# iCAREPLAST

**INTEGRATED CATALYTIC RECYCLING OF PLASTIC RESIDUES INTO ADDED-VALUE CHEMICALS**

# D2.1 Quality Plan

## Document Information

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| **Contractual Date of Delivery** | **M3** |
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| **Lead Participant** | **CSIC** |
| Contributing participants | All partners |
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## Project Information

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|---|---|
| Project Title | Integrated Catalytic Recycling of Plastic Residues into Added-Value Chemicals |
| Project Acronym | iCAREPLAST |
| Project Call | H2020-NMBP-SPIRE |
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**Version History**

**SPIRE**
Sustainable Process Industry through Resource and Energy Efficiency

## Executive Summary

The goal of the Quality Plan (QP) is to provide a reference and guideline on the quality processes that will govern the course of the iCAREPLAST project. This deliverable outlines:

- ↻ the project organization,
- ↻ measurements for quality assurance,
- ↻ documents and
- ↻ procedures,

required to ensure well-defined project management during all stages of the iCAREPLAST project.

This document is based and in agreement with the terms and conditions established in the Grant Agreement (GA) and Annexes, as well as in the Consortium Agreement (CA).

The use of the present guidelines will ensure better collaboration among the project partners. All the project partners must use this deliverable in order to ensure the quality assurance during the whole project and to facilitate the detection and prevention of possible deviations from the work plan.

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# 1. Introduction

## 1.1 iCAREPLAST in brief

The aim of iCAREPLAST project is to provide a cost and energy-efficient alternative to recycle and valorise non-recycled plastic waste (ca. 70% of European plastic waste) that, due to their characteristics or their contamination, are currently disposed into landfills (27%) or underexploited through energy recovery (42%). iCAREPLAST project, summarized in Fig.1, combines pyrolysis, catalytic treatment and membrane separation technologies to obtain high added-value chemicals, as they are (alkyl-)aromatics (BTXs and medium to long-chain alkyl-aromatics), that can be used to produce virgin-quality polymers or as raw materials for other processes in petrochemicals, fine chemicals and surfactants industries.
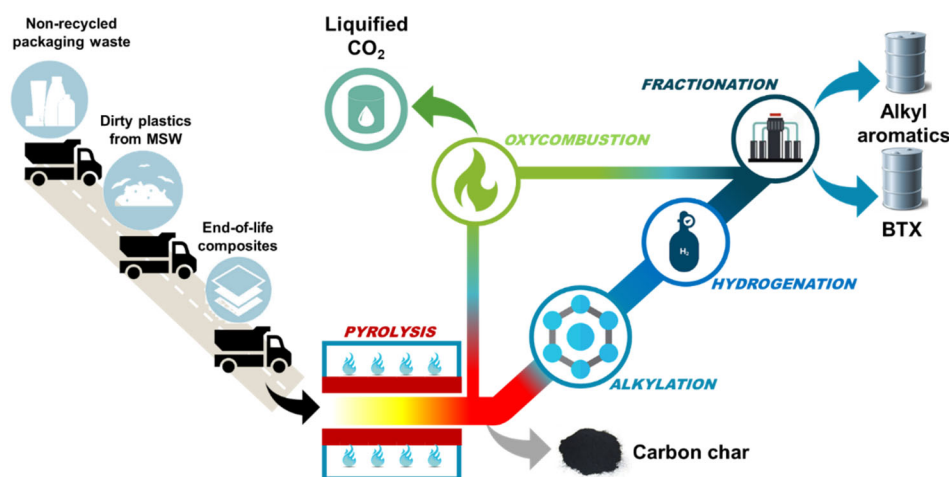


**Figure 1**. Overall concept behind iCAREPLAST process.

The nature of iCAREPLAST project involves, among industrial and scientific stakeholders, the participation of citizens and policy makers that should be aware of project potential environmental advantages, so a special communication effort must be directed to raise social acceptance.

## 1.2 Scope and objective of this deliverable

This document describes the Quality Plan for the iCAREPLAST project. The purpose of this document is to provide all project partners the main project procedures (project monitoring, reporting tools, internal communication strategies, etc.). The deliverable defines the management, decision structure and procedures in the project and describes the quality measurements that will be taken to ensure the project success.

# 2. Organization structure

## 2.1 Overview on Consortium Organization

The project consortium and structure have been established to promote an optimal use of knowledge, expertise and experience of the partners in achieving the project objectives. Made up of two decision-making forums and four key roles (see Figure 2).

