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Technical Assistance for Turkey in Horizon 2020 Phase-II
EuropeAid/139098/IH/SER/TR

Turkey in Horizon 2020 II

Session 2

Writing Successful Proposals in H2020 Green Deal in Sustainable Chemistry

LC-GD-3-1-2020: Closing the industrial carbon cycle to combat climate change -Industrial feasibility of catalytic routes for sustainable alternatives to fossil resources

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Biotechnology and Sustainable Chemistry Area Director (CARTIF Centre of Technology)

Dr. Raúl Piñero Hernanz

Green Chemistry and Sustainable Chemical/ (Bio)Process Engineering.



- “ Collaborating in multi-national and cross-sectoral consortia, **writing proposals for EU funding (H2020, Life +) and leading work teams in RIA/IAs H2020 projects** in various biofuels/biomaterials sectors with a circular economy approach, also nano-materials and green chemical processes and applications.
- “ Biotechnology and Sustainable Chemistry Area Director (CARTIF Centre of Technology)



Technology center

With a mission: **technology knowledge generation to be transferred to companies.** The final objective is improving companies' competitiveness



Foundation

Private **non-profit** organization
with an aim of general interest:
innovation





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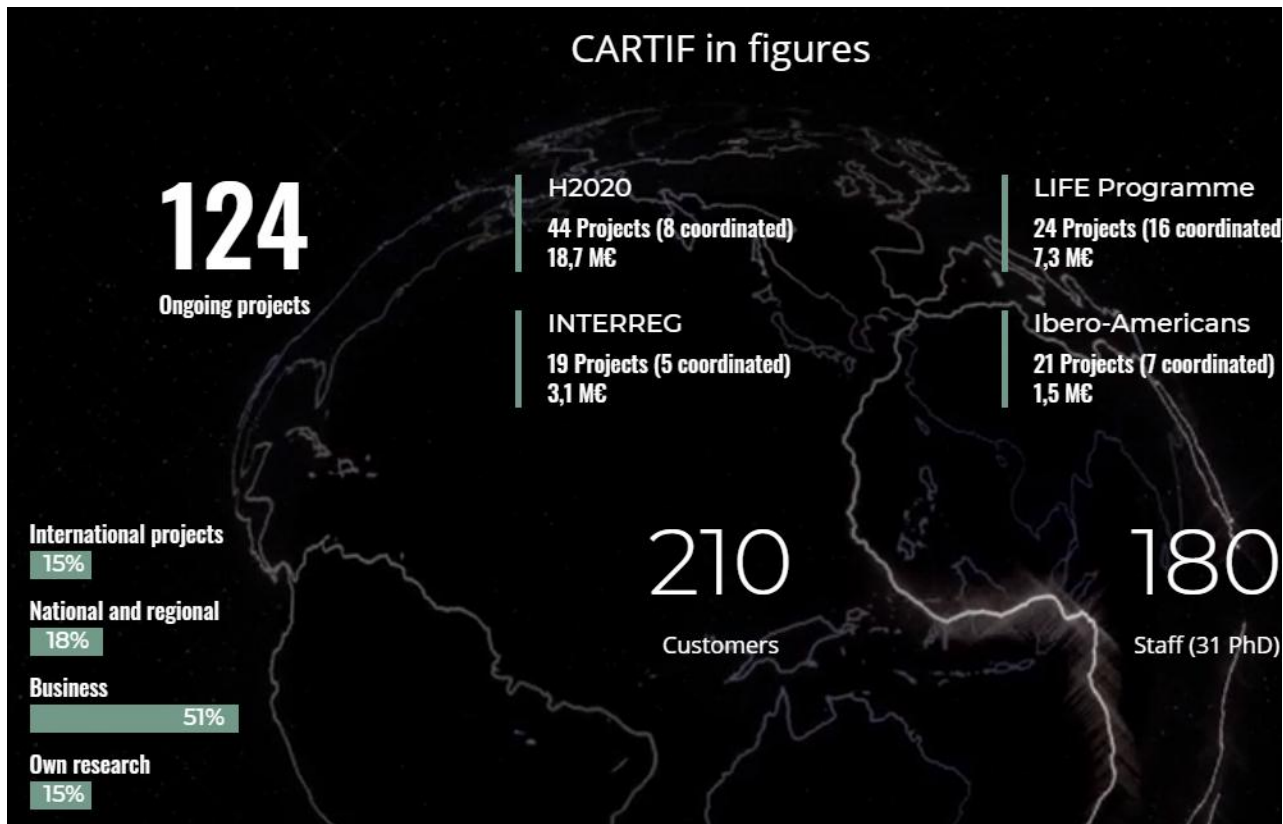
Tweets by @CARTIFCT

