2022	20,000.00	418,992.00	62,848.80
3 - PP	Pivots Engineering Ltd	Active 22/09/2022	0.00	389,064.00	58,359.60
4 - PP	Klaipeda University	Active 22/09/2022	0.00	83,248.00	12,487.20
5 - PP	West Pomeranian University of Technology	Active 22/09/2022	0.00	120,000.00	18,000.00
6 - PP	University of Tartu	Active 22/09/2022	0.00	44,892.00	6,733.80
7 - PP	Aquamind	Active 22/09/2022	0.00	369,800.00	55,470.00
8 - PP	Saaremaa Municipality	Active 22/09/2022	0.00	19,952.00	2,992.80
9 - PP	Cogastro	Active 22/09/2022	0.00	100,276.00	15,041.40
Total			24,000.00	1,920,324.00	288,048.60

No. & role	Partner name	CAT3 - Travel & accommodation	CAT4 - External expertise & services	CAT5 - Equipment	CAT6 - Infrastucture & works
1 - LP	Tallinn University of Tech	56,115.00	30,128.00	95,000.00	0.00
2 - PP	Conversio Design Ltd	62,848.80	19,700.00	770,566.00	387,300.00
3 - PP	Pivots Engineering Ltd	58,359.60	0.00	370,000.00	0.00
4 - PP	Klaipeda University	12,487.20	2,500.00	25,000.00	0.00
5 - PP	West Pomeranian Univer	18,000.00	0.00	24,000.00	0.00
6 - PP	University of Tartu	6,733.80	0.00	0.00	0.00
7 - PP	Aquamind	55,470.00	0.00	400,000.00	0.00
8 - PP	Saaremaa Municipality	2,992.80	0.00	0.00	0.00
9 - PP	Cogastro	15,041.40	0.00	0.00	0.00
Total		288,048.60	52,328.00	1,684,566.00	387,300.00

No. & role	Partner name	Total partner budget
1 - LP	Tallinn University of Technology	615,458.00
2 - PP	Conversio Design Ltd	1,742,255.60
3 - PP	Pivots Engineering Ltd	875,783.20
4 - PP	Klaipeda University	135,722.40
5 - PP	West Pomeranian University of Technology	180,000.00
6 - PP	University of Tartu	58,359.60
7 - PP	Aquamind	880,740.00
8 - PP	Saaremaa Municipality	25,937.60
9 - PP	Cogastro	130,358.80
Total		4,644,615.20

7.1.1 External expertise and services

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value
2. Conversio Desig	Specialist support	CAT4-PP2-E-0	The building permit is needed. A professional designer is to be found to follow the construction act 100 / 100 characters	Yes	I1.1_1	19,700.00
1. Tallinn University	Communication	CAT4-PP1-C-0	For public communication and target group coverage LinkedIn Premium account will be obtained. 94 / 100 characters	No	3.1	2,628.00
4. Klaipeda Universi	Events/meetings	CAT4-PP4-A-0	Water quality measurements testing results will be presented to marine institutes and HELCOM. 93 / 100 characters	No	3.3	2,500.00
1. Tallinn University	Events/meetings	CAT4-PP1-A-0	Final two-day hybrid public workshop with demonstrating the pilot farm in operation. 84 / 100 characters	No	3.2	20,000.00
1. Tallinn University	Events/meetings	CAT4-PP1-A-0	Kick-off meeting in the beginning of the project with all partners 66 / 100 characters	Yes	I1.1_1	2,500.00
1. Tallinn University	Events/meetings	CAT4-PP1-A-0	Visit to 1-2 EU scope most related topics forums/conferences for presenting the results 87 / 100 characters	No	3.2	5,000.00
	Total					52,328.00

7.1.2 Equipment

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value
5. West Pomerania	Laboratory equipmen	CAT5-PP5-D-0	chemical reagents, feed components, laboratory and experimental feeds production line elements 96 / 100 characters	Yes	I2.1_2	24,000.00
	Total					1,684,566.00

