



Marine Litter/Plastics Projects funded under Horizon 2020

Selection





EUROPEAN COMMISSION

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At a glance

Framework: Horizon 2020

Project number: 774586

Acronym: CLAIM

Title: Cleaning Litter by developing and Applying Innovative Methods in european seas

Call: H2020-BG-2017-1

Instrument: IA - Innovation action

Start date: 2017/11/01

End date: 2021/10/31

Duration: 48 months

Total Cost: € 6,185,612.75

EU Contribution: € 5,654,786.01

Consortium: 19 participants

Project Coordinator: HELLENIC CENTRE FOR MARINE RESEARCH, EL

CLAIM

Cleaning Litter by developing and Applying Innovative Methods in european seas

Abstract

CLAIM focuses on the development of innovative cleaning technologies and approaches, targeting the prevention and in situ management of visible and invisible marine litter in the Mediterranean and Baltic Sea. Two innovative technological methods will be developed, a photocatalytic nanocoating device for cleaning microplastics in wastewater treatment plants and a small-scale thermal treatment device for energy recovery from collected litter on board ships and ports. An innovative floating boom for collecting visible litter and a method to measure microlitter on board ships (Ferrybox) will be developed. The proposed cleaning technologies and approaches prevent litter from entering the sea at two main source points, i.e. wastewater treatment plants and river mouths. Effectiveness of developed devices and methods will be demonstrated under real conditions. Additionally, CLAIM will develop innovative modeling tools to assess the marine visible and invisible plastic pollution at basin and regional scales (Saronikos Gulf, Gulf of Lyon, Ligurian Sea and Belt Sea). An ecosystems approach will be followed to evaluate the potential benefit from proposed litter cleaning methods to ecosystem services. New business models will be developed to enhance the economic feasibility for upscaling the innovative cleaning technologies, taking into account the existing legal and policy frameworks in the CLAIM countries, as well as acceptance of the new technologies by their end-users and relevant stakeholders. The data and information produced will be made available to policymakers, stakeholders and end-users in a user-friendly format, both meaningful and tailored to each stakeholder group. CLAIM aims at the same time to raise public awareness with respect to having healthy oceans and seas, clean of litter and pollutants, and hence the importance of reducing marine (macro, micro and nano) pollution in European seas and beyond towards restoring marine ecosystems based on a circular economy.



Project's Participants List

CLAIM *Cleaning Litter by developing and Applying Innovative Methods in european seas*

Project's participants	Name	Country
1	HELLENIC CENTRE FOR MARINE RESEARCH	EL
2	DANMARKS METEOROLOGISKE INSTITUT	DK
3	KUNGLIGA TEKNISKA HOEGSKOLAN	SE
4	CONSIGLIO NAZIONALE DELLE RICERCHE	IT
5	DANMARKS TEKNISKE UNIVERSITET	DK
6	STICHTING VU	NL
7	PENSOFT PUBLISHERS	BG
8	IRIS SRL	IT
9	IKERCONSULTING EUROPEAN AND REGIONAL INNOVATION SOCIEDAD LIMITADA	ES
10	CHRISTIAN-ALBRECHTS-UNIVERSITAET ZU KIEL	DE
11	TALLINNA TEHNIKAULIKOOL	EE
12	Institut National des Sciences et Technologies de la Mer	TN
13	UNIVERSIDADE DE COIMBRA	PT
14	PP-POLYMER AB	SE
15	UNIVERSITE LIBANAISE	LB
16	WASTE & WATER	FR
17	INSTITUTE FOR EUROPEAN ENVIRONMENTAL POLICY, LONDON	UK
18	NEW NAVAL COMMERCIAL TECHNICAL LIMITED LIABILITY COMPANY	EL
19	UNIVERSITE D'AIX MARSEILLE	FR



At a glance

Framework: Horizon 2020

Project number: 774499

Acronym: GoJelly

Title: GoJelly - A gelatinous solution to plastic pollution

Call:: H2020-BG-2017-1

Instrument: IA - Innovation action

Start date: 2018/01/01

End date: 2021/12/31

Duration: 15 months

Total Cost: € 6,222,816.50

EU Contribution: € 5,998,114.75

Consortium: 15 participants

Project Coordinator: HELMHOLTZ ZENTRUM
FÜR OZEANFORSCHUNG KIEL, DE

GoJelly

GoJelly - A gelatinous solution to plastic pollution

Abstract

The objective of the GoJelly project is to develop, test and promote a gelatinous solution to microplastic pollution by developing a TRL 5-6 prototype microplastics filter (GoJelly) for commercial and public use, where the main raw material is jellyfish mucus. In doing so, the consortium addresses two environmental issues with one approach by removing the commercially and ecologically destructive sea and coastal pollution of both jellyfish and microplastics. This innovative approach will ultimately lead to less plastic in the ocean, municipal demand (and thereby competitive prices) for jellyfish raw material to fill the "mucus-need" by filter developers, and in turn more jobs for commercial fishers in off-seasons. The by-products of the GoJelly biomass have other uses as well, ensuring that GoJelly also delivers a green innovation, resulting in novel, valuable resource for the food and feed industry as well as agro-biological fertilizer for organic farming. The GoJelly prototype products will be tested and demonstrated in three different European seas (Norwegian, Baltic and Mediterranean), by a range of stakeholders, including commercial fishers and industry partners. Tying it together, the project will also ensure the possibilities for broader European promotion and utilization of GoJelly at the local, regional and global level by delivering a socio-ecological methodological toolbox for forming and implementing policies. GoJelly will broadly communicate its results in several formats such as traditional social media, open lab ship cruise, and in the form of an experimental online game depicting different management scenarios under different jellyfish- and microplastics combinations. An interdisciplinary and international consortium consisting of technology developers, business analysts, fishing companies, research institutes, and both natural and social scientists will realize GoJelly, and will ensure the uptake of GoJelly products by industry and policy makers.