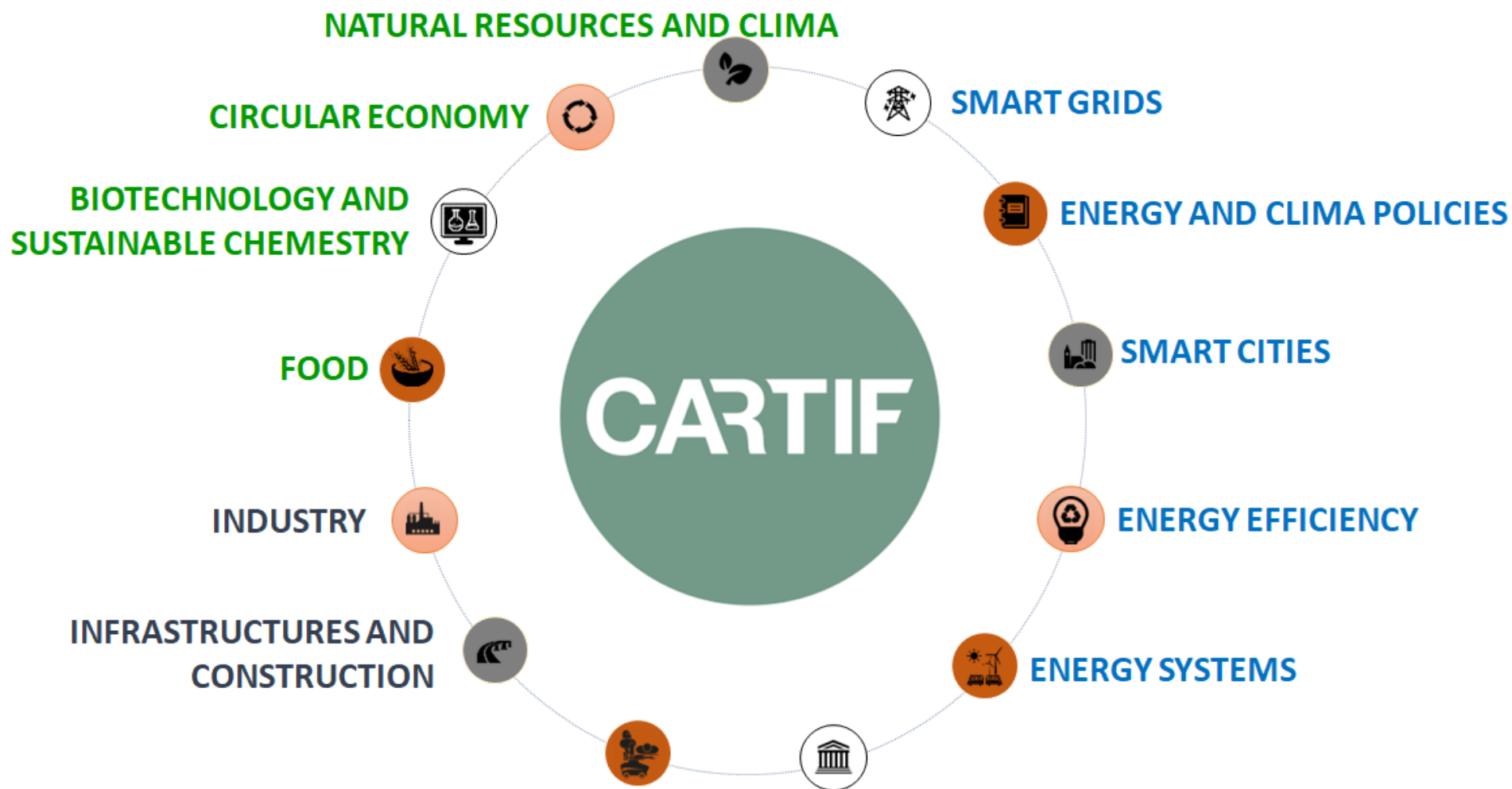
CARTIF
A través del proyecto #SIBLOG, @CARTIFCT @Cotasa_ES @Leasoa e #DECAL ponen la tecnología al servicio del Hospital Clínico Universitario de Valladolid para el desarrollo de un «Innovator» sistema de gestión integral de un #bloquequirúrgicodiaridocastillayleon elmundo. es/articulo/innov...



Cartif in figures

- **180** researchers (41 PhD) - **51 %** men and **49 %** women
- **Ca. 10 M€** turnover 2019– **67 %** public funds and **33 %** private
- **80** proposals in public calls per year (**20** national, **60** international – H2020, LIFE, INTERREG). More than **15** proposals coordinated by CARTIF per year.
- **124** projects currently on ongoing
- More than **210** clients (and more than **300** collaborators)



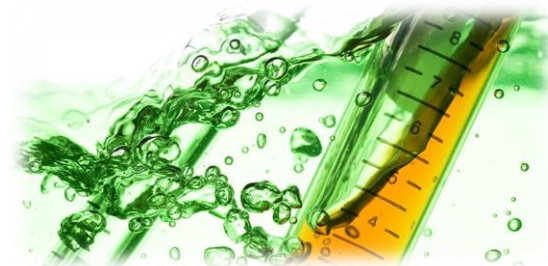


SMART CITIES	 FP7-SMART CITIES	 FP7-SMART CITIES	 H2020-LIGHTHOUSE	 H2020-LIGHTHOUSE	 H2020-LIGHTHOUSE	 H2020-SSH NBS	 H2020-SSH NBS	 H2020-LIGHTHOUSE	 H2020-LIGHTHOUSE
ENERGY EFFICIENCY	 FP7-EeB	 FP7-EeB	 FP7-EeB	 FP7-EeB	 H2020-EeB	 H2020-EE	 H2020-EE	 H2020-EeB	 H2020-EeB
RENEWABLES & SMART GRIDS	 H2020-RES	 H2020-ES							
ICTs	 FP7-EeB	 FP7-EeB	 FP7-ICT	 H2020-ICT	 INTERREG- POCTEP				
WASTE & Circular Economy	 LIFE	 LIFE	 LIFE	 LIFE	 LIFE	 FP7-WASTE	 LIFE	 H2020-RUR	
WASTE & Circular Economy	 H2020-WASTE	 LIFE ALCHEMIA	 LIFE ALGAECAN	 LIFE GysTRA	 LIFE REFIBRE	 H2020-SC5-CE	 H2020-SFS-CE		
SUSTAINABLE MANAGEMENT	 LIFE	 LIFE	 LIFE	 LIFE	 LIFE	 INTERREG-POPTec	 LIFE		
CONSTRUCTION & CULTURAL HERITAGE	 H2020-EeB	 H2020-EeB	 H2020-EeB	 H2020-EeB	 INTERREG-SUDOE	 INTERREG-SUDOE	 H2020-SC5-HERITAGE	 INTERREG-POCTEP	 INTERREG-SUDOE
INDUSTRY	 FP7-FoF	 FP7-FoF	 H2020-SPIRE	 H2020-BBI-JTI	 INTERREG-POPTec				



BIOTECHNOLOGY & SUSTAINABLE CHEMISTRY

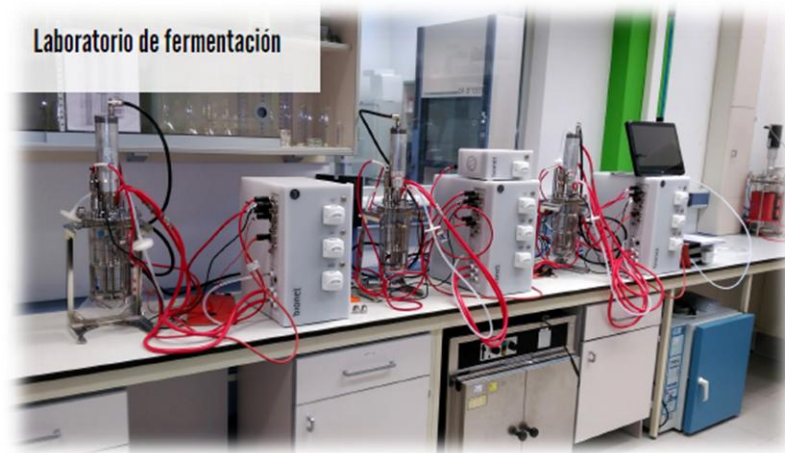
The Biotechnology and Sustainable Chemistry Area (BQS) combines several fields of knowledge & tools based on biotechnology and green chemistry applications for integrated biorefinery & biofuels to enhance the sustainability of industrial processes and the benefits on environment and human well-being