The management structure will be coordinated by a set of simple and clear procedures enabling a smooth and efficient management and monitoring of an objective-driven research and innovation project of this timescale, complexity and budget, while considering the interests of all the partners involved. Work Package 2 (WP2) will be dedicated to ensure a smooth and efficient project execution.
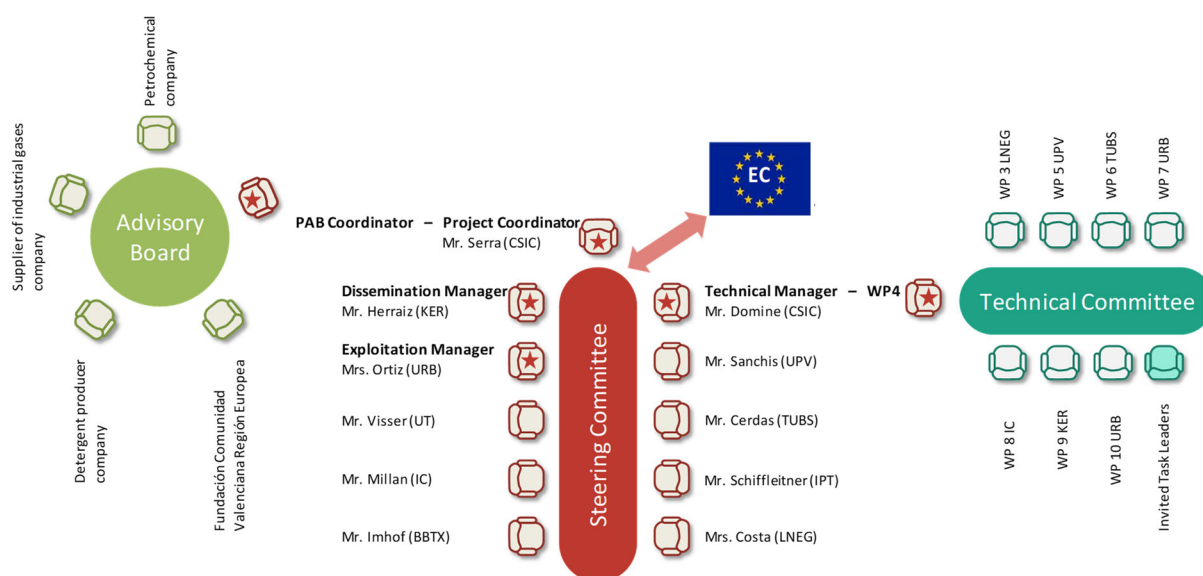


**Figure 2**. Overall iCAREPLAST project organization structure.

## 2.2 Conflict Resolution

Potential of conflict on technical, commercial or IP aspects are considered. Most of the conflicts with a contained risk within planning and/or contingency are solved by escalating one level up, meaning that task related conflicts are solved by the WP leader and WP related conflicts by the Technical Manager (M. Domine). If consensus isn´t reached within these escalations, the conflict is objectively analysed by the Project Coordinator (José M. Serra), making recommendations to the involved parties with the best interests of the consortium. In the unlikely case that this mechanism doesn´t lead to a consensus, it will be referred to the Steering Committee (SC) as a specific issue for resolution and, under extreme circumstances, a representative of the EC may be asked to act as arbitrator.

## *2.3 Communication and information flows*

Communication and information within the project take place at different levels. The Project Coordinator José M. Serra and the WP leaders will be responsible for the timely flow of information, progress reports and the contribution of results from their organisations.

In addition, the Project Coordinator will be in charge of updating the EC Project Officer on the state of the project, while providing the partners with copies of relevant scientific information and helping in the dissemination.

# 3. Quality management

## 3.1 Deliverables

Deliverables are evidences of the performance of the project and enable the Coordinator and the EC to monitor the project. Forty-three deliverables need to be submitted along the project implementation. The quality assurance of each deliverable is guaranteed by following the procedure:

- ↻ Firstly, an internal compilation and review procedure will take place. The accountable partner compiles the deliverable with the support of the other partners assigned to the specific task.
- ↻ The responsible of each deliverable forwards the deliverable and the related deliverable review report to the Coordinator (leaving at least one working day for formal checks).
- ↻ Once the deliverable has been approved and finalized, the Coordinator submits the deliverable to the European Commission on the EC portal and informs the consortium.