Project's Participants List

GoJelly
*GoJelly - A gelatinous
 solution to plastic pollution*

Project's participants	Name	Country
1	HELMHOLTZ ZENTRUM FUR OZEANFORSCHUNG KIEL	DE
2	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO
3	ARDITI - AGENCIA REGIONAL PARA O DESENVOLVIMENTO DA INVESTIGACAO, TECNOLOGIA E INOVACAO - ASSOCIACAO	PT
4	NACIONALNI INSTITUT ZA BIOLOGIJO	SI
5	UNIVERSITY OF HAIFA	IL
6	ORT BRAUDE COLLEGE	IL
7	CHRISTIAN-ALBRECHTS-UNIVERSITAET ZU KIEL	DE
8	HANSEATISCHE UMWELT CAM GMBH	DE
9	SINTEF OCEAN AS	NO
10	CRM COASTAL RESEARCH AND MANAGEMENT GESELLSCHAFT FUR KUSTENFORSCHUNG UND MANAGEMENT MIT HAFTUNGSBESCHRANKUNG GBR	DE
11	CONSIGLIO NAZIONALE DELLE RICERCHE	IT
12	SANPIETRO SOCIETA COOPERATIVA AGRICOLA	IT
13	UNIVERSITAET HAMBURG	DE
14	FONDATION EUROPEENNE DE LA SCIENCE	FR
15	INSTITUTE OF OCEANOLOGY, CHINESE ACADEMY OF SCIENCES	CN



At a glance

Framework: Horizon 2020

Project number: 633098

Acronym: UTOFIA

Title: Underwater Time Of Flight Image Acquisition system

Call: H2020-BG-2014-2

Instrument: RIA - Research and Innovation action

Start date: 2015/02/01

End date: 2018/04/30

Duration: 39 months

Total Cost : € 5,716,971.00

EU Contribution: € 5,716,971.00

Project participant and coordinator:
STIFTELSEN SINTEF, NO

UTOFIA

Underwater Time Of Flight Image Acquisition system

Abstract

UTOFIA will offer a compact and cost-effective underwater imaging system for turbid environments. Using range-gated imaging, the system will extend the imaging range by factor 2 to 3 over conventional video systems, while at the same time providing video-rate 3D information. This will fill the current gap between short-range, high-resolution conventional video and long-range low-resolution sonar systems.

UTOFIA offers a new modus operandi for the main targeted domains of application: marine life monitoring, harbour and ocean litter detection, fisheries and aquaculture stock assessment, and seabed mapping.



Project's Participants List

UTOFIA

*Underwater
Flight Image
system Time Of
Acquisition*

Project's participants	Name	Country
1	STIFTELSEN SINTEF	NO
2	BRIGHT SOLUTIONS S.R.L.	IT
3	ODOS IMAGING LIMITED	UK
4	SUBSEA TECH SAS	FR
5	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	DE
6	FUNDACION AZTI - AZTI FUNDAZIOA	ES
7	DANMARKS TEKNISKE UNIVERSITET	DK



At a glance

Framework: Horizon 2020

Project number: 652643

Acronym: Respon-Sea-ble

Title: Sustainable oceans : our collective responsibility, our common interest. Building on real-life knowledge systems for developing interactive and mutual learning media

Call: H2020-BG-2014-1

Instrument: Coordination & support action

Start date: 2015/04/01

End date: 2019/03/31

Duration: 48 months

Total Cost: € 3.696.644,00

EU Contribution: € 3.696.644,00

Consortium: 15 participants

Project Coordinator: ACTEON SARL, FR

Respon-Sea-ble

Sustainable oceans: our collective responsibility, our common interest. Building on real-life knowledge systems for developing interactive and mutual learning media

Abstract

The project will develop well-targeted and sound communication material that raises awareness on our (individual and collective) responsibility and interest in ensuring the sustainability of the ocean and of its ecosystems.

The project builds on critical assessments of: (1) existing communication strategies, material and governance that focuses on the ocean; (2) the values, perceptions and understanding of the state, functioning and role of the ocean by different types of stakeholders and of the wider public; (3) the (scientific) knowledge that exist on the ocean-human relationship, in particular in terms of ecosystem services that can be delivered by ocean ecosystems and support (future) development opportunities and blue growth and of pressures that are imposed on the oceans. These critical assessments will help identifying priority target groups with key responsibilities and interests in the state of our oceans - today and in the future.

Within a participatory process involving the stakeholders of the knowledge creation & sharing system from four European marine regions (Baltic Sea, Mediterranean Sea, Northern Sea and Atlantic _ including in its transatlantic dimension), and building on the scientific knowledge-based established and on project-dedicated IT structure/platform, the project will then develop and test under real conditions innovative communication tools. Key principles guiding this development will be interactivity, mutual learning, creativity and entertainment.

Finally, specific activities will be performed for ensuring proposed communication tools are made accessible and available to their future users in Europe but also elsewhere.



Project's Participants List

Respon-Sea-ble

Sustainable oceans: our collective responsibility, our common interest.

