Pulp and paper industry waste to fuel

Deliverable 5.2

Plans for dissemination and exploitation of the results N°1

Start date of the project: 1st October 2018
Duration 48 months

PULP & FUEL
pulp and paper industry waste to fuel

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Document Abstract

This deliverable aims to define an effective long-term strategy to pursue the following objectives:

- Make the project widely known to raise awareness on the project and stimulate interest
- Disseminate the results and transfer the knowledge generated by the project
- Explore and assess emerging application areas to facilitate the exploitation of the project's results
- Set the foundations for further opportunities to ensure the achievement of impact during and after the end of the project

This document will be re-visited regularly during the project and will be kept updated (M28 and M48) in order to have the optimal means for attaining the objectives, thus constituting an essential tool to guide the activities of the Consortium throughout the lifetime of the project.

The status of the different issues, achievements towards the objectives and measurable indicators are reported, thus giving the progress of the different activities, and outlining the work to be done in the next months.

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Abbreviations:

- RTO: Research and Technology Organisations
- SME: Small and Medium Enterprise
- IP: Intellectual Property
- R&I: Research and Innovation
- BtL: Biomass to Liquid
- TRL: Technology Readiness Level
- EC: European Commission
- WP: Work Package

1. The project

1.1 Context

Currently dominated by the use of fossil fuels, transport sector is leading to around a quarter of the European greenhouse gas emissions.

European Renewable Energy Directives aim to increase the consumption of alternative fuels such as biofuel and natural gas in the transport sector to 10% in 2020, whereas it currently represents only 5% of fuel consumption.

To avoid indirect land use change effects, biofuels from conventional crops are now limited. Hence, and considering the large and growing greenhouse gas emissions, it is of a vital importance to develop new advanced and sustainable biofuels based on alternative feedstocks, with competitive production costs technologies.

Thanks to the involvement of 10 academics and industrial partners, an innovative concept was launched, aiming to develop a simple and robust fuel synthesis process from wastes of paper industry. This project, named "Pulp and Fuel" is financed by the European Union Horizon 2020 Research and Innovation program.

1.2 Partners

- 6 RTO: CEA, SINTEF, RISE ETC, EPFL, IVL, Grenoble INP
- 3 Industry: SOFSID, FIBRE EXCELLENCE, TOP INDUSTRY
- 1 SME: ABSISKEY

1.3 Goals and objectives

The Pulp&Fuel project aims to:

- Develop a simple and robust fuel synthesis process taking advantage of the synergy between dry and wet phases and technologies
- Improve the recycling of waste streams from pulp and paper industry
- Produce biofuels below 1 €/L without having a negative impact on the existing operations of the pulp mill

To achieve these goals, 5 specifics objectives are defined:

- Objective 1: Dry gasification: improve the efficiency of the dry gasification process from 70 to 80%
- Objective 2: Wet gasification: improve the carbon conversion of the wet gasification process to above 90%
- Objective 3: Fuel synthesis: improve syngas cleaning fuel synthesis to obtain dry and wet gasification
- Objective 4: Process optimisation: extrapolate the process to an industrial demonstration plant, maximising the conversion of the biomass resource into useful product and distributed energy
- Objective 5: Technico-economic and environmental assessment: model, evaluate and optimise the overall process

2. Definitions

In the context of this document, we consider the following definitions, from the H2020 references (EC Research & Innovation Participant Portal Glossary/Reference Terms):

Results: "*any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected*"

Dissemination: "*public disclosure of the results by any appropriate means, including by scientific publications in any medium*"

Exploitation: "*use of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities*"

Communication: *"strategically planned process that starts at the outset of the action and continues throughout its entire lifetime, aimed at promoting the action and its results. It requires strategic and targeted measures for communication about (i) the action and (ii) its results to a multitude of audiences, including the media and the public and possibly engaging in a two-way exchange"*

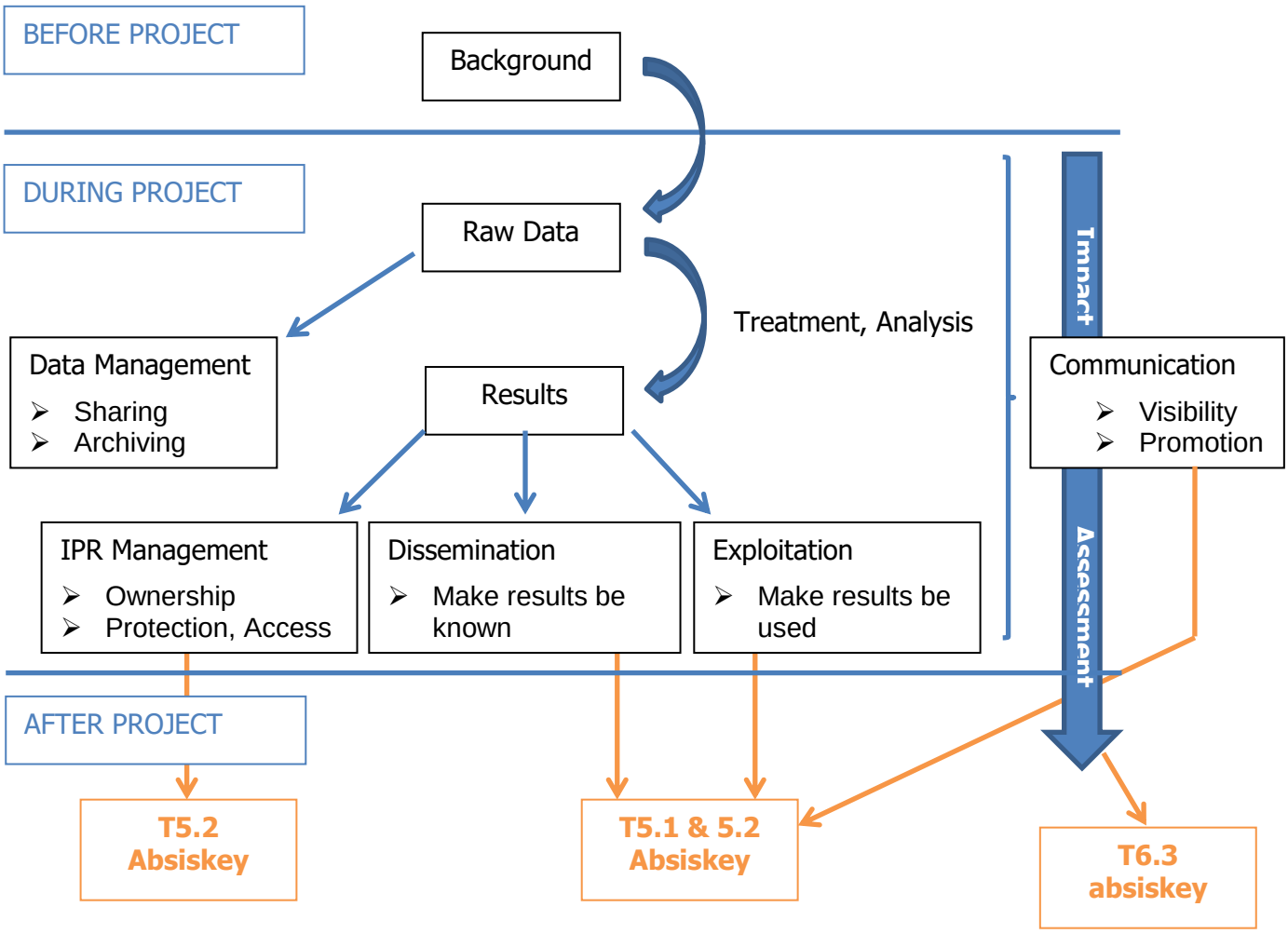

Figure 1: Process involved in the valorisation of the project and its results

Communication, dissemination and exploitation must be addressed through an integrated approach that strategically plans activities to avoid ad-hoc efforts.