EXPERTISE & CAPACITIES (TRL 2/3-4)

- ✓ Advance fermentations applied to industry
- ✓ Pretreatment processes, chemical / enzymatic hydrolysis
- ✓ Thermo-catalytic / high pressure processes
- ✓ 2G/3G Biofuels
- ✓ Biodegradation of plastics wastes for conversion into added-value chemicals and fuels.
- ✓ Control and prevention of biological processes in food industry & life time enhancement.
- ✓ CCUS tech: CO₂/syngas conversion into added-value chemicals and fuels.
- ✓ Integrated biorefinery: upstream and downstream processes

Laboratorio de fermentación

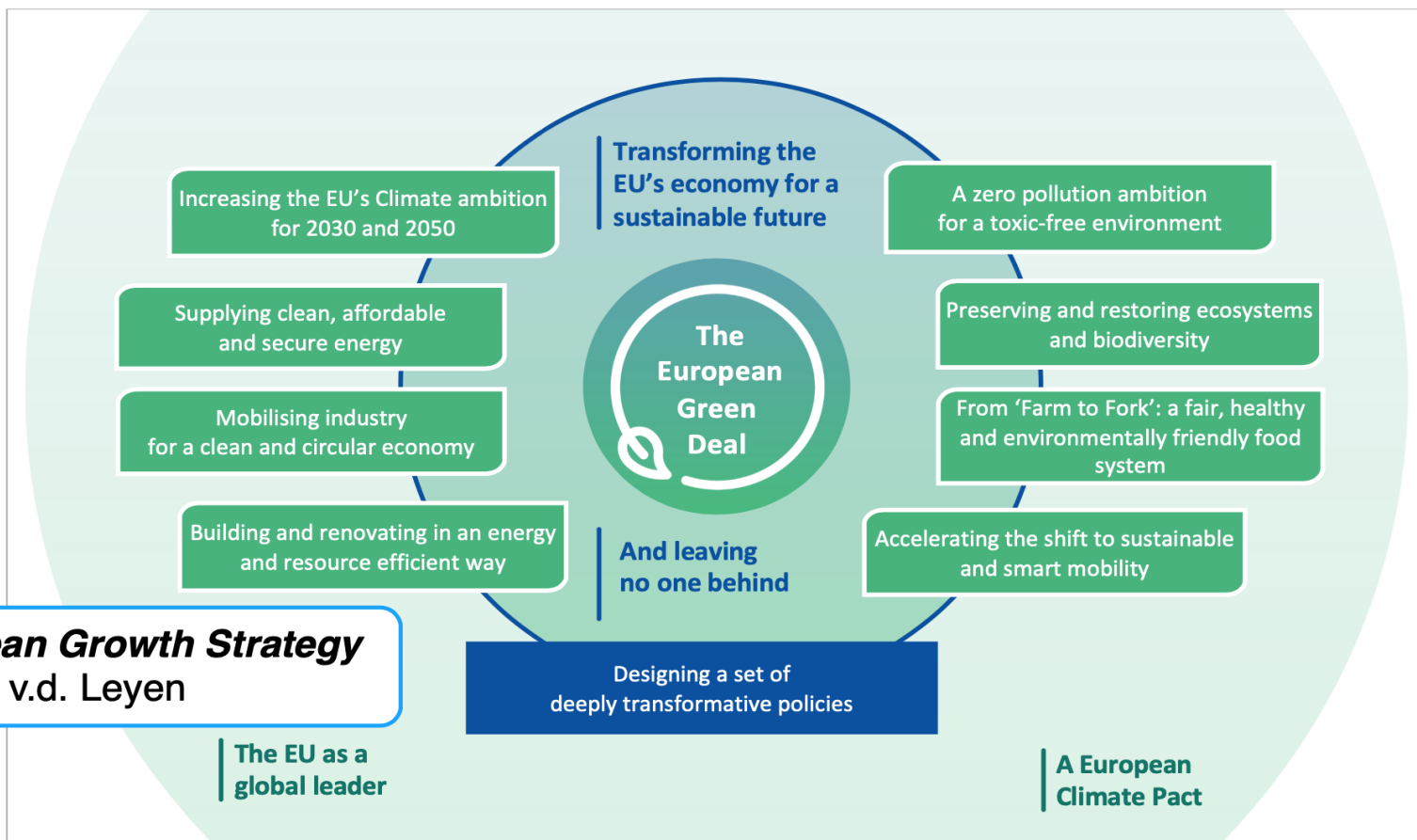


✓ CARTIF EXPERTISE & CAPACITIES IN GREEN PRODUCTS & PROCESSES (H2020 PROJECTS)

PROJECTS	DESCRIPTION
BIOSFERA (H2020-LC-SC3-2018-2019-2020)	BIOfuels production from Syngas FERmentation for Aviation and maritime use
ZEOCAT-3D H2020-NMBP-ST-IND-2018-2020 BIOMASS C+ (LIFE16 CCM/GR/000044)	Development of a bifunctional hierarchically structured zeolite based nano-catalyst using 3Dtechnology for direct conversion of methane into aromatic hydrocarbons via methane dehydroaromatization
BIOMOTIVE (H2020-BBI-JTI-2016)	Low-cost, carbon positive bioethanol production with innovative Green Floating Filters in multiple water bodies (2018 – 2021).
REHAP (H2020-SPIRE-2016)	Advanced BIObased polyurethanes and fibres for the autoMOTIVE industry with increased environmental sustainability (2017 – 2021).
VALORPLUS (FP7-KBBE-613802)	Systemic approach to Reduce Energy demand and CO2 emissions of processes that transform agroforestry waste into High Added-value Products (2016-2020).
	Valorisation of biorefinery by-products leading to closed loop systems with improved economic and environmental performance (2014-2017)



The European Green Deal



Our European Growth Strategy
U. v.d. Leyen

The EU as a
global leader

A European
Climate Pact

CONTENTS

Session 4: How to write part per part the EXCELLENCE section in an H2020 Sustainable Chemistry (3.1) grant application with emphasis on examples from winning projects

1.-Introduction: Remarks and tips to bear on mind in order to build-up a competitive Concept Idea and Consortium aligned with the GD 3.1 Call