Building on real-life knowledge systems for developing interactive and mutual learning media

Project's participants	Name	Country
1	ACTEON SARL	FR
2	STIFTELSEN GRID ARENDAL	NO
3	NATIONAL UNIVERSITY OF IRELAND, GALWAY	IE
4	STICHTING PROSEA MARINE EDUCATION	NL
5	COFAC COOPERATIVA DE FORMACAO E ANIMACAO CULTURAL CRL	PT
6	INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE DELTA DUNARII	RO
7	NORSK INSTITUTT FOR VANNFORSKNING	NO
8	CSP - INNOVAZIONE NELLE ICT S.C.A.R.L.	IT
9	BALTIC ENVIRONMENTAL FORUM DEUTSCHLAND EV	DE
10	FUNDACION AZTI - AZTI FUNDAZIOA	ES
11	THE MARINE FOUNDATION LIMITED	UK
12	SEVEN ENGINEERING CONSULTANTS OE	EL
13	UNIVERSITE DE BRETAGNE OCCIDENTALE	FR
14	UNIVERSITY OF PLYMOUTH	UK
15	TELEVISION FOR THE ENVIRONMENT	UK



At a glance

Framework: Horizon 2020

Project number: 702747

Acronym: POSEIDOMM

Title: Photochemistry at the Ocean's Surface: Effects and Interactions of Dissolved Organic Matter with Microplastics

Call:: H2020-MSCA-IF-2015

Instrument: MSCA-IF-EF-RI - Reintegration panel

Start date: 2016/05/01

End date: 2018/04/30

Duration: 24 months

Total Cost: € 180,277.20

EU Contribution: € 180,277.20

Project Coordinator and participant:
UNIVERSITA' DEGLI STUDI DI SIENA. IT

POSEIDOMM

Photochemistry at the Ocean's Surface: Effects and Interactions of Dissolved Organic Matter with Microplastics

Abstract

Microplastics represent an increasing threat to aquatic ecosystems, with potential impacts on the cycling of fundamental elements and ecological consequences at all trophic levels. Low-density polyolefins, like polyethylene and polypropylene, are the most common plastics produced and are ubiquitous in marine environments. Floating on the sea-surface, they can have direct and indirect impacts on the sea-surface microlayer (SML), a key interface for biochemical and photochemical processes controlling gas exchange between the ocean and the atmosphere. The SML is an enriched biofilm of organic biological material aggregating and favouring high microbial activity. The effects of an increasing presence of microplastics on the cycling of organic matter in the surface ocean are not well understood, and yet they may have a major impact on this key interface. POSEIDOMM will investigate the influence of microplastics on the photochemical and biological processes in the SML. We will verify the effect of microplastic pollutants on the formation of a surface-active biofilm, the implications for microbial cycles and for the photochemical generation of reactive chemical species and labile organic compounds. The goals of POSEIDOMM are to provide a chemical and biological characterization of the microplastic-biofilm aggregates in the SML, to quantify the photochemical cycling of such aggregates and to identify the implications of this cycling on gas exchange and on the microbial carbon cycle. This will be achieved through a trans-disciplinary approach combining innovative spectroscopic and biological analyses to study the SML in controlled microcosms and in-situ mesocosm studies. Through a close cooperation with leading European partners, POSEIDOMM will close major gaps in our understanding of the interaction of micropollutants with marine biological processes and atmospheric gas exchange.



At a glance

Framework: Horizon 2020

Project number: 774499

Acronym: FreshwaterMPs

Title: The environmental fate and effects of microplastics in freshwater ecosystems

Call:: H2020-MSCA-IF-2014

Instrument: MSCA-IF-EF-ST - Standard European Fellowships

Start date: 2015/04/01

End date: 2017/05/31

Duration: 24 months

Total Cost: € 159,460.80

EU Contribution: € 159,460.80

Project Coordinator and participant:
JOHANN WOLFGANG GOETHE-
UNIVERSITÄT FRANKFURT AM MAIN, DE

FreshwaterMPs

The environmental fate and effects of microplastics in freshwater

Abstract

EU member states are currently working towards the realisation of environmental goals specified in the Water Framework Directive (WFD), which aims to protect both human and ecosystem health. Microplastic particles (MPs) are emerging pollutants of increasing concern and are formed primarily when plastic waste degrades in the environment. The impacts of MPs on freshwater biota are not known, however, they may present a potentially persistent and ecotoxicological pollution problem. Accordingly, the goal of this project is to assess the environmental risk of MPs in freshwater habitats. To achieve this, a detailed investigation of MP environmental persistence will be carried out. This will provide environmental fate summaries for different polymer classes and enable the modelling of their degradation processes. This will be combined with laboratory studies to assess relevant sub-lethal endpoints such as reproduction, fitness, inflammation, and oxidative stress. As MPs are known to accumulate co-occurring organic pollutants, the toxicity of virgin MPs will be compared to MPs conditioned with relevant freshwater pollutants. This work will build towards a sophisticated state-of-the-art mesocosm study that will evaluate both MP fate and impacts in model ecosystems. The establishment of a novel framework for the environmental risk assessment of MPs will inform our ability to achieve conservation objectives taking into account MPs as emerging pollutants. The merit of this is that protection goals may be better accommodated in policy and management through the generation of so far unavailable data on MP persistence and environmental toxicity. Taken together, the project will generate so far unavailable data sets to assess for the first time the environmental impacts of freshwater MPs. Thus, the outcomes will be highly relevant for academia, politics, stakeholders and society.