The deliverable review report and finally submitted documents should be available at the project internal platform. In the following table, a timeline for the preparation, approval and submission of deliverables is presented:

**Table 1.** Timeline for the preparation, approval and submission of deliverables.

| Time | Action | Actor |
|---|---|---|
| **3 months before due date** | Reminder to accountable partners and WP leader (in CC) of upcoming deliverable | Coordinator |
| **1 month before due date** | Reminder to accountable partners and WP leader (in CC) of upcoming deliverable | Coordinator |
| **2 weeks before due date** | Submission to Coordinator for quality and compliance check | Leading Beneficiary |
| **1 week before due date** | Revision report and eventual edits | Coordinator |
| **Due date** | Final approval and submission to the EC | Coordinator |

In accordance to the Grant Agreement, deliverables are classified according to the following types:

- ↳ R: Document, report,
- ↳ DEM: Demonstrator, pilot, prototype,
- ↳ DEC: Websites, patent filling, videos, etc.,
- ↳ OTHER,
- ↳ ETHICS: Ethics requirement,
- ↳ ORDP: Open Research Data Pilot.

Regarding, the confidentiality of deliverables and other documents, including presentations, the following levels of security are considered:

- ↳ PU: Public,
- ↳ CO: Confidential, only for members of the Consortium (including the Commission Services),

↳ EU-RES: Classified Information: RESTREINT UE (Commission Decision 2005/444/EC),

↳ EU-CON: Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC),

↳ EU-SEC: Classified Information: SECRET UE (Commission Decision 2005/444/EC),

A deliverable template has to be used for all deliverables created within the project (Annex 1). The template already provides the following general structure to be followed:

↳ Cover page – containing the mandatory EU visibility information as well as the deliverable key information,

↳ Table of contents,

↳ Introduction,

↳ Core part,

↳ References / Annexes (optional).

All documents for the project should adhere to the following naming convention and are available in the internal platform created in Microsoft Office Teams:

YYYY-MM-DD_iCAREPLAST_[Title]_(Version Author)

Example: 2019-02-22_iCAREPLAST_D21_v1

## 3.2 Milestones

Milestones are project checkpoints, help to the evaluation, to monitor the progress and represent the end of a project phase. Ten milestones have been identified within the iCAREPLAST project to be accomplished along the 48 months of implementation (Figure 3):

↻ **MS1:** Conceptual design and crucial economic parameters for evaluation and decision taking.

↻ **MS2:** Bench scale apparatus for testing membrane separation technologies built.

↻ **MS3:** Sorting, pre-treatment and feeding operations of plastic waste streams established.

↻ **MS4:** Operation and control parameters established for the plastic feeder and pyrolyser to adjusted production of pyrolytic liquids.

↻ **MS5:** Selection of Key Performance Indicators and operative models for simulation of individual units and the complete plant established.

↻ **MS6:** Validated design and construction of units for the pilot plant in URB facilities.

↻ **MS7:** Selection of the optimal operational and design parameters for advanced separation units and the catalytic alkylation unit.

↻ **MS8:** Validated assessment model and suitability of foreground and background system models, and life cycle engineering models.

↻ **MS9:** Commissioning of the pilot plant (URB facilities) under established safety protocols.

↻ **MS10:** Design, construction and testing of oxycombustion membrane reactor and organic separation membrane using feed compositions of real streams from URB pilot plant.

WP leaders are responsible for the timely achievement of the milestones as identified in the Grant Agreement. The Coordinator will monitor their progress during the duration of the project. The accountable partners will be informed of upcoming milestones one month before the respective due date. In case of potential delays, the Coordinator will work with the responsible WP leader to develop a contingency plan.