LC-GD-3-1-2020: Objectives, scope and keys of the call

Some Key Notes to approach a GD 3.1 proposal

2.- Preparation of the proposal (I): Scientific-Technical Excellence. Project concept and approach. Innovation

A) FIRST STEPS: PROPOSAL DRAFT

B) THE PROPOSAL DOCUMENT - PART B

C) THE TEMPLATE

D) THE CHAPTERS OF THE SECTION OF EXCELLENCE

E) Conclusions- **Examples of winning proposals (and good proposal non finally approved)**

Introduction: LC-GD-3-1-2020: Objectives, scope and keys of the call

LC-GD-3-1-2020: Closing the industrial carbon cycle to combat climate change - Industrial feasibility of catalytic routes for sustainable alternatives to fossil resources (Innovation Action)

[The overview:]

Specific Challenge: **Greening** of industrial and energy production, storage and distribution **by use of CO2 emissions from industrial processes.**

Scope:

1. Develop and deploy highly innovative and recyclable catalytic **material systems**
2. Develop innovative, renewable energy driven, catalytic **processes**
3. Demonstrate the **full value chain for industrial production (including SMEs)** of synthetic fuels and chemicals, whilst reducing greenhouse gas emissions;
4. **Address** financial, regulatory, environmental, land and raw material (including critical raw materials) **constraints.**

Total Budget	Budget per project
80 mEUR	40 mEUR

⌚ duration of up to 5 years

Introduction: LC-GD-3-1-2020: Objectives, scope and keys of the call

■ *The GD 3.1 Call:*

Greening of industrial and energy production, storage and distribution by use of CO₂emissions from industrial processes.

❖ The challenge is to **sustainably convert CO₂emissions from industrial processes into synthetic fuels and chemicals utilising renewable energy driven processes with novel, highly optimised and energy efficient catalytic systems.** This has the potential e.g. to reduce by over 30 % the current~665Mt of CO₂emissions per annum related to the Energy Intensive Industries in Europe.

❖ However, it is necessary to demonstrate the industrial and economic feasibility of **producing synthetic fuels and chemicals by scaling-up the developed technologies to reach industrial production levels and validate the industrial exploitability and circularity.**

Introduction: LC-GD-3-1-2020: Objectives, scope and keys of the call

■ *The GD 3.1 Call:*

Scope:

- Develop and **deploy highly innovative and recyclable catalytic material systems** to facilitate the **production of synthetic fuels and chemicals from industrial flue gas emissions: mainly CO₂**(but also CO and H₂), aiming at **50 % increase in the overall efficiency compared to the State-of-the-Art**
- Develop innovative, renewable energy driven, catalytic processes, to produce synthetic fuels and chemicals, at a sufficiently large scale to demonstrate its cost effectiveness, while reducing the use of critical raw materials;
- Demonstrate the **full value chain for industrial production (including SMEs) of synthetic fuels and chemicals, whilst reducing greenhouse gas emissions;**
- Address financial, regulatory, environmental, land and raw material(including critical raw materials)constraints, as well as public acceptance issues and socio-economic impact related to the proposed technological pathways.

Introduction: LC-GD-3-1-2020: Objectives, scope and keys of the call

■ *The GD 3.1 Call:*

Scope: Develop and **deploy highly innovative and recyclable catalytic material systems** to facilitate the production of synthetic fuels and chemicals from industrial flue gas emissions: mainly CO₂(but also CO and H₂), aiming at 50 % increase in the overall efficiency compared to the State-of-the-Art;

Proposals are expected to bring the core technology from TRL 4-5 up to TRL 7 at the end of the project. The Commission considers that proposals requesting a contribution from the EU of up to **EUR 40 million and with a duration of up to 5 years** *(at least 18 months of demonstration?) would allow this specific challenge to be addressed appropriately. In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged.*

Introduction: LC-GD-3-1-2020: Objectives, scope and keys of the call

■ *The GD 3.1 Call:*

Expected Impact:

- **Industrial scale demonstrator operational by 2026** based on **Industrial Symbiosis** and **novel, highly optimised and energy efficient catalytic systems**.
- Significant reduction of **industrial CO₂ emissions (~200Mt p.a. reduction by 2050)** with the potential to achieve a carbon intensity **below 20g CO₂eq/MJ**. *–TO BE VERIFIED IN THE DEMO*
- **Enhance the effectiveness of renewable energy sources** (i.e. solar, wind) by enabling the production and transmission of a **flexible high energy density storage medium in the form of chemicals and synthetic fuels to be used for specific industry segments** (e.g. aviation, chemical, shipping, defence) and validated through Techno-Economic and Life Cycle assessment (TEA/LCA).

Introduction: LC-GD-3-1-2020: Objectives, scope and keys of the call

■ *The GD 3.1 Call:*

Expected Impact:

- **Demonstrate and validate the industrial feasibility and cost effectiveness of the technologies, at pilot plant level with a minimum chemical production capacity of 4000 tons per annum**, while enhancing Europe's sustainable competitiveness in accordance with the Commissions Industrial Strategy
- Significant **indirect impact on air quality and citizen health through the filtering of flue gas emissions from large industrial plants** (e.g. **energy, cement, chemical, non-ferrous metals and steel**).
- Foster a **cross-sectorial European innovation eco-system** to deploy **sustainable alternatives to fossil resources** and create demonstration capacity for **sustainable catalytic systems of superior efficiency towards 2030 and 2050**.

Introduction: LC-GD-3-1-2020: Objectives, scope and keys of the call

■ *The GD 3.1 Call:*

Also, very important to take a look to:

Cross-cutting Priorities: [Clean Energy](#)

[1] Masterplan for a Competitive Transformation of EU Energy-Intensive Industries Enable a Climate-neutral, Circular Economy by 2050. Report by the High-Level Group on Energy-intensive Industries, 2019

[2] Low carbon energy and feedstock for the European chemical industry, DECHEMA 2017. Industrial Value Chain - A Bridge Toward a Carbon Neutral Europe, VUB-IES 2018, Table 1, page 21: https://www.ies.be/files/Industrial_Value_Chain_25sept_0.pdf

[3] https://ec.europa.eu/info/sites/info/files/communication-eu-industrial-strategy-march-2020_en.pdf

■ *Some remarks and tips to bear on mind in order to build-up a competitive Concept Idea and Consortium aligned with the GD 3.1 Call: Some Key Notes for GD 3.1*

Key Note #1: TO ENSURE THAT THE PROPOSAL IS **TOTALLY ALIGNED WITH THE OBJECTIVES OF THE CALL** (feedback from the corresponding National Contact Point (NCP) may be useful)

Key Note #2: TO ENSURE THAT THE PROPOSAL **COVERS ALL THE EXPECTED IMPACTS**, AND THEY ARE CLEARLY STATED FROM THE VERY BEGINNING (CONCEPT NOTE)

Key Note #3: TO ENSURE THAT THE **CONSORTIUM IS WELL-BALANCED AND COMPLETE**, SO THAT ALL KEY ROLES ARE COVERED BY THE PARTNERS ON BOARD.