TOPIOS

At a glance

Framework: Horizon 2020

Project number: 715386

Acronym: TOPIOS

Title: Tracking Of Plastic In Our Seas

Call: ERC-2016-STG

Instrument: ERC-STG - Starting Grant

Start date: 2017/04/01

End date: 2022/03/31

Duration: 60 months

Total Cost: € 1,484,760.00

EU Contribution: € 1,484,760.00

Consortium: 2 participants

- UNIVERSITEIT UTRECHT, NL
- IMPERIAL COLLEGE OF SCIENCE TECHNOLOGY AND MEDICINE, UK

Project Coordinator: UNIVERSITEIT UTRECHT, NL

Tracking Of Plastic In Our Seas

Abstract

The amount of plastic in our ocean is exponentially growing, with recent estimates of more than 5 million metric tonnes of plastic reaching the ocean each year. This plastic infiltrates the ocean food chain and thus poses a major threat to marine life. However, understanding of plastic movement and its budget in the ocean is inadequate to fully establish its environmental impact, prompting the EU and G7 to recently make marine litter a top science priority. It is now recognised that the amount of plastic entering our ocean is several orders of magnitude larger than the estimates of floating plastic on the surface of the ocean. More than 99% of plastic within our ocean is therefore 'missing'. This project will make breakthroughs towards closing the plastic budget by creating a novel comprehensive modelling framework that tracks plastic movement through the ocean. Building on well-established previous work to follow generic water parcels through hydrodynamic ocean models, this project will modify these 'virtual' parcels to represent pieces of plastic by, for the first time, simulating fragmentation, sinking, beaching, wave-mixing and ingestion by biota. The new parameterisations that underpin this modelling will be based on field data and new coastal flume wave tank lab experiments. The simulated plastic particles will be tracked within state-of-the-art hydrodynamic ocean models, in order to compute maps of pathways and transports around our oceans and on coastlines and in biota. This numerical modelling will be used to evaluate a broad suite of scenarios and test hypotheses, including where the risk to marine biota is greatest. The results from this project will inform policymakers and the public on which countries, for example, are responsible for which part of the plastic problem, crucial for mitigation and legal frameworks. It will also inform engineers on where and how to best invest resources in mitigating the problem of plastic in our ocean.



CM

At a glance

Framework: Horizon 2020

Project number: 774586

Acronym: CM

Title: Prevention of Cosmetic-Induced Non-Communicable Diseases and Micro Plastics entering Food Chains with the CosmEthics-Health App

Call: H2020-SMEINST-1-2016-2017

Instrument: SME-1 - SME instrument phase 1

Start date: 2016/12/01

End date: 2017/05/31

Duration: 6 months

Total Cost: € 71,429.00

EU Contribution: € 50,000.00

Project Coordinator and participant:
COSMETHICS OY, FI

Prevention of Cosmetic-Induced Non-Communicable Diseases and Micro Plastics entering Food Chains with the CosmEthics- Health App

Abstract

CosmEthics, with its E-solutions, helps EU citizens to identify cosmetics products with potential hazard ingredients (EU Annex II prohibited chemicals, carcinogens, hormones, allergens), and helps them to find better alternatives based on scientific research and user tailored preferences (allergies, vegan, plastics). Nearly all EU citizens use some form of personal hygiene products daily. Cosmetics are a major source of water and food chain pollution via the microplastics they often contain. This video explains the problem in the industry: <http://www.youtube.com/watch?v=pfq000AF1i8#t=16> This video explains our current solution (currently viewed by over 1M EU citizens): https://www.youtube.com/watch?v=G9Lv83AcUOY&feature=youtu.be&ab_channel=CosmEthics The feasibility study assesses the following objectives 1) feasibility of concept of open data web plugin (for e-commerce or authority web pages), which shows the alert icon of the product analysis (e.g red light). 2) Feasibility of concept of measurement of harmful or prohibited cosmetic ingredients with laboratory tests, 3) Assessment of collaboration with authorities on data regarding breaches so that consumers receive the information (when prohibited chemicals are found), 4) intellectual property assessment during 6 months (Jan 2017-June 2017), 5) User involvement. We are targeting the program, "Accelerating market introduction of ICT solutions for Health, Well-Being, and Ageing Well", because we enable prevention of non-communicable diseases such as cancer and allergies, prevention of epidemics induced by cosmetics (e.g triclosan causes antibiotic resistant bacteria, or bone marrow in cosmetics risks SARS). As EU is the biggest valued cosmetic market, import of non-EU standard products provides high risk of harmful products entering the market. Seas and water ecosystems, once polluted by cosmetic induced micro plastics, is irreversible. The team has won several international prizes and is noted by Forbes.



At a glance

Framework: Horizon 2020

Project number: 717863

Acronym: SEA LITTER CRITTERS

Title: A compact, unmanned, renewables-powered and self-sufficient vessel able to pick up marine litter and to treat it on board for volume reduction and energy recovery

Call: H2020-SMEINST-1-2015

Instrument: SME Instrument Phase 1

Start date: 2016/03/01

End date: 2016/08/31

Duration: 6 months

Total Cost: € 71,429.00

EU Contribution: € 50,000.00

Project participant and coordinator: IRIS SRL, IT

SEA LITTER CRITTERS

A compact, unmanned, renewables-powered and self-sufficient vessel able to pick up marine litter and to treat it on board for volume reduction and energy recovery

The project intends to explore the feasibility of introducing to the market Sea Litter Critters, a compact, unmanned, renewables-powered and self-sufficient marine litter collection and treatment vessel based on a patent pending device treating waste thermally with plasma technology and no harmful emissions. This device is designed to operate near the shores especially nearer tourist facilities substituting the mechanical collection of litter currently adopted. By picking up litter (plastic debris mostly) near the point of entry, Sea Litter Critters contribute to minimising the pollution risks linked to plastic in the sea, where plastic items become brittle and break down into small particles, but basically never dissolve. Such particles can be eaten by zooplankton thus enter the foodchain. Therefore picking up plastic debris while still intact and as soon as possible after their disposal supports and complement in the short term all the high level policy actions for litter prevention (minimisation of waste, use of biodegradable plastic, awareness raising, beach clean-up days etc.). This study aims to check the attractiveness of the innovation to the market involving potential customers (coast towns, associations of tourist and fishing ports and marinas, representatives from the cruise and hotels industry, marine natural reserves authorities). The first markets identified are on the Mediterranean Sea, which is at the center of a very highly populated area of the World with many Countries relying mostly on tourism. Studies confirm that the Med has mostly marine litter derived from this economic activity and up to 80% of it originating from land. Italy, with its over 7600km long coastline and a strong dependency upon tourism, will be the first market, followed suit by France and Croatia and then Spain and Greece. After a 3 year phase to cover development, industrialisation and commercialisation, production is expected to start in 2019, with employment of 17 new staff.



