ENTIRE LIFE
project proposal

CONFIDENTIAL

Overview

Programme: Programme for the Environment and Climate Action (LIFE)

Call for proposal: Climate Change Mitigation and Adaptation Standard Action Projects (SAP)
LIFE-2023-SAP-CLIMA

Priority area: Climate Change Mitigation (CCM)

Funding contribution: 60%

Deadline: 21st September 2023

Project idea

ENTIRE LIFE – Waste tires recycling: a sustainable pyrolytic process to produce aviation fuel, ENergy, new TIREs and reduce crude oil extraction

Average funding: € 3.5 - 4 M

Duration: 48 months

Consortium: 6 partners

Project contribution to the LIFE CLIMA programme

Area of intervention: Actions which enhance the functioning of the existing EU Emissions Trading System and which have an impact on energy and greenhouse gas intensive industrial production

Activities are intended to start at not lower than Technology Readiness Level 5 and target at most Technology Readiness 8-9

Solutions that enhance the recovery, recycling and reuse of waste materials, so as to reduce the use and CO2-intensive processing of primary raw materials in energy intensive industries. Projects that combine work on improved collection and separation with recovery, recycling and reuse of waste materials would be eligible.

Project goal

In order to reach the targets set out in the European Climate Law, the ENTIRE LIFE project will contribute to the recovery, recycling and reuse of waste materials, with the aim to reduce the use and CO2-intensive processing of primary raw materials in energy intensive industries.

The increasing amount of tires production, consumption and disposal should meet some new perspective to improve their end-of-life, involving this waste stream in sustainable upcycling processes. ENTIRE LIFE proposed three different perspectives, to reuse waste tires and contemporarily assist the decarbonization of some non-sustainable, energy-consuming processes. The main method used in this project for this waste transformation is a low-temperature pyrolysis process (that causes very low CO2 emissions, being carried out under inert atmosphere), to obtain three different products (aviation fuel, new tires, energy).

The production of a waste-derived (thus sustainable) aviation fuel is a very important step forward, made by ENTIRE LIFE, to free aviation industry from fossil fuels extraction. Aviation Plan to achieve net-zero by 2050 require formulation and merchandizing of new SAF, and the possibility to produce a new one for waste tires could be a relevant plan to reach this aim.

At the same time, also the adding of the remaining part of the output material from waste-tire treatment to produce carbon black and energy is a way to reduce fossil fuel extraction, giving a fully circular-economy soul to this process. In fact, the solid output material coming from the tire treatment is a carbon black, that can be reused as coloring ad reinforcing material to produce new tires: the use of this recycled carbon black avoids the extraction ad treatment of new coal, coal tar and petroleum.

Also the gaseous phase produced in the process ensures the sustainability and circularity of the process, being a source for the plant energy supply. The ENTIRE LIFE project is focused to demonstrate sustainability opportunities in the recycling of waste tires in order to obtain higher added value products, trough the construction of a pyrolysis plant at the site of the project partner SARAS. The project specific objective will be verified as well through the successful implementation of the recycling process and the production of SAF and new carbon black as additives for new tires pruduction.

WP breakdown

WP	Task	Description	Durata 48	Leader
WP1		**Project Management, Coordination and Monitoring**	**1M-48M**	**RINA-C**
	T1.1	Project Coordination and Management	1M-48M	RINA-C
	T1.2	Administrative, Contractual and Financial Management	1M-48M	RINA-C
	T1.3	Consortium Management	1M-48M	RINA-C
	T1.4	Intellectual Property Rights and Data Management	1M-48M	RINA-C
WP2		**Pyrolysis process optimization and tests on pilot plant**	**1-18M**	**UNIGE**
	T2.1	Pyrolysis process optimization at lab scale and replication on pilot plant	1-18M	UNIGE/IRLE
	T2.2	Study and tests for the use of the three materials in output from the laboratories and pilot plant trials	1-18M	UNIGE/IRLE
	T2.3	Analisys and study of emission impacts and abatement	1-15M	UNIGE/IRLE
WP3		**Plant building, process tests and production**	**1-45M**	**SARAS**
	T3.1	Plant engineering and procurement of main equipment	1-18M	SARAS
	T3.2	Permitting	4-15M	RINA-C
	T3.3	HSE	1-36M	RINA-C
	T3.4	LCA and SAF requirement checks	24-36M	RINA-C
	T3.5	Plant building and commissioning	15-33M	SARAS
	T3.6	Process tests in the new plant, analisys of the emissions and production	34-48M	SARAS
WP4		**Study, Analysis and Application of the output materials**	**34-48 M**	**IRLE**
	T4.1	Confirmation study of the refining process of the liquid phase and analyses of the fuel obtained	34-48	SARAS
	T4.2	Confirmation study and test for the use of carbon black as both solid fuel and material for new tires production	34-48	IRLE
	T4.3	Confirmation study of the abatement of gas emissions and their utilization for energy recycling	34-48	SARAS
	T4.4	EU Taxonomy alignment	stessa dur	RINA-C
WP5		**Sustainability, Exploitation and Replication of project results**	**M1-M48**	**RINA-C/AIMPL**
	T5.1	State of the art of the EU Legislative scenario	1-18M	AIMPLAS
	T5.2	Policy support for market application	M36-M48	AIMPLAS
	T5.3	Business model and CBA	M6-M36	RINA-C
	T5.4	Exploitation road to TRL 9 (KER, BFMULO, Patent analysis)	1-30M	RINA-C
	T5.5	Replication studies on different socio, economic and geographical contexts	M36-48	AIMPLAS
WP6		**Communication, Dissemination and engagement**	**1M-48M**	**ECOPNEUS**
	T6.1	Communication and dissemination strategy	1M-48M	ECOPNEUS
	T6.2	Customers and stakeholders engagement	1M-48M	ECOPNEUS
	T6.3	Project visibility	1M-48M	ECOPNEUS
	T6.4	Network and synergies for capitalization of project results	1M-48M	ECOPNEUS

Contact points

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For more info:

Thank you

Marina Focarile & Martina Vagnoni

RINA-C