Once a milestone is reached, the leading beneficiary should inform the Coordinator specifying the delivery date. After that, the Coordinator will update the Milestones Monitoring File and record the accomplishment on the EC portal.
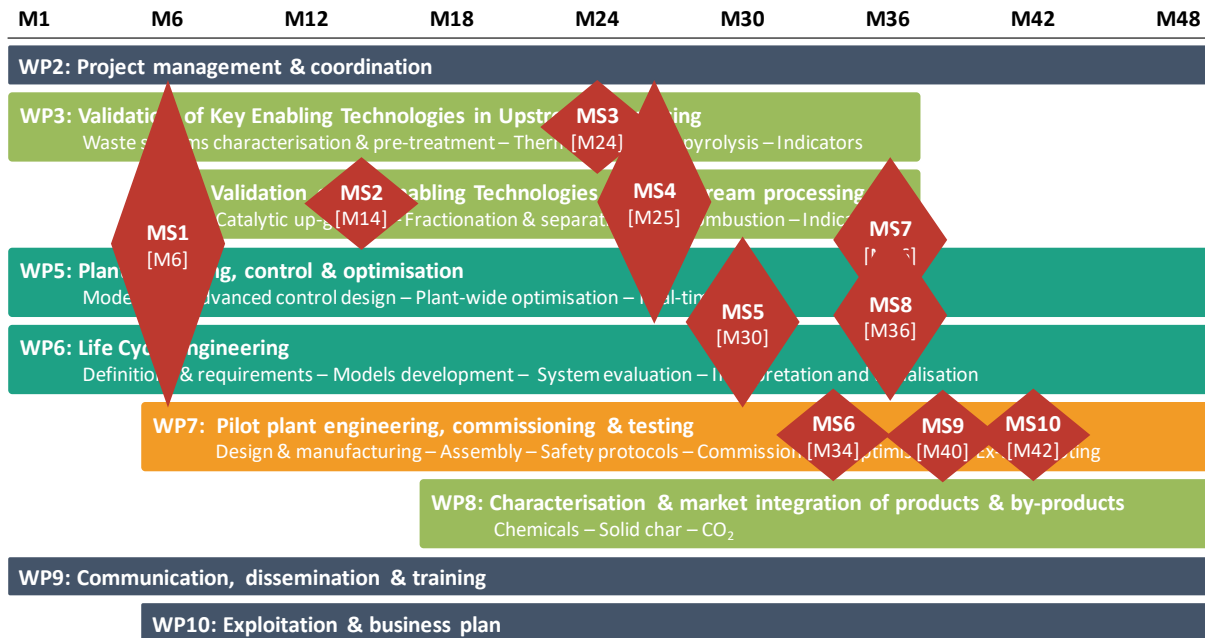


**Figure 3**. Milestones of the iCAREPLAST project.

## 3.3 Risk Management

Potential technical risks that may induce the adjustment of the planned activities of the project and the ways that these risks will be tackled have been foreseen and were detailed in the project proposal.

Risk management during the project has been split into two areas: the Technical Manager will deal with the technical risks associated with the project; and the Project Coordinator with the non-technical risks related to managerial or exploitation issues.

Before each stage of the project is initiated, the appropriate manager will conduct a risk assessment, based on the already defined potential risks and contingency plans. In case of an important impact to the project scope, plan or contractual obligations, a proposal for implementing any change into the Work Plan will be submitted to the Project Officer for final approval. The consortium members will be responsible of implementing these measures.

Periodically (every 12 months) in the Deliverable Risk Report the risk management strategy applied in iCAREPLAST will be presented ensuring the quality of the project. An update of the risks will be carried out if necessary.

## 3.4 Financial Management

Financial management tools will be provided to assist in administrative duties, simplifying data gathering for the creation of cost claims and financial reports. Each consortium member will be asked to report every nine months resource allocation (person-month, consumables, travel and other expenses) on this system so that monitoring and follow up will be easily made, simplifying the Consortium Management process.

The Project Coordinator will monitor every six months whether the costs of the different partners follow the plan. Partners' costs allocation will be reviewed in relation with tasks development. Any required budget transfer or adjustment will be analysed and approved by the SC and duly communicated to the EC if GA amendments would be required.

## 3.5 IPR and Knowledge Management

During the execution of the project, knowledge management will be performed. The Project Coordinator was responsible of concluding a definitive Consortium Agreement, legally signed by all members before Grant Agreement.

The Exploitation Manager will be responsible to agree and elaborate the exploitation and business plan to guarantee the project sustainability and benefit from the exploitation capabilities of the consortium partners.

The Task 10.2 Intellectual Property Rights (IPR) led by CSIC is devoted to protect the knowledge and innovations generated in the project as well as granting access to consortium partners to any background and IP required for carrying out the research work, following the rules defined and agreed in the Consortium Agreement. The Project Coordinator will be responsible for granting IP access and compliance the rules of the CA. The deliverable D10.2 Exploitation and Business Plan, including IPR strategy and agreement will be delivered in months 30,36 and 48 presenting the IPR designed strategies and agreements.

The Dissemination Manager will coordinate the development of the dissemination plan. The exploitation and the dissemination plans will ensure that IPR are properly handled and the background isn´t violated.