For that, clear objectives, defined targets, pertinent messages, right medium and means must be identified and implemented.

Communication, dissemination and exploitation activities are closely linked: although they can be considered separately, they often belong together since one drives the other and vice versa. What differentiate them from another are the objectives, focus and target groups they address.

To build this integrated and strategic approach, following steps must be implemented:

- Description of the project key exploitable results, their exploitation route and IP management
- Identification of the main objectives of the communication-dissemination-exploitation strategy and of the relevant target audiences
- Definition of clear messages in accordance with objectives
- Identification of proper communication means and tools
- Formalisation of roadmaps planning activities
- Evaluation of the efforts already done and improvements proposition

3. Project key exploitable results

The exploitation aims to describe how the results arising from the project will be used and more generally concretises the value and impact of the R&I activity for societal challenges.

3.1 Background

During the proposal stage, the partners have listed the components of their background likely to be brought to the project and the potential rights attached to them:

- Regarding the gasification process, there will be no conflicts with existing patents. RISE ETC and CEA have full control over their respective technologies.
- For Fischer-Tropsch synthesis and upgrading the selected catalysts will be based on published reports, either based on open literature or from patents that have expired, or form commercial vendors where appropriate.
- The gas cleaning technology is developed in a national project where SINTEF is partner and utilising the results in Pulp&Fuel has been clarified with the project manager.

3.2 Expected Pulp&Fuel results and outcomes

This step intends to answer the following questions:

- What are the expected key exploitable results of the project?
- How are they going to be used and by whom?
- Which means to ensure their exploitation?

The scope of this first version of the exploitation plan at M14 is based on a synthesis of the elements formalized in the project proposal.

Further updates at M28 and M48 shall be based on the consortium brainstorming sessions, taking into account possible changes, scanning the effective obtained results and matching them with the initial ambitions/goals.

The dissemination and exploitation strategy of the project will extensively target industrial stakeholders. Due to the TRL of the technology, activities aiming at direct commercialization and industrial implementation during the project are premature and will have to take place following further technology development.

The coordinator of Pulp&Fuel is in charge to constitute an Advisory Board that will play a key role and will serve both to ensure the industrial relevance of the project activities and to communicate project results to the industry. It will be constituted by up to 10 members for guidance, advice and evaluation, coming from such as companies that have a commercial interest in the technology.

3.3 Use of the results in further research activities

As described in the table above, the measures to ensure exploitation of the results when using these in further research activities are related to communication and dissemination strategy (make the results be known so as to transfer technologies): thus, the next chapters (targeted audiences, key messages, communication means and tools) contribute to these exploitation activities as well as the communication and dissemination ones.

3.4 Use of the results in developing commercial activities

Due to the TRL of the technology (3 to 5), activities aiming at direct commercialisation and industrial implementation during the project are premature and will have to take place following further technologies developments and prototypes.

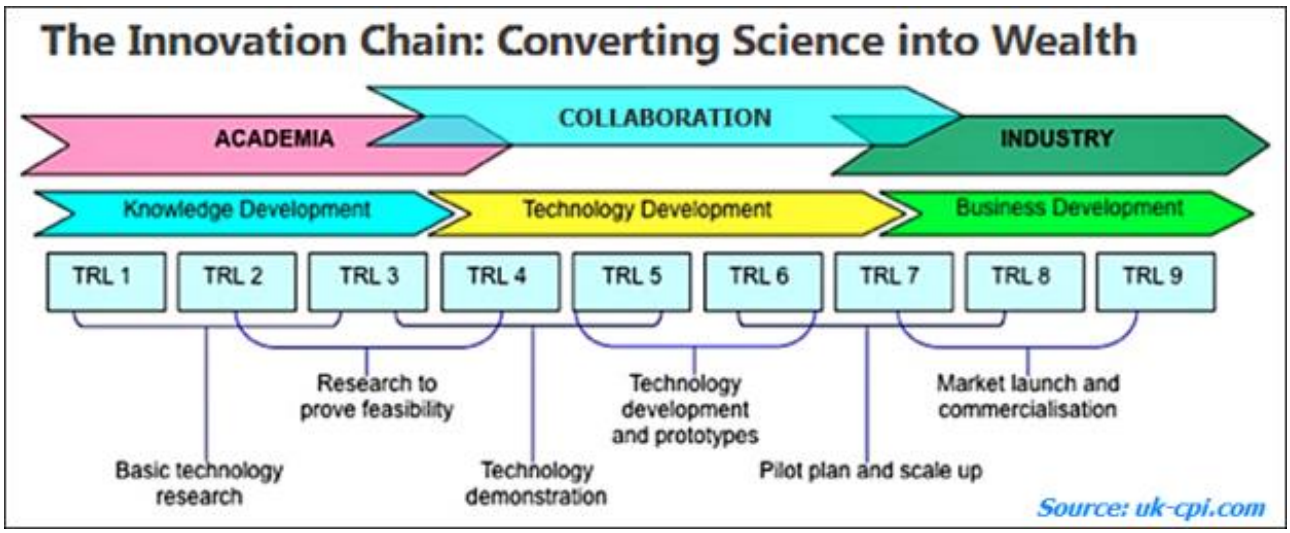

Figure 2: Technology Readiness Level scale

Thus, commercial activities are at not expected during the project, and the exploitation plan must lead reflexion to anticipate and prepare relevant actions in order to convert generated knowledge and technology demonstrations into products or services.

Exploitation plan will consists of:

- Formalising a strategic marketing plan, so as to evaluate the market potential of the exploitable results (demand, competition, customers benefits, unique selling proposition)
- Formalising a business plan, so as to define commercial and financial strategies, based on the economic evaluation (T4.3)
- Attract additional funding to implement higher TRL level, from technology developments and prototypes to market launch and commercialisation

In this first M14 version, we consider it is too early to initiate these analyses, which need a minimum implementation of the project: thus marketing strategy and business plan shall be set up in the final updates (M28 and/or M48), based on a consortium brainstorming session, and ideally involving the Knowledge Transfer and Partner Relations Departments of the academic centres involved in the project.