Key Note #4: TO ENSURE THAT THE PROPOSAL AIMS **AN INTEGRATED SOLUTION COVERING THE COMPLETE VALUE CHAIN**

■ *Some remarks and tips to bear on mind in order to build-up a competitive Concept Idea and Consortium aligned with the GD 3.1 Call:*

Key Note #5: HIGH TRL DEMONSTRATION IN A DEMOSITE IF POSSIBLE ALREADY EQUIPPED WITH CARBON CAPTURE FACILITY AND WITH A LOCAL OFF-TAKER / END-USER OF CO₂-BASED BIOFUEL/BIOCHEMICAL PRODUCED

Key Note #6: TO DEVELOP A “GREEN ENERGY DRIVEN” POWER-TO “X” PROCESS THAT CAN FACILITATE RENEWABLE GRID INTEGRATION AS WELL AS THE USE BIOFUELS / LOW CARBON FUELS AS PRIMARY ENERGY OF THE INTEGRATED CCUS-DEMO PLANT

■ *Some remarks and tips to bear on mind in order to build-up a competitive Concept Idea and Consortium aligned with the GD 3.1 Call:*

Key Note #7: TO REDUCE ENERGY CONSUMPTION OF CO₂ CONVERSION PROCESS, CONSIDERING ALL THE “KEY ELEMENTS” REQUIRED FOR PROCESS SCALE-UP AT INDUSTRIAL LEVEL(*)

(*) FOR INSTANCE: DEPLOYMENT AND INTEGRATION OF THE TECHNOLOGIES AT TRL 7 (INDUSTRIAL SCALE):

***FULL ENERGY/MATERIAL INTEGRATION, INTO THE INDUSTRIAL PREMISES: INTERFACING WITH THE EXISTING SYSTEMS in the AIMED DEMO-SITES**

**** CONSIDERATIONS OF ECONOMY OF SCALE FOR TECHNO-ECONOMIC ASSESMENT,**

***** FULL LIFE CYCLE ANALYSIS OF THE END PRODUCT ALONG ALL THE VALUE CHAIN.**

■ ***Strategies for buiding-up a competitive Consortium aligned with the GD 3.1 Call:***

Key Note #3: TO ENSURE THAT THE CONSORTIUM IS WELL-BALANCED AND COMPLETE, SO THAT ALL KEY ROLES ARE COVERED BY THE PARTNERS ON BOARD.

FOR THE SPECIFIC CASE OF THE GREEN DEAL 3.1 CALL, IT COULD INVOLVED:

- 1.- CO2 INDUSTRIAL EMIITTERS
- 2.- TECHNOLOGY DEVELOPERS (ALREADY PROVEN AT TRL 4-5)
- 3.- TECHNOLOGY PROVIDERS (THERMOCATALYTIC PROCCESS/ CATALYSTS; RENEWABLE ENERGY SYSTEMS, UP-GRADING PROCESSES, ETC)
- 4.- TECHNOLOGY INTEGRATORS (ENGINEERING AND CUSTOMIZED / TURN-KEY PLANT SUPPLIERS)
- 5.- POTENTIAL END USERS OF BOTH THE CO2-CONVERSION TECNOLOGY AND CO2-BASED PRODUCTS (BIOFUELS AND/OR CHEMICALS): EXPLOITATION AND COMMERCIALIZATION)
- 6.- ESPECIALIZED ORGANIZATIONS ON CCUS SECTOR IN CHARGE OF THE DISSEMINATION AND COMMUNICATION ACTIVITIES
7. -PUBLIC OR ORGANIZATION INVOLVED THE TOPIC / STANDARIZATION
- 8.- OTHERS: CHINESE ENTIITIES for potential replication in CHINA –*as the call requires for international cooperation*

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A) FIRST STEPS: PROPOSAL DRAFT

What do we face with?

- **PROCESS -> STAGES:**
- **Define our project idea**
- **Ensuring that it adapts to the topic and that it is necessary**
- **Define achievable preliminary goals**
- **Launch an internal proposal preparation process**
- **Team: roles and responsibilities**
- **Schedule**
- **Select collaborators to carry out**
- **Set up a consortium**
- **Write the proposal in the right format**
- **Presenting it - telematics procedures**

INITIAL aspects

- Get started early - draft phases of programs
- Get to know the call well
- Are we clear about a concept yet?
- Do we have a goal or group of objectives?

INITIAL aspects

- Do we know what we'd like to achieve?
- Shall we go with the right TRLs?
- Are we clear about how the current market is?
- Have we analyzed the interest of big players?
- Have we reviewed previous projects?

When should we start to prepare the concept idea and gather a competitive consortium?

- **FIRST DRAFTS OF THE TOPICS DESCRIPTION– 1 YEAR**
- **CONSOLIDATED DRAFT– 9 MONTHS**
- **INFODAYS –CALL PUBLICATION – 9 MONTHS**

The topic

- **Challenge**
 - Where the topic is located
- **Scope** – generally speaking, the main expected results are in this part:
 - It's a mixture of technical and non-technical requirements
 - Sometimes the roles of the consortium are already defined
 - Suggestions are often offered to link the project to other initiatives
 - Subsidy limits are often suggested
 - Other special call conditions are included
 - TRLs ranges are usually given
- **Impact**
 - Scientific & Technical: progress beyond the SotA, **quantified objectives** for the **implementation of the aimed technologies/activities** (demonstrations, etc)
 - Social, economic or otherwise

The TEAM (*..i.e.: the key*)

- Coordinator
- Technical Experts (..and “thinkers”)
- Administrative Issues Experts



B) THE PROPOSAL DOCUMENT - PART B

First draft of the idea (the “Concept Note”)

- **Context**
- **Objectives**
- **List of necessary partners**
- **Top expected results**

First draft of the idea

UNDERSTANDING CONTEXT

Work Programme, agendas, documents ...