At a glance

Framework: Horizon 2020

Project number: 674624

Acronym: UPCYCLINGTHEOCEANS

Title: High quality clothes made from marine plastic litter

Call: H2020-SMEINST-1-2014

Instrument: SME-1 - SME instrument phase 1

Start date: 2015/06/01

End date: 2015/11/30

Duration: 6 months

Total Cost: € 71,429.00

EU Contribution: € 50,000.00

Project coordinator and participant: ECOALF SL, ES

UPCYCLINGTHEOCEANS

High quality clothes made from marine plastic litter -

Abstract

ECOALF is an SME that design and market high quality textile products and accessories made of recycled materials (bottles, fishing nests, tyres, coffee, cotton...).The main objective of the UPCYCLING THE OCEANS project is to produce and sell fabrics and clothes made from marine plastic litter, by recycling and industrial methods to convert these plastics into high properties textiles. European seas contain many tons of waste, mainly plastic (around 400 kg per km²). This plastic litter has a very negative impact in the marine environment even affecting the food chain (potentially triggering endocrine and/or carcinogenic processes).To contribute to mitigate this problem ECOALF proposes to implement a collaborative scheme with fishermen's organisations (agreements already signed) to collect plastic from seas; to implement an industrial process that includes waste management, pellets production and additivation, spinning and fabrics, and clothes manufacturing; and to distributions and marketing the new products in Europe. To that end ECOALF proposes a feasibility study:-To analyse the economic feasibility of the initiative (production cost, volume of sales, incomes; relevant economic indicators; sensitive analysis).-To identify logistical needs to obtain the marine plastic litter and to establish a mechanism to provide the consumer with a reliable Guarantee of Origin (GoO) that reflects that the clothes are made 100% from plastic waste and which percentage is from marine origin.-To ensure the technical feasibility to additivate properly the flakes to obtain pellets that fulfil with ECOALF fabrics requirements. To define the adequate terrestrial / marine mix to ensure stability during the sinning process.-To carry out a survey among clients and distributors to assess the market reaction to these products and to select at least four countries to carry out a market test.



At a glance

Framework: Horizon 2020

Project number: 766603

Acronym: ECOLACTFILM

Title: A Water-Soluble Packaging to Unlock New Markets

Call: H2020-SMEINST-2-2016-2017

Instrument: SME-2 - SME instrument phase 2

Start date: 2017/07/01

End date: 2019/06/30

Duration: 24 months

Total Cost: € 2 132 271,25

EU Contribution: € 1 492 589,88

Project coordinator and participant:
LACTIPS, FR

ECOLACTFILM

A Water-Soluble Packaging to Unlock New Markets

Abstract

Lactips is an innovative company located in France, founded in 2014. Lactips develops a disruptive thermoplastic material, water-soluble at room temperature and below, for uses in water-soluble or edible packaging. This material is unique on a worldwide scale. Based on milk protein, Lactips' thermoplastic pellets show besides a full biodegradability in less than three weeks (it can even be thrown away in one's home compost), is highly printable thus perfect for information and marketing purposes, presents a very good barrier to oxygen and can further be functionalised. Its unique water solubility property allows Lactips to answer chemical manufacturers needs for better single doses packaging in laundries and dishwashing. Moreover, it opens up new market opportunities such as detergent packaging for water treatment (swimming pools) and agrochemicals, where single doses cannot be used currently as current packaging is poorly soluble below 30°C and does not answer requirements. Users (consumers, farmers, employees) will not be in contact anymore with harmful chemicals and will control the amount of chemical they add in water. This will result in a better user safety and a better preservation of our environment. The ECOLACTIFILM is Lactips' project to remove every barrier and properly address the market. Properties will be improved for our material to resist to liquids, acid and alkaline powders and to be shrinkable. At the project end, every chemical that are to address water trouble could be packaged in a sound and clean, harmless way.



At a glance

Framework: Horizon 2020

Project number: 673465

Acronym: Waste to Resource

Title: Commercialisation of WarwickFBR™ technology which can recycle Mixed Plastic Waste into a hydrocarbon product, the Plaxx™

Call: H2020-SMEINST-1-2014

Instrument: SME-1 - SME instrument phase 1

Start date: 2015/06/01

End date: 2015/10/31

Duration: 48 months

Total Cost: € 71,429.00

EU Contribution: € 50,000.00

Consortium: 2 participants

RECYCLING TECHNOLOGIES LTD., UK

CRAPPER & SONS LANDFILL LIMITED, UK

Project Coordinator: RECYCLING TECHNOLOGIES LTD., UK

Waste to Resource

Commercialisation of WarwickFBR™ technology which can recycle Mixed Plastic Waste into a hydrocarbon product, the Plaxx™

Abstract

Plastic has become the most common material since the beginning of the 20th century. Unfortunately, what makes it so useful, such as its durability, light weight and low cost, also makes it problematic when it comes to its end of life phase. Nearly 50% of plastic waste in the EU is still landfilled which is a waste of a resource, causes environmental issues and its disposal to a landfill or incinerator is a significant cost to its producers. The reason for low levels of plastic waste recycling is because currently only mechanical recycling route exists and not all plastic products are equally suitable to be mechanically recycled. Recycling Technologies have developed a technology, the WarwickFBR™, which can recycle this Mixed Plastic Waste back to a hydrocarbon based product branded as Plaxx™. Plaxx™ can be used as slack waxes or as a feedstock in oil refineries to make more plastics. By recycling of MPW destined for landfill or incineration to Plaxx™, the WarwickFBR™ technology can help in reducing the environmental impact of plastic waste and conserve the natural resources. For the customers it creates substantial commercial value as it converts a liability, the Mixed Plastic Waste, to a revenue earning asset, the Plaxx™.