3.5 IP rights and management

IP strategy aims to secure and manage project results. To formalise that strategy, several points must be taken into account:

- ownership of the results (principle = results belong to the beneficiary generating them; if they have been generated by several partners jointly = joint ownership)
- access rights of the results (open access as a general principle of scientific dissemination)
- whether or not they have to be protected (can reasonably be expected to be commercially or industrially exploited and protecting them is possible, reasonable and justified)
- which protection measures will be taken

4. Strategic objectives and targeted audiences

4.1 Main objectives of the communication-dissemination-exploitation strategy

- Embed project results into the practices of participants
- Make available the knowledge generated through the project to all interested organisations
- Establish links with related on-going research initiatives
- Trigger further development and researches in next generation biofuel technologies
- Set the foundation for further commercial exploitation and opportunities
- Help to attract additional funding to increase TRL level of technologies and tools developed
- Make the project's work widely known, attract civil society attention and generate interest for exploitation of the results
- Inform decision makers about Pulp&Fuel important outcomes

4.2 Targeted audiences

The groups of target audiences of the project for communication, dissemination and exploitation purposes are shown in the picture below.

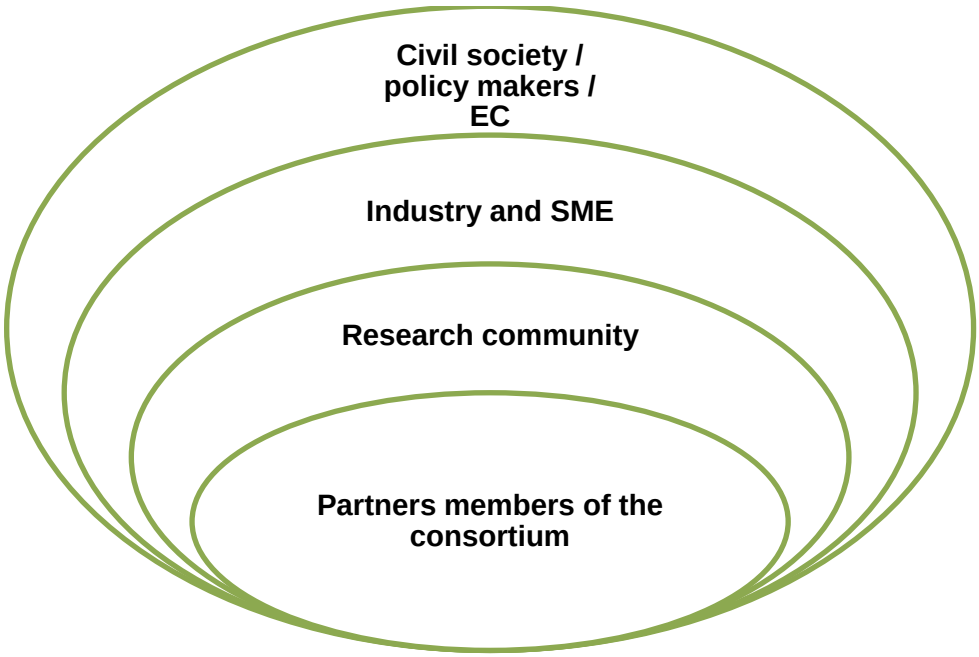

Figure 3: Scheme of targeted audience of the Pulp&Fuel project

4.2.1 Partners members of the consortium

- Mainly academics
- Highly involved in the project
- High expectations about the outcomes as WP are interdependent to build on Pulp&Fuel final results

- Expect to trigger further developments in next biofuel technologies
- Expect to set the foundations for further commercial exploitation
- Get information mainly through scientific events and papers, or professional workshops
- Shall establish links with other R&I activities (see table 3 below)

4.2.2 Research community

- Mainly academics in thermochemical conversion of wastes into biofuel, and in paper production
- Expect to be informed of the knowledges and technologies generated through the project
- Expect to build new collaborative researches in next generation biofuel technologies
- Get information mainly through scientific events and papers
- Some use professional Social Media (Research Gate, LinkedIn)

4.2.3 Industry and SMEs

- Industry and SME's in the sector of pulp and paper industry, biofuel and renewable fuel technologies, waste treatments
- Expect to develop synergies with academics in order to develop new commercial activities
- Get information mainly through professional Social Media, newsletters, professional events

4.2.4 Civil society / policy makers / European Commission

- Interested in environmental challenges and in biofuel and renewal fuel technologies
- Expect to get information about main project outcomes, and especially about their possible concrete applications
- Get information mainly through mass medias and Social Media, website

Tableau 1: Links to other R&I initiatives

Acronym (Coordinator)	Program	End Year	Title	Link with the Pulp&Fuel project	Partner involved
(IVL)	Renewable transportation fuels and systems[18]	2018	Environmental and socio-economic benefits from Swedish biofuel production	Develops and applies methodology to identify aggregated environmental benefits from biofuel production by-products (e.g. fertilizers, materials, etc.) and utilities and services (e.g. industry integration), which is highly relevant for Pulp&Fuel project.	IVL
(IVL)	Renewable transportation fuels and systems	2018	Techno-economics of long and short-term technology pathways for renewable transportation fuel production	Techno-economic method development and evaluation of integrated biofuel production. Pulp&Fuel will give large synergies.	IVL
MIWARE (VTT)	EU Acqueau	2017	Mine Water as a Resource	Development of membrane separation technology for specific inorganic compounds (metals). Will give relevant results for metal/nutrient recovery from SCWG.	IVL
SCCER BIOSWEET (O Krocher)		2020	Swiss Competence Centre on Energy Research, Biomass for the Swiss Energy Future	Waste to liquid process system design and integration (WP3)	EPFL
GAFT (SINTEF)	Norwegian Research Council	2018	Gasification and Fischer-Tropsch synthesis (GAFT)	Fuel synthesis based on the produced gas from entrained flow gasification of Norwegian wood and waste sludge. Parametric study of Fischer-Tropsch synthesis with both Co and Fe-based catalysts.	SINTEF ETC
BioFT (NTNU)	Norwegian Research Council	2021	Bio Fischer-Tropsch (BioFT) – staging and multiple hydrogen feed of biomass to Fischer-Tropsch fuel synthesis.	Modelling and experimental verification including kinetic studies of staged Co-based Fischer-Tropsch synthesis.	SINTEF