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value
2. Conversio Desig	Machines and instru	CAT5-PP2-E-0	extruder for processing fish feed based on insects (50 / 100 characters)	Yes	I2.1_2	21,566.00
1. Tallinn Universitv	Furniture and fittings	CAT5-PP1-C-0	Greenhouse interior fittings necessary also for nursering (57 / 100 characters)	Yes	I2.1_3	50,000.00
2. Conversio Desig	Tools or devices	CAT5-PP2-F-0	Heating, ventilation, steamer, mechatronics, wiring, lights, waste separator in Green house (91 / 100 characters)	Yes	I2.1_4	206,000.00
3. Pivots Engineerin	Tools or devices	CAT5-PP3-F-0	New lift system, lights, raceway paints, air-pipeing, biofilter, sensors, automatization, video (97 / 100 characters)	Yes	I2.1_5	275,000.00
2. Conversio Desig	Tools or devices	CAT5-PP2-F-0	Electrolyzers, hydrogen and oxygen storage tanks, compressors, fuel cells, pipeing for hydrogen (95 / 100 characters)	Yes	I2.2_2	516,000.00
3. Pivots Engineerin	IT hardware and soft	CAT5-PP3-B-0	Sensor equipped test boxes for vessels to monitor the BS water quality (70 / 100 characters)	Yes	I2.3_1	55,000.00
3. Pivots Engineerin	Tools or devices	CAT5-PP3-F-0	Parts to perform insect farm assembly (37 / 100 characters)	Yes	I2.1_1	40,000.00
2. Conversio Desig	Tools or devices	CAT5-PP2-F-0	Windmill renovation parts (25 / 100 characters)	Yes	I2.2_1	20,000.00
4. Klaipeda Universi	Laboratory equipmen	CAT5-PP4-D-1	chemical reagents, multi-meter (30 / 100 characters)	Yes	I2.3_1	18,000.00
4. Klaipeda Universi	IT hardware and soft	CAT5-PP4-B-1	computers with relevant software (32 / 100 characters)	Yes	I2.3_1	7,000.00
1. Tallinn Universitv	Laboratory equipmen	CAT5-PP1-D-1	greenhouse testing, fertilizers and compost, feedstock analysis (63 / 100 characters)	Yes	I2.1_3	5,000.00
1. Tallinn Universitv	IT hardware and soft	CAT5-PP1-B-1	greenhouse and feedstock functions data storage and alaysis (60 / 100 characters)	Yes	I2.1_3	4,000.00
2. Conversio Desig	IT hardware and soft	CAT5-PP2-B-1	farm running and control software and licences (46 / 100 characters)	Yes	I2.1_6	7,000.00
	Total					1,684,566.00

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
7. Aquamind	Tools or devices	CAT5-PP7-F-1	Insect farm shelves, boxes, conveiers, control devices, automization 68 / 100 characters	Yes	I2.1_1	400,000.00	
1. Tallinn University	Tools or devices	CAT5-PP1-F-1	the controller for the connection of wind turbines, PV and other equipment (RTU) 80 / 100 characters	Yes	I2.2_2	36,000.00	
	Total					1,684,566.00	

7.1.3 Infrastructure and works

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
2. Conversio Desig	Building permits	CAT6-PP2-B-0	State fee for acquiring the building permit 43 / 100 characters	Yes	I1.1_1	300.00	
2. Conversio Desig	Building material	CAT6-PP2-C-0	Greenhouse transparent glass roof 33 / 100 characters	Yes	I2.1_3	40,000.00	
2. Conversio Desig	Building material	CAT6-PP2-C-0	Insulation of the Green building 32 / 100 characters	Yes	I2.1_4	70,000.00	
2. Conversio Desig	Building material	CAT6-PP2-C-0	Room repair according to the design and equipment needs, fire protection system 79 / 100 characters	Yes	I2.1_6	72,000.00	
2. Conversio Desig	Specialised interventi	CAT6-PP2-E-0	Wind turbine up to 50m hub height and its installation 54 / 100 characters	Yes	I2.2_1	150,000.00	
2. Conversio Desig	Specialised interventi	CAT6-PP2-E-0	Relocation of 50 kW pv-panels to the land-based construction 60 / 100 characters	Yes	I2.2_1	15,000.00	
2. Conversio Desig	Building material	CAT6-PP2-C-0	Windmill foundation 19 / 100 characters	Yes	I2.2_1	40,000.00	
	Total					387,300.00	

7.1.4 Investment summary

Investment item no.	Investment title	Total planned value
I1.1_1	Farm development technical design.	22,500.00
I2.1_1	Insect farm	440,000.00
I2.1_2	Feedstock unit	45,566.00
I2.1_3	Greenhouse	99,000.00
I2.1_4	Green building techno systems	276,000.00
I2.1_5	Second fish building	275,000.00
I2.1_6	General repair and IT	79,000.00
I2.2_1	Renewable power generation	225,000.00
I2.2_2	Hydrogen related part	552,000.00
I2.3_1	Sensor box	80,000.00

Investment no. I1.1_1 - Farm development technical design.