# 4. Project reporting

## *4.1 Internal Reporting*

The project progress will be reported by all partners on a six monthly basis. The goals of the status report are:

- ↻ documentation of project progress,
- ↻ discover deviations at an early stage,
- ↻ start remedial actions (if necessary) as soon as possible.

Templates to standardize and simplify the content of the internal reports as well as to facilitate the work of the project partners will be prepared by the Coordinator. The partners will report their activities 3 weeks after the end of each reporting period. The work package leaders will then revise and send to the Project Coordinator within one week.

## *4.2 Reporting to the EC*

The Project Coordinator will submit to the EC the technical and financial reports set out in the GA. The project is divided into three reporting periods (RP):

- ↻ RP1: from month 1 to 18,
- ↻ RP2: from month 19 to 36,
- ↻ RP3: from month 37 to 48.

The reports will be generated in collaboration with the WP leaders, using as an input the internal technical periodic reports and will encompass all activities carried out in the previous 18 months. Therefore, WP leaders will not prepare and send to the Coordinator internal technical reports at M18 and M36. However, the WP leaders will be requested to provide the information needed for the evaluation of the organizational KPIs in the period.

The Coordinator must submit the periodic reports within 60 days following the end of each reporting period.

# 5. Internal Communication

## 5.1 Communication Channels

The Consortium internal communication strategy aims to ensure the appropriate transparency and cooperation among partners as well as the timely generation, collection and storage of project information.

Day-to-day communication issues related to the project are done via e-mail or phone. Important communications should be traced via e-mail.

One e-mail account has been set up to facilitate the communication with the coordination team: icareplast@itq.upv.es.

## 5.2 Regular Meetings

The consortium will meet periodically to monitor the progress of the project and make decisions for the future. Approximately every six months, coinciding with major milestones, project plenary meetings will be hold combining review meetings, technical and managerial tasks in order to minimise costs and travels as scheduled in Table 2.

The Kick-off meeting took place in CSIC Brussels Office on 13-14/11/2018 according to the schedule. Meeting locations will be rotated among consortium members, enhancing the comprehension of each member´s business capabilities. The hosting partner is responsible for the logistical organisation of the meeting coordinated with the Coordinator.

The Coordinator is responsible for setting up the agenda, taking the meeting minutes and sharing them with all the participants and project bodies. An agenda template was made and is available at the project internal platform in order to facilitate the organization of the oncoming meetings (Annex 2).

**Table 2.** Meetings (face-to-face) planned related with major milestones.

| Meeting num. | Meeting type | Project month | Milestones | Meeting location |
|:---:|:---:|:---:|:---:|:---:|
| 1 | Kick-off | 1 | | Brussels (BE) |
| 2 | Technical meeting | 6 | MS1 | Lisbon (PT) |
| 3 | Project plenary | 14 | MS2 | Twente (NL) |
| 4 | Technical meeting | 19 | | Madrid (ES) |
| 5 | Midterm | 26 | MS3-4 | Braunschweig (DE) |
| 6 | Technical meeting | 30 | MS5 | Valencia (ES) |
| 7 | Project plenary | 36 | MS6-7-8 | Zaragoza (ES) |
| 8 | Technical meeting | 42 | MS9-10 | London (UK) |
| 9 | Final | 48 | | Valencia (ES) |

### 5.3 Web Technical Meetings

The Coordinator plans and proposes a date for a monthly Technical Committee online meeting. The participation of the WP leaders in these meetings is mandatory. The assistance of one representative of the WP in the case that the WP leaders are not available, is highly appreciated. All project partners are informed of the selected date and finally, an invitation with a link to join the meeting is sent to all project partners.

Additionally, all the project partners are free to propose and set up a web meeting conference. The Project Coordinator should be invited to all web meetings. In case the web meeting is organized by a task leader, the WP leader should be invited as well.

The organizer of the web meeting, most commonly the Coordinator, is responsible for preparing the agenda and minutes of the meeting.

### 5.4 Minutes of Meetings

Minutes of the regular meetings (Table 2) are mandatory and will be distributed to all the partners and to the EC Project Officer. The minutes of the regular (face-to-face) meetings should include:

- ↻ Initial table with general information: type of meeting, date and place, participants, organisers, WP involved, number of pages,
- ↻ Agenda,
- ↻ Dissemination level,
- ↻ Version history,
- ↻ Contents,
- ↻ Meeting Minutes,
- ↻ Action list,
- ↻ List of Attendees (signed list).