- **We can extract:**

- Main **priorities** of the programm
- Objectives and associated **indicators**
- **Rationale** and need of the project
- Medium-long term **View**
- ...

First draft of the idea

OBJECTIVES

- First **general objective**
- Some specific objectives
 - Watch out the TRLs!!
- Detecting partner needs
 - Writting the proposal
 - Covering specific competences

First draft of the idea

Partnes core-group

- Regular contributors
- Partners with key competencies
- We will share and coordinate with them general focus and objectives

First draft of the idea

Expected results

- Methods
- Products
- Shows
- Publications-patents...
-

First steps completed

- TEAM
- DRAFT / CONCEPT IDEA
- CORE-GROUP

NEXT STEPS:

CONSORTIUM & PROPOSAL DOCUMENTS

Consortium

- **Technology partners:**

- Developers
- Solution providers
- Tech end users
- Experts

- **Specific partners:**

- Demonstrations - high TRLs
- Technology pilots - medium TRLs
- Validations - low TRLs

Consortium

- **Partners with cross-responsibility**
 - Broadcasting: Dissimination & Communication
 - Exploitation and market
 - Social sciences & humanities
 - Evaluation
- **Geographic coverage**
 - Diverse market scenarios
 - International cooperation

TEMPLATE TO PREPARE THE PROPOSAL

TWO STAGE PROPOSAL/SUBMISSION

ONE STAGE PROPOSAL/SUBMISSION

RIA/IA/CSA ...

SPECIAL CONDITIONS

C) THE TEMPLATE



Proposal template: technical annex

(for full proposals: single stage submission procedure and 2nd stage of a two-stage submission procedure)

Research and Innovation actions Innovation actions

This template is to be used in a single-stage submission procedure or at the 2nd stage of a two-stage submission procedure.

The structure of this template must be followed when preparing your proposal. It has been designed to ensure that the important aspects of your planned work are presented in a way that will enable the experts to make an effective assessment against the evaluation criteria. Sections 1, 2 and 3 each correspond to an evaluation criterion.

Please be aware that proposals will be evaluated as they were submitted, rather than on their potential if certain changes were to be made. This means that only proposals that successfully address all the required aspects will have a chance of being funded. There will be no possibility for significant changes to content, budget and consortium composition during grant preparation.

⚠ Page limit: The cover page and sections 1, 2 and 3, together should not be longer than 70 pages. All tables, figures, references and any other element pertaining to these sections must be included as an integral part of these sections and are thus counted against this page limit.

The page limit will be applied automatically; therefore you must remove this instruction page before submitting.

If you attempt to upload a proposal longer than the specified limit before the deadline, you will receive an automatic warning and will be advised to shorten and re-upload the proposal. After the deadline, excess pages (in over-long proposals/applications) will be automatically made invisible, and will not be taken into consideration by the experts. The proposal is a self-contained document. Experts will be instructed to ignore hyperlinks to information that is specifically designed to expand the proposal, thus circumventing the page limit.

Please, do not consider the page limit as a target! It is in your interest to keep your text as concise as possible, since experts rarely view unnecessarily long proposals in a positive light.

⚠ The following formatting conditions apply.

The reference font for the body text of H2020 proposals is Times New Roman (Windows platforms), Times/Times New Roman (Apple platforms) or Nimbus Roman No. 9 L (Linux distributions).

The use of a different font for the body text is not advised and is subject to the cumulative conditions that the font is legible and that its use does not significantly shorten the representation of the proposal in number of pages compared to using the reference font (for example with a view to bypass the page limit).

The minimum font size allowed is 11 points. Standard character spacing and a minimum of single line spacing is to be used.

Text elements other than the body text, such as headers, foot/end notes, captions, formula's, may deviate, but must be legible.

The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).

Instructions for the Template

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TEMPLATE

1. EXCELLENCE

1.1 Objectives

1.2 Relation to the work programme

1.3 Concept and methodology

(a) Concept

(b) Methodology

1.4 Ambition

2. IMPACT

3. IMPLEMENTATION

4. MEMBERS OF THE CONSORTIUM

5. ETHICS AND SECURITY

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Template

instructions - objectives

- Describe the overall and specific objectives for the project, which should be **clear, measurable, realistic and achievable** within the duration of the project.
- Objectives should be **consistent** with the expected **exploitation and impact** of the project (see section 2).

Template

instructions - relation to the work programme

- Indicate the work programme topic to which your proposal relates, and explain
 - how your proposal addresses the **specific challenge**
 - and **scope** of that topic, as set out in the work programme.

Template

Instructions - concept

- Describe and explain the **overall concept** underpinning the project.
 - Describe the **main ideas**, models or assumptions involved. Identify any inter-disciplinary considerations and, where relevant, use of stakeholder knowledge.
 - Where relevant, include measures taken for **public/societal engagement** on issues related to the project.
 - Describe the positioning of the project e.g. where it is situated in the spectrum from 'idea to application', or from 'lab to market'. Refer to **Technology Readiness Levels** where relevant. (See General Annex G of the work programme);
- Describe any national or international **research and innovation activities which will be linked with the project**, especially where the outputs from these will feed into the project;

Template

instructions - methodology

- Describe and explain the overall methodology, distinguishing, as appropriate, activities indicated in the relevant section of the work programme, e.g. for **research, demonstration, piloting, first market replication, etc.**
- Where relevant, describe how the **gender dimension**, i.e. sex and/or gender analysis is taken into account in the project's content.

Please note that this question does not refer to gender balance in the teams in charge of carrying out the project but to the content of the planned research and innovation activities . **Sex and gender analysis refers to biological characteristics and social/cultural factors respectively.** For guidance on methods of sex / gender analysis and the issues to be taken into account, please refer to http://ec.europa.eu/research/swafs/gendered-innovations/index_en.cfm?pg=home

Template

instructions - ambition

- Describe the **advance** your proposal would provide **beyond the state-of-the-art**, and the extent the proposed work is ambitious.
- Describe the **innovation potential** (e.g. **ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models**) which the proposal represents. Where relevant, refer to products and services already available on the market. Please refer to the results of any patent search carried out.

D) THE CHAPTERS OF THE SECTION OF EXCELLENCE

1.1 OBJECTIVES

TITLE & ACRONYM

BACKGROUND

CONCEPT

OBJECTIVE

SPECIFIC OBJECTIVES

TITLE & ACRONYM

- Title:
 - Self-Explanatory
 - Brief and clear
- Acronym
 - Original
 - Easy to remember



[... ?]