Contracting partner	Planned contract value
2. Conversio Design Ltd	20,000.00
1. Tallinn University of Technology	2,500.00

Investment no. I2.1_1 - Insect farm

Contracting partner	Planned contract value
3. Pivots Engineering Ltd	40,000.00
7. Aquamind	400,000.00

Investment no. I2.1_2 - Feedstock unit

Contracting partner	Planned contract value
5. West Pomeranian University of Technology	24,000.00
2. Conversio Design Ltd	21,566.00

Investment no. I2.1_3 - Greenhouse

Contracting partner	Planned contract value
2. Conversio Design Ltd	40,000.00
1. Tallinn University of Technology	59,000.00

Investment no. I2.1_4 - Green building techno systems

Contracting partner	Planned contract value
2. Conversio Design Ltd	276,000.00

Investment no. I2.1_5 - Second fish building

Contracting partner	Planned contract value
3. Pivots Engineering Ltd	275,000.00

Investment no. I2.1_6 - General repair and IT

Contracting partner	Planned contract value
2. Conversio Design Ltd	79,000.00

Investment no. I2.2_1 - Renewable power generation

Contracting partner	Planned contract value
2. Conversio Design Ltd	225,000.00

Investment no. I2.2_2 - Hydrogen related part

Contracting partner	Planned contract value
2. Conversio Design Ltd	516,000.00
1. Tallinn University of Technology	36,000.00

Investment no. I2.3_1 - Sensor box

Contracting partner	Planned contract value
3. Pivots Engineering Ltd	55,000.00
4. Klaipeda University	25,000.00

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	Tallinn University of Technology	Active 22/09/2022	EE	ERDF	80.00 %	615,458.00	492,366.40	123,091.60	For each partner, the State aid relevance and applied aid measure are defined in the **State aid section**
2-PP	Conversio Design Ltd	Active 22/09/2022	EE	ERDF	80.00 %	1,742,255.60	1,393,804.48	348,451.12	
3-PP	Pivots Engineering Ltd	Active 22/09/2022	EE	ERDF	80.00 %	875,783.20	700,626.56	175,156.64	
4-PP	Klaipeda University	Active 22/09/2022	LT	ERDF	80.00 %	135,722.40	108,577.92	27,144.48	
5-PP	West Pomeranian University of Technology	Active 22/09/2022	PL	ERDF	80.00 %	180,000.00	144,000.00	36,000.00	
6-PP	University of Tartu	Active 22/09/2022	EE	ERDF	80.00 %	58,359.60	46,687.68	11,671.92	
7-PP	Aquamind	Active 22/09/2022	DK	ERDF	80.00 %	880,740.00	704,592.00	176,148.00	
8-PP	Saaremaa Municipality	Active 22/09/2022	EE	ERDF	80.00 %	25,937.60	20,750.08	5,187.52	
9-PP	Cogastro	Active 22/09/2022	LT	ERDF	80.00 %	130,358.80	104,287.04	26,071.76	
Total ERDF						4,644,615.20	3,715,692.16	928,923.04	
Total						4,644,615.20	3,715,692.16	928,923.04	

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	403,239.49	322,591.61	403,239.49	322,591.61
Period 2	1,175,907.90	940,726.32	1,175,907.90	940,726.32
Period 3	1,696,684.18	1,357,347.34	1,696,684.18	1,357,347.34
Period 4	615,118.87	492,095.09	615,118.87	492,095.09
Period 5	402,476.97	321,981.57	402,476.97	321,981.57
Period 6	327,187.79	261,750.23	327,187.79	261,750.23
Total	4,644,615.20	3,715,692.16	4,644,615.20	3,715,692.16