At a glance

Framework: Horizon 2020

Project number: 730292

Acronym: PlastiCircle

Title: Improvement of the plastic packaging waste chain from a circular economy approach

Call: H2020-CIRC-2016TwoStage

Instrument: IA - Innovation action

Start date: 2017/06/01

End date: 2021/05/31

Duration: 48 months

Total Cost: € 8,674,540.89

EU Contribution: € 7,774,016.75

Consortium: 21 participants

Project Coordinator: INSTITUTO TECNOLÓGICO DEL EMBALAJE, TRANSPORTE Y LOGÍSTICA, ES

PlastiCircle

Improvement of the plastic packaging waste chain from a circular economy approach

Abstract

The European plastic market is not currently aligned with the circular economy. More than 25.8 million tonnes of plastic waste are produced per year in the EU28 being recycled only 29.7%. This represents a clear loss in the plastic market loop (losses of €10.56bn). Moreover, this goes against the EU legislation on waste (high environmental impact; 23.8 Mt of CO₂). Low recycling rates of plastic are mainly due to the situation of packaging waste (i.e. main plastic waste fraction), since it is mainly domestic residue and consequently the quality of the material collected depends on the system of segregation available and the environmental awareness of citizens. PlastiCircle aims to develop and implement a holistic process to increase recycling rates of packaging waste in Europe. This will allow to reprocess again plastic waste in the same value chain (i.e. Circular economy; closure of plastic loop). This process is based on four axes: collection (to increase quantity of packaging collected), transport (to reduce costs of recovered plastic), sorting (to increase quality of recovered plastic), and valorization in value-added products (i.e. foam boards, automotive parts like engine covers/bumpers/dashboards, bituminous roofing membranes, garbage bags, asphalt sheets/roofing felts and urban furniture like fences/benches/protection walls). The target is to increase collection from 81.7% to 87% and valorization in a 9.8%. The implementation of PlastiCircle approach in Europe have the potential to increase collected plastic in 861,250t (reaching 14.14 Mt) and valorization in 1.59Mt. The valorization of this new material, represents a market value of €2.86bn-€7.95bn. Taking into account current figures of the plastic sector (turnover €350bn, 62,000 companies, 1.45M employees), this could imply creation of 500-1400 new companies and the generation of 11,900-33,000 new jobs in the medium to long term if PlastiCircle approach is extended in a EU level.



Project's Participants List

PlastiCircle

Improvement of the plastic packaging waste chain from a circular economy approach

Project's participants	Name	Country
1	INSTITUTO TECNOLOGICO DEL EMBALAJE, TRANSPORTE Y LOGISTICA	ES
2	STIFTELSEN SINTEF	NO
3	RTT STEINERT GMBH	DE
4	AXION RECYCLING LTD	UK
5	CENTRO RICERCHE FIAT SCPA	IT
6	GEMEENTE UTRECHT	NL
7	FUNDACION DE LA COMUNITAT VALENCIANA PARA LA PROMOCION ESTRATEGICA EL DESARROLLO Y LA INNOVACION URBANA	ES
8	MUNICIPALITY OF ALBA IULIA	RO
9	MESTNA OBCINA VELENJE	SI
10	SOCIEDAD ANONIMA AGRICULTORES DE LAVEGA DE VALENCIA	ES
11	POLARIS M HOLDING SRL	RO
12	INDUSTRIAS TERMOPLASTICAS VALENCIANAS, S.A.	ES
13	Armacell Benelux S.A.	BE
14	Imperbel N.V.	BE
15	CONSORZIO PER LA PROMOZIONE DELLA CULTURA PLASTICA PROPLAST	IT
16	HAHN PLASTICS LTD	UK
17	ECOEMBALAJES ESPANA, S.A.	ES
18	Fundacio Knowledge Innovation Market Barcelona	ES
19	PLASTICSEUROPE	BE
20	ICLEI EUROPEAN SECRETARIAT GMBH (ICLEI EUROPASEKRETARIAT GMBH)*	DE
21	PICVISA MACHINE VISION SYSTEMS SL	ES



At a glance

Framework: Horizon 2020

Project number: 730308

Acronym: PolyCE

Title: Post-Consumer High-tech Recycled Polymers for a Circular Economy – PolyCE

Call: H2020-CIRC-2016TwoStage

Instrument: IA - Innovation action

Start date: 2017/06/01

End date: 2021/05/31

Duration: 48 months

Total Cost: €9,452,964.59

EU Contribution: € 8,321,995.72

Consortium: 20 participants

Project Coordinator: FRAUNHOFER
GESELLSCHAFT ZUR FOERDERUNG DER
ANGEWANDTEN FORSCHUNG E.V., DE