Informal minutes are mandatory for each web meeting as well. The minutes of the technical meetings should be shared with all the project partners, which could be related with the discussed issues for approval and then, stored in the internal project platform.

A template for the minutes of the meetings was created, it is available for all projects partners and can be found in the internal project platform (Annex 3).

All Minutes of Meetings should adhere to the following naming convention:

YYYY-MM-DD_iCAREPLAST_[Title]_(Version Author)

Example: 2019-02-22_iCAREPLAST_1-Technical-Committee-Meeting_v1

### 5.5 Exchange Tools

A platform was created in Microsoft Office Teams for internal collaboration and documents repository. Microsoft Teams is built on the Office 365 hyper-scale, enterprise-grade cloud, delivering the advanced security and compliance capabilities. Teams is Tier D-compliant, this includes the

following standards: ISO 27001, ISO 27018, SSAE16 SOC 1 and SOC 2, HIPAA, and EU Model Clauses (EUMC) (https://docs.microsoft.com/es-es/microsoftteams/security-compliance-overview).

Private invitations were sent individually to each project partner allowing the access. The Coordinator took care was informed and solved the issues of each individual partner. The internal platform serves as document repository (deliverables, templates, general and specific documents, drafts, publications, etc.), exchange and internal communication tool. The private section of the project website includes a link to the internal platform.

# 6. External Communication

## 6.1 Website

The iCAREPLAST website (www.icareplast.eu) will be the main interface for communication to the public. It contains information on the iCAREPLAST goals, the partnership, the proposed activities and the foreseen/achieved results. It will also allow having access to the dissemination material and will host a blog to facilitate the interaction between partners and interested parties. In order to maximize its visibility, free or affordable methods to increase page ranking on search engines will be used.

The web will include information of the project and the possibility to contact with project partners for interested stakeholders. Interested parties will have the possibility to register to receive updated information and networking opportunities. Electronic newsletters reporting on project events and results will be published half-yearly on the website of the project reaching a wide community of potential stakeholders. Apart from the public area, a link to the internal platform created in Microsoft Office Teams will be set up. All confidential project documents have been and will keep uploaded in the platform to enable the exchange of information and reporting activities.

## 6.2 Social Media

In order to reach a broad target audience while establishing two-ways communication channels, the presence of the iCAREPLAST project in social media will be encouraged.

A Twitter account (https://twitter.com/iCAREPLAST/) will be used as a direct communication instrument for reaching the public and following Horizon 2020 communication and dissemination campaigns launched by the European Commission. The social media platforms used by the Commission and its agencies will be employed to expand project audience, which will be accomplished by adding #H2020 and tagging @EU_H2020 to iCAREPLAST tweets. Additionally, in order to reflect the relation of the project with the SPIRE community, references to @Spire2030 will be included whenever possible.

On the other hand, a LinkedIn (https://www.linkedin.com/company/icareplast/) page will be used for reaching stakeholders and industry professionals. Official LinkedIn groups will be joined to raise awareness among the different project topics professionals and industry.

The website will have direct access to these social networks by clicking over the icons situated on a visible part of the website. In this way, it will be easy for every user to participate in this when visiting the website.

## 6.3 Scientific and Trade Journals

Scientific publications are an effective way to disseminate high-level project information and to attract the interest of representatives of various target groups. The research partners will preferably publish the results in indexed peer-reviewed journals (Q1-Q2), which are addressed to academic staff as well as industry professionals.

Companies within the consortium, and research partners when applicable, will present iCAREPLAST in trade journals of magazines of sectors and industries related to the project outcomes

(recycling technologies, oxycombustion and $CO_2$ capture, membrane technology, control and LCA software and systems, etc.), always taking into account confidentiality and IPR protection aspects.

The Coordinator should be informed on project related publications. Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results. References to published articles should be stored in the project internal platform if possible.

The basic rules for dissemination activities and publication were detailed in the deliverable D9.1 Project Communication and Dissemination Plan. Any dissemination of results (in any form, including electronic) must include the following text:

*"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 820770".*

*"This [insert type of activity] reflects only the author's views and the Commission is not responsible for any use that may be made of the information contained therein"*

## 6.4 News and Press

Publication of periodic press releases (coinciding with major project meetings and events) to local, national and international media, contributions to specialised magazines (e.g. Recycling International Magazine, Resource Recycling Magazine, BioFuels Digest) will be continuously made.

# 7. Annexes

**ANNEX 1.** Deliverable template

## ANNEX 2. Agenda template



## ANNEX 3. Minutes template