CLD (NTNU)	Norwegian Research Council	2020	Chemical Looping Desulfurization of Raw Syngas from Biomass Gasification by Mn-based Solid Sorbent.	Development of improved gas cleaning technology for sulphur removal. Construction of mobile pilot unit for demo that may be tested in the Pulp&Fuel project towards the end.	SINTEF
Bio4Fuels (SINTEF)	Norwegian Research Council	2020 (2024)	Norwegian Centre for Sustainable Bio-based Fuels and Energy.	Large national consortium of stakeholders addressing biochemical, thermochemical and chemical conversion technologies, including Fischer-Tropsch synthesis and refining.	SINTEF
FASTCARD (SINTEF)	FP7-NMP	2018	FAST industrialisation by CAtalysts Research and Development	Addressing major challenges impacting on the efficiency and implementation of key catalytic steps in biobased processes, including the Fischer-Tropsch synthesis.	SINTEF
4REFINERY (SINTEF)	H2020-LCE-8	2020	Scenarios for integration of bio-liquids in existing REFINERY processes	Development and demonstration of next generation biofuels integrated with downstream (hydro) refining.	SINTEF
OCMOL (UGent)	FP7-NMP	2014	Oxidative Coupling of Methane followed by Oligomerization to Liquids	Catalytic conversion of hydrocarbons to liquid fuels.	SINTEF
EUROBIOREF	FP7-ENERGY	2014	EUROpean multilevel integrated BIOREFinery design for sustainable biomass processing	Thermochemical conversion of non-food biobased feed-stocks to refined fuels.	SINTEF
Gasification of SLF (ETC)	RE: Source (SWE, Swedish energy agency, Formas and Vinnova joint program)	2018	Recycling of SLF through high-temperature gasification	High-temperature gasification of complex plastic waste, which is relevant for the Pulp&Fuel project.	ETC
ENERLIG (CEA)	Carnot	2016	Energy valorisation of lignin in a paper mill bio refinery	Supercritical water gasification of black liquor	CEA GRENOBLE INP

Beatles (CEA)	Carnot	2016	Valorisation of sewage sludge for energy production and inorganic species recovery	Experience obtained on liquefaction and supercritical water gasification of municipal sewage sludge.	CEA
WASTE2ROAD	H2020	2022	Biofuels from WASTE TO ROAD transport	Development a new generation of cost-effective biofuels from a biogenic residues and waste fractions.	SINTEF

5. Key messages

This chapter presents the key messages of the project, ensuring coherence of communication, dissemination and exploitation activities. Not all the messages hold interest for all types of audiences that the project addresses, as described below.

Tableau 2: Key messages of the Pulp&Fuel project

Target audience	Objective	Message	Calls to action	KPI's (obj. to fix)
Partners members of the consortium	• Improve biofuel process technology • Transfer the knowledge generated • Set the foundation for further commercial exploitation	Working together will allow you to achieve both the project and your own objectives	• Make the project be known • Disseminate your results • Organize events to make the project be known • Establish links to other R&I initiatives	• Number of publications in international conferences • Number of publications in international journal • Lectures & posters in international conferences • Number of events organised
Research community	• Establish links with related on-going research initiatives • Build new collaborative researches	Project presents opportunity to feed your own researches and to set collaborations	• Participate to the events organised by the Pulp&Fuel consortium • Embed project results into your practices • Use the most significant outcomes to trigger further development in thermochemical conversion of wastes into biofuel	• Number of attendees in total • Impact factor of the publications of the Pulp&Fuel project / number of reading-download (website) • Number of academics followers of the Pulp&Fuel Social Media (apart from the partners)
Industry and SME	• Match the project new material and corresponding research advances with market opportunities	Outcomes present great opportunities for business	• Follow the main valuable project outcomes • Set the foundations for further commercial exploitation	• Number of industrials followers of the Pulp&Fuel Social Media (apart from the partners) • Number of industrial cooperation agreements

				• Evidence of transfer of research and innovation into practice (patents, prototypes, licenses) • Number of new products, practices or procedures developed based on outcomes
European Commission, Governments	• Increase TRL level of technologies and tools developed	Additional projects can lead to better standardisation of the outcomes	• Fund additional projects related to the thematic	• Evidence of new funding
Policy makers	• Raise political awareness	Outcomes present opportunity to support economy, jobs and growth	• Contribute to new policies about the thematic	• Evidence of debates in the media
Civil society	• Make the project's work widely known • Attract civil society attention • Generate interest for exploitation of the results	Outcomes present opportunity to decrease greenhouses emissions, and to answer environmental challenge related to renewable energies	• Go to our website • follow us on twitter • share with your own networks	• Number of website visits • Number of documents and videos downloading • Number of followers of the Pulp&Fuel Social Media (apart from the partners) • Number of people asking for feedback or more information

6. Communication mean and tools

All patent applications and publications or any other type of communication (also in electronic form) shall include a statement that the action received financial support from the EU. The same applies also to results incorporated in standardisation activities.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818011

Figure 4: Pulp&Fuel statement to acknowledge EU funding

6.1 Promotion tools

6.1.1 Logo, templates, flyer, poster

The strategic branding of the project is ensured from the beginning of the project with the design of an original visual identity, including the project logo and its own visual chart as well as official project templates, a number of attractive documents both in traditional as well as in digital form.