PolyCE

Post-Consumer High-tech Recycled Polymers for a Circular Economy – PolyCE

Abstract

Various activities address the WEEE value chain in order to reduce waste generation and enhance the sustainable resource management through use of recycled materials instead of their virgin counterparts. While the system for metals recycling is already well established, the rising volumes of waste plastics point to stalemates in the current plastics economy, which hamper its shift to a more circular model. Although there are individual efforts to improve the collection and recycling of WEEE plastics, the plastics value chain is still too fragmented and WEEE recycled plastics seem unattractive material for the end-user. To shift towards circular economy a systematic transformation is required, involving all actors in the value chain and encompassing the entire lifecycle of plastic materials. While substantially reducing the WEEE plastics generation and enhancing the use of recycled plastics in new applications, PolyCE will demonstrate the feasibility of circular plastics supply and value chain. In particular, PolyCE will elaborate harmonized set of technical requirements addressing the entire value chain and develop grade system for recycled plastics according to their material properties and final application suitability. Accordingly, PolyCE will strengthen the market for recycled plastics through an online platform integrating the different plastic grades. In parallel, the technical and economic feasibility as well as environmental benefits of using recycled plastics will be validated in several electronics demonstrators. In addition, PolyCE will provide Guidelines for designing new electronics products with recycled plastics. The project's impact will be scaled up by involving target cities and their green public procurement initiatives; by EU-wide information and awareness raising campaigns. PolyCE will establish a feedback loop from the research activities, provide policy input regarding technical feasibilities and policy conflicts from technical perspective



Project's Participants List

PolyCE

***Post-Consumer High-tech Recycled
Polymers for a Circular Economy –
PolyCE***

Project's participants	Name	Country
1	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.,	
2	UNITED NATIONS UNIVERSITY	JP
3	THE UNIVERSITY OF NORTHAMPTON HIGHER EDUCATION CORPORATION	UK
4	MBA POLYMERS AUSTRIA KUNSTSTOFFVERARBEITUNGS GMBH	AT
5	SITRAPLAS GMBH	DE
6	FUNDACION TECNALIA RESEARCH & INNOVATION	ES
7	UNIVERSITEIT GENT	BE
8	KATHOLIEKE UNIVERSITEIT LEUVEN	BE
9	ONA PRODUCT SL	ES
10	CIRCULAR DEVICES OY	FI
11	ECODOM-CONSORZIO ITALIANO PER IL RECUPERO E RICICLAGGIO ELETTRICITA'	IT
12	KUNSTSTOFFWEB GMBH	DE
13	PEZY GROUP BV	NL
14	UL INTERNATIONAL FRANCE SA	FR
15	BUREAU EUROPEEN DE L'ENVIRONNEMENT AISBL	BE
16	TECHNISCHE UNIVERSITAET BERLIN	DE
17	PHILIPS CONSUMER LIFESTYLE B.V.	NL
18	WHIRLPOOL EMEA SPA	IT
19	PROLABIN & TEFARM SRL	IT
20	THE IMAGINATION FACTORY LIMITED	UK



P4SB

At a glance

Framework: Horizon 2020

Project number: 633962

Acronym: P4SB

Title: P4SB – From Plastic waste to Plastic value using *Pseudomonas putida* Synthetic Biology

Call: H2020-LEIT-BIO-2014-1

Instrument: RIA - Research and Innovation action

Start date: 2015/04/01

End date: 2019/03/31

Duration: 48 months

Total Cost: € 7,056,968.75

EU Contribution: € 7,056,968.50

Consortium: 11 participants

Project Coordinator: RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN, DE

P4SB – From Plastic waste to Plastic value using *Pseudomonas putida* Synthetic Biology

Abstract

P4SB is about the utilization of the conceptual and material tools of contemporary Synthetic Biology to bring about the sustainable and environmentally friendly bioconversion of oil-based plastic waste into fully biodegradable counterparts by means of deeply engineered, whole-cell bacterial catalysts. These tools will be used to design tailor-made enzymes for the biodepolymerization of PET (polyethylene terephthalate) and PU (polyurethane), but also for the custom design of a *Pseudomonas putida* Cell Factory capable of metabolizing the resulting monomers. *Pseudomonas putida* will undergo deep metabolic surgery to channel these diverse substrates efficiently into the production of polyhydroxyalkanoates (PHA) and derivatives. In addition, synthetic downstream processing modules based on the programmed non-lytic secretion of PHA will facilitate the release and recovery of the bioplastic from the bacterial biomass. These industry driven objectives will help to address the market need for novel routes to valorise the gigantic plastic waste streams in the European Union and beyond, with direct opportunities for SME partners of P4SB spanning the entire value chain from plastic waste via Synthetic Biology to biodegradable plastic. As a result we anticipate a completely biobased process reducing the environmental impact of plastic waste by establishing it as a novel bulk second generation carbon source for industrial biotechnology, while at the same time opening new opportunities for the European plastic recycling industry and helping to achieve the ambitious recycling targets set by the European Union for 2020.



Project's Participants List

P4SB

P4SB – From Plastic waste to Plastic value using Pseudomonas putida Synthetic Biology

Project's participants	Name	Country
1	RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN	DE
2	UNIVERSITAET LEIPZIG	DE
3	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	ES
4	UNIVERSITY COLLEGE DUBLIN, NATIONAL UNIVERSITY OF IRELAND, DUBLIN	IE
5	BIOPLASTECH LTD	IE
6	BACMINE SL	ES
7	HELMHOLTZ-ZENTRUM FUER UMWELTFORSCHUNG GMBH - UFZ	DE
8	UNIVERSITY OF SURREY	UK
9	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR
10	SOPREMA	FR
11	PROTEUS	FR



At a glance

Framework: Horizon 2020

Project number: 720739

Acronym: FRESH

Title: Fully bio based and bio degradable ready meal packaging

Call: H2020-BBI-PPP-2015-2-1

Instrument: : Innovation Action - Demonstration

Start date: 2016/10/01

End date: 2020/31/03

Duration: 42 months

Total Cost: € 10,248,750.00

EU Contribution: € 5,636,813.00

Consortium: 5 participants

Project Coordinator: HUHTAMAKI MOLDED FIBER TECHNOLOGY BV, NL

FRESH

Fully bio based and bio degradable ready meal packaging

Abstract

Ready meal consumption continues to grow throughout Europe – 6.5 billion and growing. The trays they come in are creating vast quantities of waste, many of which go for landfill.