1.1 OBJECTIVES

- **Background**
- It's the beginning of the story, identifying the initial context and the main references
- It must establish the path between that context and the need to carry out the project
- It must give clear justification for the concept and objectives
- Easy start to assimilate ... contextualize quickly
- Ends with a list of needs

1.1 OBJECTIVES

- **Concept**

- It's a general and complete approach to the topic
- It is a high-level idea, not excessively concrete but if anticipating the goal
- You should include keywords if possible
- One or two paragraphs is sufficient for the evaluator to be placed
- Highlight it in the text

1.1 OBJECTIVES

- **Objetivo general**

- Debe ser de amplio alcance y fácilmente divisible en objetivos más concretos, tanto los científico tecnológicos como los no técnicos
- Debe incluir detalles clave que pueden ser:
 - Consorcio
 - Demos
 - Productos principales
- La parte gráfica es un valor añadido

1.1 OBJECTIVES

- **Specific Objectives**

- They must be complete and very detailed
- Be directly referred to the expected results
- Quantifiable
- Ambitious
- They should highlight all the innovative aspects
- Do not forget that exploitation, dissemination and other standard activities are also objectives of the project.
- Brushstrokes of expected results should be given.
- It may be of value to indicate that there are key partners for specific goals

Comments from ESR

- The objectives are **clear and pertinent**.
- The stated objectives are clearly defined and mostly **in line to those indicated in the call**, except when addressing the concept of easy installation.
- The objectives are clear, and the specific technical objectives are **well quantified and measurable**.

Comments from esr

- The objectives of the proposal are broadly relevant to the call. However, **only some of the main objectives are addressed and to a minor extent.**
- The proposal is in line with the overall topic in the work programme. The **presented objectives are generic** but consistent with the expected exploitation and impacts of the action.

1.2 RELATION TO THE WORK PROGRAMME

RELATION TO THE WORK PROGRAMME

- Disaggregate the topic and part of the work programme preambulo
- Justify each of the claims from the project's perspective
- Normally it is presented in Table/List format

1.3 CONCEPT & METHODOLOGY

OVERALL CONCEPT

TRLs

REFERENCE PROJECTS

METHODOLOGY

GENDER DIMENSION

1.3 CONCEPT & METHODOLOGY

OVERALL CONCEPT

- Detailed description of everything intended to be done in the project
 - Research
 - Methodologies
 - Product and process developments
 - Proof of concept and validations
 - Shows
 - Detailed assessments
 - Non-technical actions

1.3 CONCEPT & METHODOLOGY

TRLs

1.3.X Positioning of XXX in the Technology Readiness Scale (TRL)

- Brief introduction to TRLs and where the project is located
- List of technologies to be applied/developed in the project, current and final TRL expected

TRL 1 Basic principles observed	TRL 2 technology concept formulated	TRL 3 experimental proof of concept	TRL 4 technology validated in lab	TRL 5 technology validated in relevant environment	TRL 6 technology demonstrated in relevant environment	TRL 7 Syst / Prototype demonstration in operational environment	TRL 8 System complete and qualified	TRL 9 actual system proven in operational environment
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1.3 CONCEPT & METHODOLOGY

TRLs

- **TRL 1 – basic principles observed**
- **TRL 2 – technology concept formulated**
- **TRL 3 – experimental proof of concept**
- **TRL 4 – technology validated in lab**
- **TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)**

1.3 CONCEPT & METHODOLOGY

TRLs

- TRL 6 – technology **demonstrated in relevant environment** (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system **prototype** demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

1.3 CONCEPT & METHODOLOGY

Projects of reference

1.3.X. National and International research and innovation activities linked to

Demonstrate training and previous experiences in similar areas

Some of its results may be project inputs and it should be highlighted

All partners should contribute if possible with any project

It is necessary to explain very briefly **where the synergies** between the reference projects and the proposal are

1.3 CONCEPT & METHODOLOGY

Methodology

- It's not the work plan.
- It can be represented as the logical chain of activities that allow the project to evolve from its initial state to the final results
-

1.3 CONCEPT & METHODOLOGY

gender dimension

- Project will make the necessary effort to foster gender equality in research
- Project should be aware of the "**Gender Equality in Horizon 2020**" guidelines
- Ensuring responsibilities will be balanced
- These aspects will be reported

Comments from ESR

- The **concept is sound**
- The **description of the demonstration** sites is very well presented
- The overall focus as well as the selection of the demonstration sites are **favouring the validation**

Comments from ESR

- The proposed approach is well described. However, there are important **shortcomings**.
 - The proposal **fails to be specific in defining the newly added features, especially how the "dynamic" properties of the system are handled;**
 - There is a **lack of information** on the models to be used for external factors including disruptive events; the approach gathers a vast amount of knowledge-based characterization of technologies, policies, strategies, scenarios etc., but **the plan for structuring the information on a pan-European level is missing;**

Comments from ESR

- From a modelling perspective the approach seems to be reasonable. However, **the concept and methodology is quite vaguely presented using questions and answers.**
- The involvement of the test site owners **is not fully adequate and the selection criteria for the test sites are not very clear**, although the sites are described.

Comments from ESR

- There is **insufficient justification as to how the outputs from the individual demonstration sites (including those dealing solely with diagnostics and optimization) will each contribute to the integrated outputs and new holistic services**. In addition, it is not adequately explained.
- The proposal **lacks a clear description of the type of data and sensors to be used**, end user functionality and how the tool will be directly applied

1.4 AMBITION

STATE OF THE ART

INNOVATION POTENTIAL

1.4 Ambition

State of the art (SotA)

- Demonstrates project **excellence**
- It must include the state of the art of
 - Methodologies
 - Tools
 - Processes
 - Products...
- Descriptions
 - Well- referenced
 - Brief Paragraph -> **progress regarding the SotA**

1.4 ambition

innovation potential

- **Remark very innovative products/processes** (ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models)
- Explain and reference the potential use of **patents** and products in the market
- It is a brief -but still very “condensed” section- usually tables/lists are used

Comments from ESR

- The proposal is **ambitious**. Overall the innovation potential of the project is well presented and high relating to some technology components
- The ambition level of the proposed work is very high.
- The State of the Art is well described, and **the project explains well how it will move beyond it.**

Comments from ESR

- The state of the art is briefly presented. Although there are references to many relevant EU funded projects, **there is no clear presentation of the current situation.**
- The eight progresses listed seem to jointly lead to the creation of one innovative solution, which claims to go beyond the state of the art, **but this is not fully convincing.**
- It is **difficult to judge** how far this proposal provides technologies/processes beyond the state of the art.