PULP&FUEL

pulp and paper industry waste to fuel

Figure 5: Pulp&Fuel logo

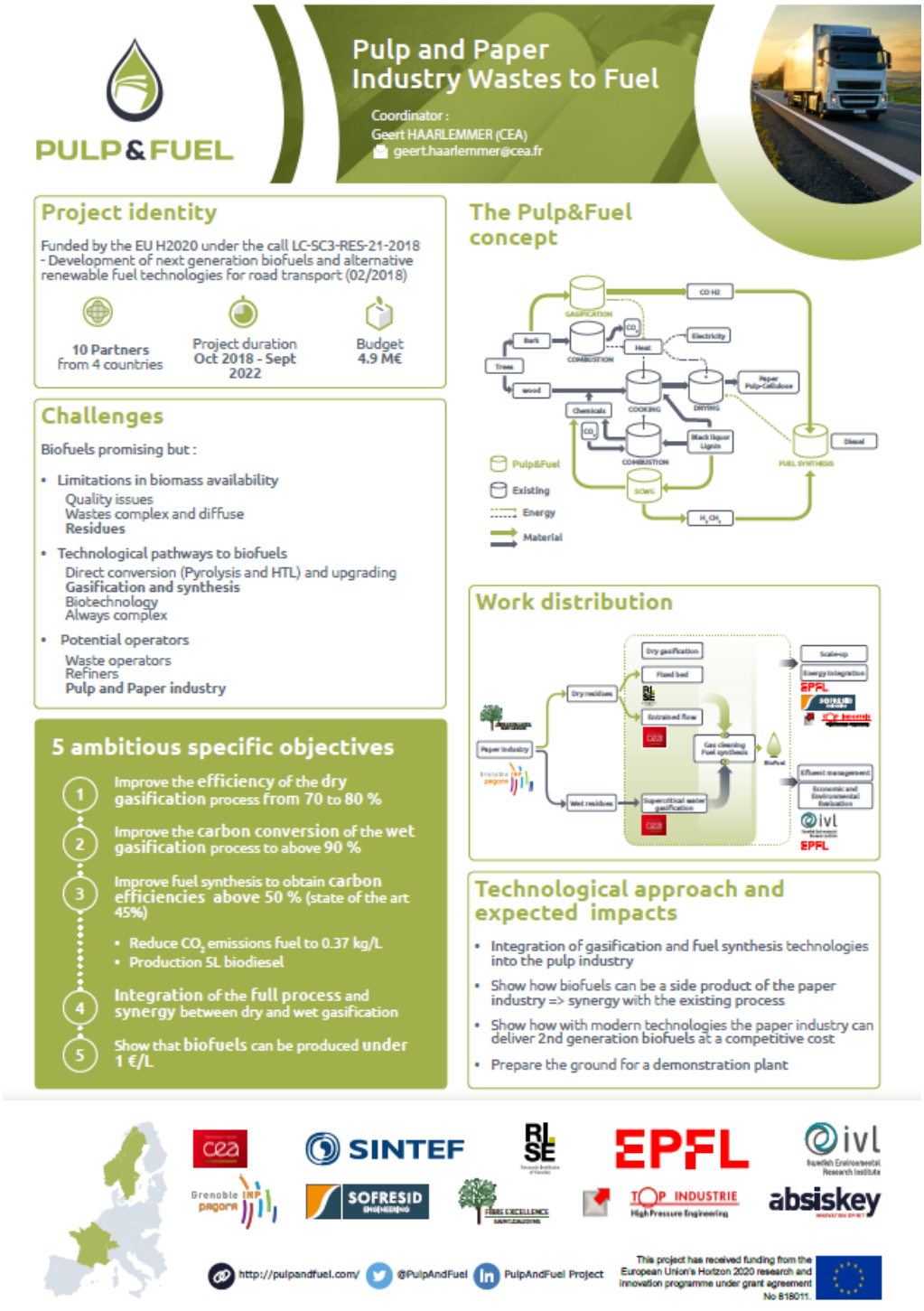

Figure 6: Pulp&Fuel poster

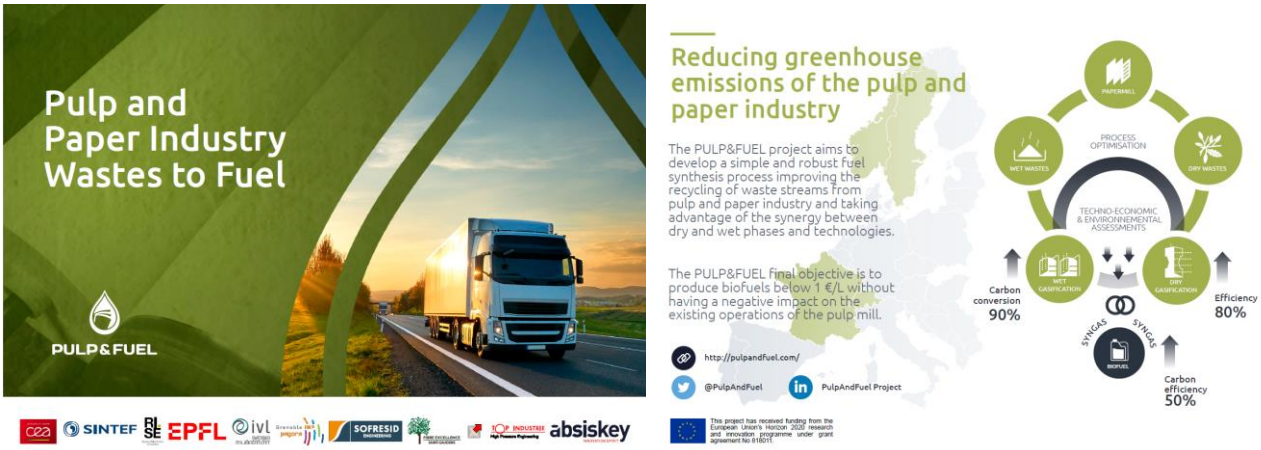

Figure 7: Pul&Fuel 1st flyer

This material was used to promote the project during conferences such as international scientific conference.

Figure 8: Pul&Fuel poster template

This material has been creating to allow the project partners to fill by themselves the poster for any internal or external use.

6.2 Communication tools

6.2.1 Videos

It is planned to make at least 3 videos to promote the project and its results:

- A first one presenting the project – will be launched around month 16 (January 2020)
- A second one presenting the results achieved – around month 30 (March 2021): pictures could be taken during the first conference
- And a last one, presenting the whole project achievement and exploitation – around month 45 (June, 2022) : pictures could be taken during the last conference

6.2.2 Newsletter

For the Pulp&Fuel project, a good practice would be to produce a newsletter giving some key information about the project at the end of each reporting period (M18, M30, M48).

These newsletters would be published on Pulp&Fuel website and Social Media.

6.3 Communication means

6.3.1 Project website

The website is a key tool for external one-way communication. It was launched at month 5 (February 2019) and is continuously fed to keep the audience informed and ensure interest of already attracted visitors.

Indicators will be regularly checked, at least for each meeting. They could include the following criteria: number of sessions, number of users and new users, average session duration, number of documents downloaded, geographical distribution of the users.

More information is available in the deliverable 5.1, focused on the website and Social Media creation and development.

6.3.2 Reference to the project on each partner's website

To optimize the communication on the project, it is a good practice for all partners to make reference to the Pulp&Fuel project on their own websites.

Tableau 3: Reference to the project on each partner's website

Partner	Website url	Mention of the Pulp&Fuel project
P1 CEA	http://liten.cea.fr/cea-tech/liten/Pages/Accueil.aspx	YES/NOT YET
P2 SINTEF	https://www.sintef.no/en/industry/process-technology/#	YES
P3 RISE ETC	https://www.ri.se/sv	YES
P4 EPFL	https://www.epfl.ch/labs/ipese/	YES
P5 IVL	https://www.ivl.se/english/startpage.html	NO
P6 INP Grenoble	http://pagora.grenoble-inp.fr/fr/recherche	YES
P7 SOFRESID	https://sofresid-engineering.com/categorie/innovation-transition-energetique/	YES
P8 FIBRE EXCELLENCE	http://www.fibre-excellence.fr/	NO
P9 TOPI	www.top-industrie.fr/?lang=EN	
P10 ABSISKEY	http://www.absiskey.com/	NO

Moreover, it would be a good thing to involve communication services of the different partners organising events (workshops, schools, conferences) so as to publish articles + photos about the events (and thus about the project) on their own websites. These materials will then be relayed on the Pulp&Fuel website and Social Media.

6.3.3 Social Media

The Pulp&Fuel Social Media are a key tool for external one-way communication. They were launched at month 5 (February 2019) and are continuously fed to keep the audience informed and ensure interest of already attracted visitors.

More information is available in the deliverable 5.1, focused on the Website and Social Media selection, creation and development.

INEA uses Twitter and LinkedIn and would like to be informed about any big dissemination event to communicate on it. INEA must be added as the Social Media follower.

6.3.3.1 Twitter

The Pulp&Fuel Twitter account will be used to serve communication, dissemination and exploitation objectives: announcements, short comments, or news may be posted, if possible with media attachments (photos, images, videos …).