The FRESH project will demonstrate an innovative, cellulose-based alternative to existing fossil-based plastic trays, which is a fully bio-based and biodegradable composite material.

The project will deliver a full value chain that will demonstrate the techno-economic viability (including customer satisfaction) of a 100% bio-based and 100% biodegradable alternative made from an innovative cellulose-based composite, using a new lamination technology.

Objectives:

The overall objective is to do a demonstration with an innovative cellulose-based packaging composite material as fully bio-based and biodegradable alternative for the PET/ CPET ready meal trays.

- Deliver a food safe, GMO-free and 100% bio-based and biodegradable product.
- Be at least 10% lighter than the fossil alternative (PET)
- Deliver the same or better technical and functional properties than a PET food tray
- Show a radically improved environmental footprint (CO₂ reduction of more than 80%) over the product lifecycle than competing fossil-based packaging material;
- Open up new applications and markets and increase the competitiveness of the European pulp, board and paper making industries, additionally showing high potential in terms of job creation in rural areas, moreover showing high potential for replicability in Europe.
- FRESH will create a fully bio based ready meal package is vital to ensure that more sustainable packages are fabricated durable in the packaging industry



Project's Participants List

FRESH

*Fully bio based and bio degradable
ready meal packaging*

Project's participants	Name	Country
1	Huhtamaki Molded Fiber Technology BV	NL
2	Sodra Skogsagarna Ekonomisk Forening	SE
3	Huhtamaki (Lurgan) Limited	UK
4	Samworth Brothers Limited	UK
5	WAITROSE LIMITED	UK



AFTERLIFE

At a glance

Framework: Horizon 2020

Project number: 745737

Acronym: AFTERLIFE

Title: Advanced Filtration TEchnologies for the Recovery and Later conversion of relevant Fractions from wastEwater

Call: BBI-RIA - Bio-based Industries Research and Innovation action

Instrument: : Research & Innovation Action

Start date: 2017/09/01

End date: 2021/08/31

Duration: 48 months

Total Cost: € 4 180 166,38

EU Contribution: € 3,890,593.13

Consortium: 15 participants

Coordinator: EGGPLANT SOCIETA A RESPONSABILITA LIMITATA, IT

Advanced Filtration TEchnologies for the Recovery and Later conversion of relevant Fractions from wastEwater

Abstract

The AFTERLIFE project proposes a flexible, cost- and resource-efficient process for recovering and valorising the relevant fractions from wastewater. It will represent an advance on existing approaches to wastewater treatment, which rely on physic-chemical and biological methods.

The AFTERLIFE process will separate out the different components of value using a series of membrane filtration units that will separate all the solids in the wastewater. These will then treated to obtain high-pure extracts and metabolites or, alternatively, to be converted into value-added biopolymers; polyhydroxyalkanoates(PHAs).

In addition to the value extracted from the solids, the remaining outflow of the water will be ultrapure and ready for re-use.

Objectives:

The overarching objective of the AFTERLIFE project is to demonstrate, at TRL-5, an innovative wastewater treatment that simultaneously recovers compounds of interest while converting the remaining organic matter into a high-volume added value biopolymer. Specifically, it sets out to:

- Develop the filtration system for recovering suspended and soluble solids in wastewater by using membrane filtration units.
- Develop the process for recovering and purifying valuable compounds in the concentrates extracted in the filtration step.
- Develop an anaerobic/aerobic process for converting the low value-added organic matter into PHAs.
- Optimise the resources in the process, following a circular economy approach
- Design and optimise the AFTERLIFE process from a holistic perspective following a Multidisciplinary Design Optimisation (MDO) approach
- Conduct a demonstration, at a pilot scale, using real industrial wastewater to generate the end products
- Prove the economic and industrial feasibility for AFTERLIFE process along with a comprehensive Lifecycle Analysis (LCA) and cost assessment.
- Promote exploitation of the project's results and expand its impact.



Project's Participants List

AFTERLIFE

Advanced Filtration TEchnologies for the Recovery and Later conversIon of relevant Fractions from wastEwater

Project's participants	Name	Country
1	EGGPLANT SOCIETA A RESPONSABILITA LIMITATA	IT
2	OPTIMIZACION ORIENTADA A LA SOSTENIBILIDAD SL	ES
3	AUSTEP-AUSTEAM ENVIRONMENTAL PROTECTION SPA	IT
4	BIO BASE EUROPE PILOT PLANT VZW	BE
5	CELABOR SCRL	BE
6	L'UREDERRA, FUNDACION PARA EL DESARROLLO TECNOLOGICO Y SOCIAL	ES
7	MI-PLAST DOO ZA PROIZVODNJU TRGOVINU I PRUZANJE USLUGA-MI-PLAST LLC MANUFACTURING, TRADING AND SERVICES MIPLAST	
8	NOVA-INSTITUT FUR POLITISCHE UND OKOLOGISCHE INNOVATION GMBH	DE
9	TEKNOLOGIAN TUTKIMUSKESKUS VTT Oy	FI
10	AGENCIA ESTATAL CONSEJO SUPERIOR DEINVESTIGACIONES CIENTIFICAS	ES
11	ASOCIACION EMPRESARIAL DE INVESTIGACION CENTRO TECNOLOGICO NACIONAL DE LA CONSERVA	ES
12	NOVA ID FCT - ASSOCIACAO PARA A INOVACAO E DESENVOLVIMENTO DA FCT	PT
13	JAKE SA	ES
14	HERITAGE 1466	BE
15	CITROMIL SL	ES