E) CONCLUSIONS

- Program selection and topic
- Initials
- Work team and draft
- Core group
- Document and consortium

1.-Excellence → project story

E) Examples of winning / non-approved proposals

Example of a rejected proposal:

Call identifier

H2020-LC-SC3-2018-2019-2020

Topic: CE-SC3-NZE-2-2018: Conversion of captured CO₂

Acronym of the Proposal: RECO₂NVERSION

☐ Evaluation Summary Report (ESR)

Interpretation of the score:

 Associated with document Ref. Ares(2018)6419088 - 13/12/2018

- 0– The **proposal fails to address the criterion** or cannot be assessed due to missing or incomplete information.*
- 1– **Poor.** The criterion is inadequately addressed, or there are serious inherent weaknesses.*
- 2– **Fair.** The proposal broadly addresses the criterion, but there are significant weaknesses.*
- 3– **Good.** The proposal addresses the criterion well, but a number of shortcomings are present.*
- 4– **Very good.** The proposal addresses the criterion very well, but a small number of shortcomings are present.*
- 5– **Excellent.** The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.*

Example of a rejected proposal:

Score: 3.50 (Threshold: 3/5.00 , Weight: -)

The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme:

Clarity and pertinence of the objectives

The objectives of the proposal are clear.

The pertinence of the objectives to the topic is very good. The technologies developed will produce different fuels from captured CO₂. The objective is for energy-efficient, economically and environmentally viable solutions, with upscaling from lab scale to pilot plant scale. This is credible and fully in line with the call objectives.

Soundness of the concept, and credibility of the proposed methodology

The concept is sound.

The different main technologies proposed, among which are biotechnological and thermo-catalytic technologies, are credible in order to produce the non-fossil fuel end-products. The focus on producing these products from the CO₂ outputs of four energy intensive industries is credible. However, some of the key scientific concepts are not convincingly elaborated, e.g. the co-electrocatalysis technology. This is a shortcoming. Moreover, the added value of having several parallel conversion processes is not fully justified in the proposal. This is a shortcoming.

The credibility of the methodology is very good.

The proposed research methodologies from lab scale testing through to pilot scale validation at demo-sites are convincing. The potential of the proposed conversion solutions will be demonstrated through the conduct of a credible Life Cycle Analysis. The social sciences are appropriately included through the proposed work in social readiness and technology acceptance assessment, which is convincing. This is excellent. The proposal elaborates targets for energy requirements and yields for the conversion processes. These targets are ambitious. This is very good. However, they are not entirely substantiated by evidence and therefore not fully credible. In addition, it is not clear what the targets are in terms of conversion cost reduction. This is a shortcoming.

Example of a rejected proposal:

Extent that proposed work is beyond the state of the art, and demonstrates innovation potential (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models)

*The progress beyond the state of the art is good. The proposal offers realistic advances in the areas of biotechnological solutions and presents credible advance in the areas of bipolar membrane electrolysis for H₂/CO production. However, it is not convincing that the proposed thermo-catalytic process is beyond the state of the art. **This is a shortcoming.***

*It is credible that the proposal will take the technologies which it plans to develop from TRL3 at the start of the project to achieve TRL5. The innovation potential is good. The proposal has credible innovation potential in the area of bipolar membrane electrolysis. **However, it is not convincing that the different proposed solution will result in other innovative products or services. This is a shortcoming.***

Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge and gender dimension in research and innovation content

The consideration of interdisciplinary approaches is excellent. The proposal effectively integrates a range of disciplines, including biotechnology, chemical engineering, energy engineering and socio-economics.

*The use of stakeholder knowledge is very good. **Stakeholder knowledge with respect to potential users of the technology and societal stakeholders is well addressed through dedicated tasks. This is very good.** However, the end users and their needs are not sufficiently identified at the stage of the proposal. **This is a shortcoming.***

Example of a approved proposal:

Call identifier SC3-RES-23-2019

Topic: Development of next generation biofuel and alternative renewable fuel technologies for aviation and shipping

Acronym of Proposal: BIOSFERA

☐ Evaluation Summary Report (ESR)

Score: 4.50 (Threshold: 3/5.00 , Weight: -)

The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme:

Clarity and pertinence of the objectives

Soundness of the concept, and credibility of the proposed methodology

Extent that proposed work is beyond the state of the art, and demonstrates innovation potential (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models)

Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge and gender dimension in research and innovation content

The objectives of the proposal are clear.

The pertinence of the objectives to the topic is excellent. The project develops a cost-effective, efficient and interdisciplinary technology for the sustainable production of next-generation liquid jet-like and bunker fuel-like biofuels for the aviation and marine sectors, from non-food and non-feed bio-based feedstock (woody biomass from forestry residue, agricultural residue and biogenic wastes from sewage sludge of ports and airports).

Example of a approved proposal:

The concept is sound. The project combines thermochemical, biochemical and thermocatalytic pathways to convert a flexible biomass feedstock into drop-in shipping and marine biofuels. The biomass feedstock is gasified to syngas, which (after purification) is converted by a two-step fermentation into (...) hat can be blended with marine diesel and jet fuel. This is excellent. The waste heat from the flue gas and syngas will be utilised for heat and power production for other parts of the plant such as steam generation and water electrolysis. This is excellent. The (..) will minimise the gas cleaning and the deactivation of the hydrotreatment catalyst and produce a tailored biofuel stream. This is excellent.

Solutions for the effective and efficient design and operation of the whole plant are provided by a convincing integrated model that includes the whole value chain. This is excellent. The proposal will convincingly bring the core integrated technology from TRL3 to TRL5, which is in line with the call requirements. The use of stakeholder knowledge is excellent. Stakeholders, such as fuel producers, ship owners and biomass association are identified and some demonstrate their commitment to the project with letters of support. The knowledge will be convincingly incorporated into the project through an advisory board and dedicated tasks. This is excellent. For instance Task 2.1 will bring stakeholders requirements and market needs.

The credibility of the methodology is excellent. The methodology convincingly uses syngas cleaning water from a real gasifier during fermentation that will provide credible information about the activity of the microbes in the actual reaction environment and the extraction of the lipids and purification by steam explosion will credibly reduce the environment and energy demands. This is excellent.



Preparation of the proposal (I): Scientific-Technical Excellence. Project concept and approach. Innovation

RAÚL PIÑERO HERNANZ – Centre of Technology CARTIF

MANY THANKS FOR YOUR ATTENTION !



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