If possible, the account will be fed each week, which requires involvement of all partners to send regularly contents and material to the WP5 leader.

Indicators will be regularly checked, at least for each meeting. They could include the following criteria:

- Quantitative: number of tweets, number of followers, number of profile visits, number of likes/shares, number of mentions (use of Pulp&Fuel hashtag), number of views
- Qualitative: types of comments received, their tone, types of followers, word clouds etc.…

If existing, accounts of other linked R&I initiatives will be followed.

6.3.3.2 LinkedIn

More widely used by the scientific community and professionals in general, it will target such audience while Tweeter is more dedicated to a larger public.

The contents are similar to Tweeter's ones, except short comments. The editorial slant is also more formal. Frequency of publication is about one article each week, if possible (if there is enough contents/material provided by the partners).

The following indicators will be checked: number of articles/posts, number of followers, number of profile visits, number of views, number of likes.

If any, accounts of other linked R&I initiatives will be followed.

6.3.3.3 Research gate

A research gate account was created to promote the results toward the research community.

6.3.4 Events

As covered in the chapter 3 Exploitation, events organisation and participation to events is an important measure to ensure exploitation of the results, as well as communication and dissemination objectives.

6.3.4.1 Events organized by the project consortium

The Pulp&Fuel consortium will organise several events:

- 2 workshops (M24 and M40) to disseminate the findings of the project : partner, advisory board and external stakeholders
- 1 summer school (M36) to guarantee further developments and upgrading of the developed technologies : academic community, project researchers and students interested in subjects addressed by the project
- 2 conferences (M30 and M45) to present project main achievements to reach larger audiences, so that the audience may provide valuable feedback on the effectiveness and potential application of the project outcomes: policy makers, people from industry and from public administration

Tableau 4: Events organised by the project consortium

Date	Event	Location
M24 – September 2020	Workshop #1	
M30 – March 2021	Conference #1	
M36 – September 2021	Summer School	
M40 – January 2022	Workshop #2	
M45 – June 2022	Conference #2	

6.3.4.2 Other known international events

To promote the Pulp&Fuel project and its results, and make them widely known, participation to international events such as conferences is an important point to serve communication, dissemination and exploitation objectives.

- European Biomass Conference and Exhibition (EUBCE) : EU, 2019, 2020, 2021, 2022
- European Meeting on Supercritical Fluids (EMSF) : EU, 2019, 2021
- Natural Gas Conversion Symposium (NGCS) : World, 2019, 2021
- European Congress on Catalysis (EuropaCat) : EU, 2019, 2021
- International Symposium on Wood, Fibre and Pulp Chemistry (ISWFPC) : World, 2019, 2021
- European symposium on computer aided process engineering (ESCAPE) : EU, 2019, 2020, 2021, 2022
- European Workshop on Lignocellulosic and Pulp (EWLP): EU, 2020, 2022
- International Conference on Renewable Resources & Biorefineries (16th edition)

7. Roadmap of the communication-dissemination-exploitation activities

7.1 General Roadmap

Tableau 5: General Roadmap of the Pulp&Fuel project

Action	Date/Frequency	Objective	Target audience	Mean	Responsible	Results expected
Feed PULP&FUEL website and Social Media	M4 January 2019 to M48 September 2022 If possible, a post per week	Make the project and its outcomes be known	Research community Industry and SME Civil society/Policy makers/EC	News and articles about events, results or any other material and information	P10 ABSISKEY	Website and Social Media statistics : increasing frequentation
Year 1						
Mention the belonging to the H2020 funded PULP&FUEL project on partners' websites	M4 January 2019 to M6 March 2019 Revival if necessary	Make the H2020 project be known	Research community Industry and SME	Partners' websites	Partners	Link to the PULP&FUEL project on each partner website
1st Video	M6 March 2019	Make the project be known	Civil society/Policy makers/EC	PULP&FUEL Website and Social Media	P10 ABSISKEY	Significant number of video downloads Repercussion on website and Social Media frequentation
EMSF 2019 M7 April 2019	M5 February 2019 to M8 May 2019	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation

EUBCE 2019 M8 May 2019	M6 March 2019 to M9 June 2109	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
NGCS 2019 M9 June 2019	M7 April 2019 to M10 July 2019	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
ESCAPE 2019 M9 June 2019	M7 April 2019 to M10 July 2019	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
EuropaCat 2019 M11 august 2019	M9 June 2019 to M12 September 2019	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
ISWFPC 2019 M11 august 2019	M9 June 2019 to M12 September 2019	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
Year 2						
1st Newsletter	M18 March 2020	Make first period outcomes be known	Research community Industry and SME	Pulp&Fuel Website and Social Media	P10 ABSISKEY	Significant number of newsletter downloads Repercussion on website and Social Media frequentation
EUBCE 2020	M18 March 2020 to	Inform about PULP&FUEL	Research community	PULP&FUEL Website	P10	Partners' participation Repercussion on website

M20 May 2020	M21 June 2020	participation, report	Industry and SME	and Social Media	ABSISKEY Partners	and Social Media frequentation
ESCAPE 2020 M21 June 2020	M19 April 2020 to M22 July 2020	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
EWLP 2020 M21 June 2020	M19 April 2020 to M22 July 2020	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
Workshop #1 M24 September 2020	M22 July 2020 to M25 October 2020	Inform about the event, call to participate, report	Research community Industry and SME	PULP&FUEL Website and Social Media Organising partners' website	P10 ABSISKEY Organising partner	Attendance and satisfaction about the event Repercussion on website and Social Media frequentation
Year 3						
Conference #1 M30 march 2021	M28 January 2021 to M31 April 2021	Inform about the event, call to participate, report	Research community Industry and SME Policy makers/EC	PULP&FUEL Website and Social Media Organising partners' website	P10 ABSISKEY Organising partner	Attendance and satisfaction about the event Repercussion on website and Social Media frequentation
EMSF 2021 M31 April 2021	M29 February 2021 to M32 May 2021	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
2nd Video	M30 March 2021	Make the firsts outcomes be known	Civil society/Policy makers/EC	PULP&FUEL Website and Social Media	P10 ABSISKEY	Significant number of video downloads Repercussion on website and Social Media

						frequentation
2nd Newsletter	M30 March 2021	Make second period outcomes be known	Research community Industry and SME	Pulp&Fuel Website and Social Media	P10 ABSISKEY	Significant number of newsletter downloads Repercussion on website and Social Media frequentation
EUBCE 2021 M32 May 2021	M30 March 2021 to M33 June 2021	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
NGCS 2021 M33 June 2021	M31 April 2021 to M34 July 2021	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
ESCAPE 2021 M33 June 2021	M31 April 2021 to M34 July 2021	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
EuropaCat 2021 M35 august 2021	M33 June 2021 to M36 September 2021	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
ISWFPC 2021 M35 august 2021	M33 June 2021 to M63 September 2021	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
Summer School M36 September 2021	M34 July 2021 to M37 October 2021	Inform about the event, call to participate, report	Research community	PULP&FUEL Website and Social Media Organising partners' website	P10 ABSISKEY Organising partner	Attendance and satisfaction about the event Repercussion on website and Social Media

						frequentation
Year 4						
Workshop #2 M40 January 2022	M38 October 2021 to M41 February 2022	Inform about the event, call to participate, report	Research community Industry and SME	PULP&FUEL Website and Social Media Organising partners' website	P10 ABSISKEY Organising partner	Attendance and satisfaction about the event Repercussion on website and Social Media frequentation
EUBCE 2022 M44 May 2022	M42 March 2022 to M45 June 2022	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
ESCAPE 2022 M45 June 2022	M43 April 2022 to M46 July 2022	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
EWLP 2022 M45 June 2022	M43 April 2022 to M46 July 2022	Inform about PULP&FUEL participation, report	Research community Industry and SME	PULP&FUEL Website and Social Media	P10 ABSISKEY Partners	Partners' participation Repercussion on website and Social Media frequentation
Conference #2 M45 June 2022	M43 April 2022 to M46 July 2022	Inform about the event, call to participate, report	Research community Industry and SME Policy makers/EC	PULP&FUEL Website and Social Media Organising partners' website	P10 ABSISKEY Organising partner	Attendance and satisfaction about the event Repercussion on website and Social Media frequentation
3rd Video	M45 June 2022	Make the whole project achievement	Civil society/Policy makers/EC	PULP&FUEL Website and Social Media	P10 ABSISKEY	Significant number of video downloads

		be known				Repercussion on website and Social Media frequentation
3rd Newsletter	M48 September 2022	Make third period outcomes be known	Research community Industry and SME	Pulp&Fuel Website and Social Media	P10 ABSISKEY	Significant number of newsletter downloads Repercussion on website and Social Media frequentation

7.2 Practices to be included on a regular basis in the communication and dissemination activities

7.2.1 Related to website, Social Media and global communication

- Each month:
  - P10 ABSISKEY asks the partners to send new contents: information, results, pictures or any relevant material ; objective = 4 contents per month (1 per week) to publish on the website and Social Media;
  - P10 ABSISKEY informs the partners they shall interact with the project's Social Media and website contents.
- Before each consortium meeting: P10 ABSISKEY asks the partners to fill in the monitoring tool in order to track communication and dissemination past and previous activities; furthermore, this tool will be completed for each update of the Plans for dissemination and exploitation of the results.

7.2.2 Related to events organized by the project consortium

- 2 months before events:
  - P10 ABSISKEY reminds the partners to create the event flyer/schedule/registration form and to promote the event on their own website
  - P10 ABSISKEY publishes an announcement about the event on the website + Social Media, using flyer/schedule/registration form
- 1 month before events:
  - P10 ABSISKEY republishes the same announcement about the event on Social Media, using flyer/schedule/registration form
- 1 week before events:
  - P10 ABSISKEY makes a final reminder about the event on Social Media, using flyer/schedule/registration form
  - P10 ABSISKEY reminds the organising partners to take pictures
- During event:
  - The organizing partners' communication departments should organize uptakes of the events (photos, articles, and interviews) to promote the Pulp&Fuel project on their own websites.
  - P10 ABSISKEY will then make reference to these materials on the project website and Social Media
- Within one month after the event:
  - P10 ABSISKEY asks the organising partners to send contents to be published on website and Social Media

7.2.3 Related to other known international events

- 2 months before event :
  - P10 ABSISKEY asks the partners if they intend to participate to event
  - If yes, P10 ABSISKEY reminds the partners to promote the Pulp&Fuel project (using promotion tools such as flyer, poster) and its outcomes (using lectures and specific posters)

- 1 month before event:
  - P10 ABSISKEY post an article (News section of the website + Social Media) informing about the participation of the Pulp&Fuel project to the event
- On the month of the event:
  - P10 ABSISKEY reminds the partners to take pictures at the events
  - P10 ABSISKEY post an article (News section of the website + Social Media) reminding about the participation of the Pulp&Fuel project to the event
- Within one month after the event:
  - P10 ABSISKEY report participation to the event (asks relevant partners to send contents such as photos)

8. Monitoring and assessment of the activities

8.1 Main activities up till now

8.1.1 Events

Tableau 6: Organisation and participation to events on year 1

Description: title of the Event	Audience (type, size)	Dates (year and Day/month if known) and Place	Contribution, materials, partner's short name
GDR 2019 2nd seminar of GDR Thermobio	French researchers in thermochemical conversion of biomass and wastes, 50 people	7th, 8th Nov. 2019 Montpellier, France	Poster and Flash presentation of the poster Grenoble INP (H. Curmi)
EMSF 2019 17TH European Meeting On Supercritical Fluids	Scientfic community	8th – 11th April 2019 Ciudad Real, Spain	TOP INDUSTRY (Gildas Merian)
7th **European Meeting on High Pressure Technology**	Scientfic community	8th – 11th April 2019 Ciudad Real, Spain	
H2020 **Contractor's Workshop Biofuel Project**	Scientfic community	23th, 24 May 2019 Brussels, Belgium	P&F presentation (oral) Karim SIDI ALI CHERIF, G. Haarlemmer, M. Peyrot
EUBCE 2019 27th European Biomass Conference & Exhibition	Scientfic community	27th-31th May 2019 Lisbon, Portugal	P&F presentation (oral) Guillaume Boissonnet, G. Haarlemmer, M. Peyrot
ECOS 2019 32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems	Scientfic community	23th – 28th June 2019, Wroclaw, Poland	Oral Presentation
Woodchem	Scientfic community	20th – 22th Nov. 2019 Nancy, France	Poster presentation Grenoble INP (H. Curmi)

8.1.2 Scientific publications

Tableau 7: Scientific publications on year 1

Description, title of the journal etc…	Address	Author	Dates	Status	DOI	Open access: Gold or Green access
***Energies* 2019** A Holistic Methodology for Optimizing Industrial Resource Efficiency	https://www.mdpi.com/1996-1073/12/7/1315	EPFL	2019	Published	https://doi.org/10.3390/en12071315	Gold Access
Proceedings of ECOS 2019, 2299-2309 Potential of hydrothermal black liquor gasification integrated in pulp production plant Resource Efficiency	https://infoscience.epfl.ch/record/268664?&ln=en	EPFL	2019	Published	No DOI	Open access but proceedings without copyright

8.1.3 Posters and Flyers

Tableau 8: Poster & Flyer on year 1

Subject	Date	Related event	Involved Partners
POSTERS			
Biofuels and biomolecules from wood black liquor in a cellulose based biorefinery	7th and 8th November, 2019	GDR Thermobio	Grenoble INP
	20th, 21th and 22 th November, 2019	Woodchem Conference	Grenoble INP
FLYERS			

8.1.4 Website and Social Media

8.1.4.1 Website

- **Frequentation (2018/10/01 – 2019/12/02):**
  the objectives for this first year were to obtain a significant and increasing frequentation of the website. They are reached considering the number of sessions (around 704, from around 423 different users) and the high proportion of new visitors.

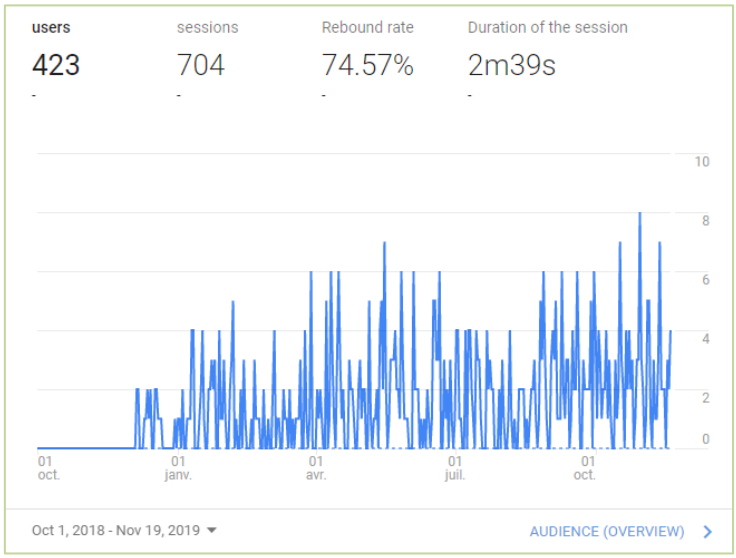

Figure 9: Website frequentation statistics – year 1

- **Traffic acquisition (2018/10/01 – 2019/12/02) :**
  The visitors mainly find the website by direct entry of the url address (55.9%), then by typing key words in the search engine (33.5%), which demonstrate the efficiency of communication materials (flyer, poster,Social Media).

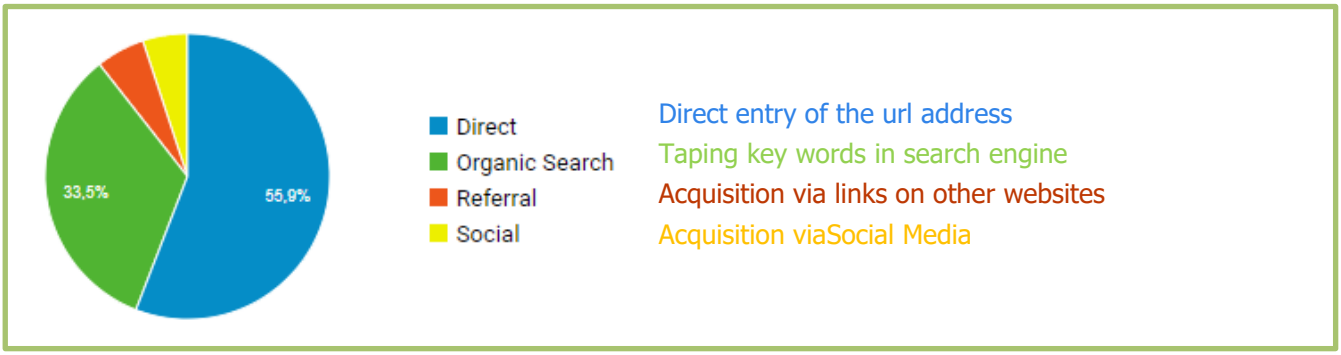

Figure 10: Website traffic acquisition statistics – year 1

- **Geographical distribution (2018/10/01 – 2019/12/02) :**
  France 1st with 173 users (40,5%), USA 2nd with 60 users (14%) and Sweden 3rd with 51 users (12%).
  Most of the visitors are from the EU.

Country	Acquisition		
	users	New users	sessions
	423 % of total: 100.00% (423)	423 % of total: 100.00% (423)	704 % of total: 100.00% (704)
1. la France	**173** (40.52%)	172 (40.66%)	388 (55.11%)
2. United States	**60** (14.05%)	60 (14.18%)	62 (8.81%)
3. Sweden	**51** (11.94%)	50 (11.82%)	80 (11.36%)
4. China	**14** (3.28%)	14 (3.31%)	14 (1.99%)
5. India	**12** (2.81%)	12 (2.84%)	13 (1.85%)
6. Denmark	**10** (2.34%)	10 (2.36%)	10 (1.42%)
7. Norway	**9** (2.11%)	9 (2.13%)	30 (4.26%)
8. Belgium	**8** (1.87%)	8 (1.89%)	10 (1.42%)
9. Switzerland	**8** (1.87%)	7 (1.65%)	11 (1.56%)
10. Germany	**8** (1.87%)	8 (1.89%)	9 (1.28%)

Figure 11: Website visitor's geographical distribution – year 1

- **Document downloads (2018/10/01 – 2019/12/02) :**
  The document section of the website seems to be attractive to visitors due to the number of downloads : 57 ; mainly related to lectures of scientific publications : 30 Downloads.

Libellé d'événement	Nombre total d'événements
	57 % du total: 16,15 % (353)
1. PUBLICATION 2019_Julia GRANACHER & all - Potential of hydrothermal black liquor gasification integrated in pulp production plant	**13** (22,81 %)
2. PUBLICATION 2019_Maziar KERMANI & all - A Holistic Methodology for Optimizing Industrial Resource Efficiency	**12** (21,05 %)
3. SLIDES_Pulp&Fuel General Presentation	**11** (19,30 %)
4. Poster Pulp&Fuels project	**10** (17,54 %)
5. Flyer Pulp&Fuels project	**9** (15,79 %)
6. Pulp&Fuel General Presentation	**1** (1,75 %)
7. Pulp&Fuel General Presentation_PPT	**1** (1,75 %)

Figure 12: Website documents download statistics – year 1

8.1.4.2 Social Media

Twitter (2018/10/01 – 2019/12/02)

- 34 tweets in 13 months
- 8 followers
- 4 likes
- 0 mentions (uses of Pulp&Fuel hashtag)

LinkedIn (2018/10/01 – 2019/12/02)

- 27 posts in 13 Months
- 60 followers
- 77 likes
- 2012 views

Social Media's statistics show a good efficiency for the main targeted audience (scientific community) but also for industrials. LinkedIn gives better results than Tweeter, which is probably less used in a professional context.

9. Conclusion

This public document details the communication-dissemination-exploitation measures aimed at fostering the maximisation of the expected impacts of the project.

After having identified the project target audiences, it explains where and how to communicate about the project and its results.

In addition, strategy to be carried out as well as all means and material designed and produced for increasing the awareness of the project in the EU context but also for the wider public have been properly described.

In order to evaluate the quality of the communication action, a set of KPIs and target values have been provided.

This first version of the Plans for dissemination and exploitation of the results will be re-visited regularly during the course of the project, and will be kept updated (M28 and M48) in order to have the optimal means for attaining the objectives, thus constituting an essential tool to guide the activities of the Consortium throughout the lifetime of the project.