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D7.2 DISSEMINATION PLAN

The VIVALDI project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000441.

Disclaimer

Table 1. Table with version management

Version	Date	Implemented by
V1	26 November 2021	CVE
Draft	09 November 2021	CVE

Table 2. Reference to the Consortium

Coordinator:	UNIVERSITAT AUTÒNOMA DE BARCELONA (UAB)
Associated Beneficiaries:	1.UNIVERSITAT AUTONOMA DE BARCELONA (UAB) 2. UNIVERSITAET FUER BODENKULTUR WIEN (BOKU) 3. LULEA TEKNISKA UNIVERSITET (LTU) 4. VLAAMSE INSTELLING VOOR TECHNOLOGISCH ONDERZOEK N.V. (VITO) 5. HELMHOLTZ-ZENTRUM FUR MWELTFORSCHUNG GMBH (UFZ) 6. ACONDICIONAMIENTO TARRASENSE ASSOCIACION (LEITAT) 7. PROCESSIUM (PROC) 8. FUNDACIÓ UNIVERSITARIA BALMES (UVIC) 9. CO_2 VALUE EUROPE AISBL (CVE) 10. ISLE UTILITIES BV (ISLE) 11. NUTRITION SCIENCES (NUT) 12. AVANTIUM CHEMICALS BV (AVT) 13. SUNPINE AB (SUNP) 14. COMPAÑIA CERVECERA DAMM, S.L (DAMM) 15. BIOAGRA SPOLKA AKCYJNA (BZK) 16. NOVAMONT SPA (NVMT)

Version: 1.0

Executive Summary

The VIVALDI project's Dissemination Plan (D7.2) of is one of the five axes of the Plan for Dissemination and Exploitation of the Results (PEDR) that contains all the required initiatives to maximise the impact of the project.

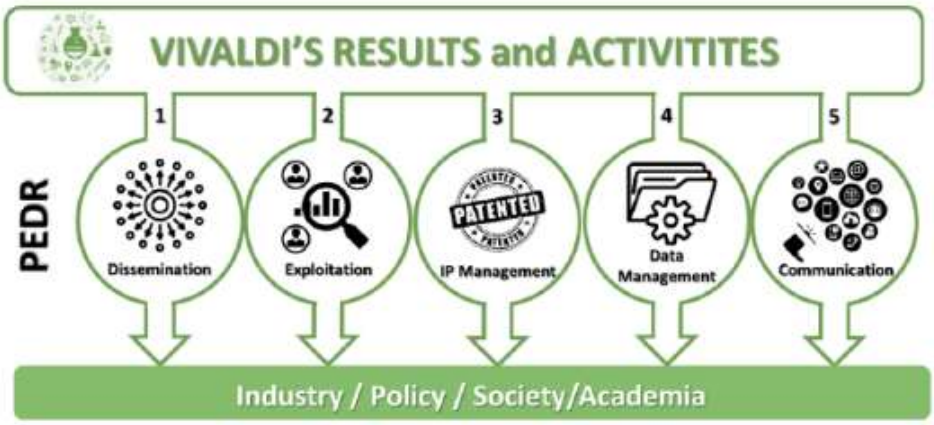

FIGURE 1. Main axes of VIVALDI's Plan for Dissemination and Exploitation of the Results

The Dissemination Plan focus on spreading VIVALDI results to a wide stakeholder base that is interested in VIVALDI's outcomes and are likely to use them in activities other than exploitation, including scientific diffusion and knowledge exchange.

The leader of WP7 "Communication and dissemination" (CVE) will be the main responsible for implementing the Dissemination Plan, focusing on supporting the project's partners to maximise the dissemination of the results achieved throughout the project.

The Dissemination Plan includes the following key elements:

- The dissemination objectives and the expected outcomes to be disseminated.
- The identification and analysis of the target audience. Aspects such as knowledge and attitude towards the subject, potential barriers and their role in reaching dissemination objectives are described for each stakeholder group.
- The dissemination tools and channels. A detailed list of means to ensure to reach the entire target audience and convey the project's results in the most appropriate way.
- The implementation plan and the governance. A guide on how, when, where, to whom disseminate VIVALDI project's outcomes. The partners' responsibilities and the KPIs complete the section.

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List of abbreviations

BES	Bioelectrochemical System
BIs	Bio-based industries
CA	Consortium Agreement
CCU	Carbon Capture and Utilisation
CO_2	Carbon Dioxide
EBSP	Exploitation and Business Strategy Plan
ECO_2R	Electrocatalytic reduction of CO_2
FA	Formic Acid
GDE	Gas Diffusion Electrode
GHG	Greenhouse Gas
IB	Innovation Board
IPR	Intellectual Property Rights
LA	Lactic Acid
LCA	Life Cycle Assessment
MeOH	Methanol
PEDR	Plan for Dissemination and Exploitation of the Results
RTOs	Research and Technology Organisations
R&D	Research and Development
SA	Succinic Acid
TEA	Techno-economic Assessment
TRL	Technology Readiness Level
WP	Work Package

1. Introduction

1.1. VIVALDI project in brief

VIVALDI - innoVative bIo-based chains for CO_2 VALorisation as aDded-value organIc acids – is a Horizon 2020 project funded by the European Commission. Starting from June 2021, the project will last 48 months.

The overarching objective of the VIVALDI is to develop an integrated solution for the conversion of CO_2 emissions into added-value organic acids as a response to the urgent need to reduce GHG emissions. Focusing on bio-based industries (BIs), VIVALDI presents these BIs an opportunity to shift towards circular economy by turning their CO_2 emissions into high-value products that can be again utilised as raw materials in the production of biomaterials. VIVALDI will use real off-gas emissions from four key BI sectors (Pulp & Paper, Food & Drinks, Bioethanol and Biochemicals) and will focus on the bioproduction of 4 industrially relevant organic acids with different applications and market penetration: lactic acid (LA), succinic acid (SA), itaconic acid (IA) and 3-hydroxypropionic acid (3-HP).

The adoption of the VIVALDI concept allows the transform of current biorefineries into plants with negative GHG emissions and sets the path towards the implementation of a new CO_2-based industrial sector that is environmentally and economically competitive with the current fossil-based alternatives.

1.2. Scope of the deliverable

This deliverable aims to present the dissemination plan as well as the associated actions that will be implemented during the entire duration of VIVALDI project.

The purpose of the Dissemination Plan is to make sure the results of VIVALDI project are diffused in the appropriate fora and to target stakeholders via the most appropriate channels. The deliverable indicates how dissemination activities can increase the impact of the project and its potential to inspire future activities by engaging effectively with key stakeholders and showcasing VIVALDI's results and its environmental, economic and societal benefits.

2. The dissemination plan

Due to similar principles, this plan has been developed simultaneously with the Communication Plan. However, the Communication Plan and the Dissemination Plan constitutes 2 different deliverables as they have a different focus (project's activities and results, respectively).

The Dissemination Plan guides the consortium's and the WP7 leader's dissemination efforts by:

- Defining the strategic dissemination objectives
- Selecting the VIVALDI outcomes to be disseminated and identifying the target stakeholders and the most appropriate dissemination tools
- Elaborating a long-term implementation plan, listing the dissemination activities to be realised during the whole duration of VIVALDI project. Each entry displays the activity and the respective audience, tool(s), timeline, budget and human resources needed for its completion.
- Setting the expected results and performance indicators to ensure the effectiveness of the dissemination actions and tools.
- Clarifying the partner's responsibilities.

The Dissemination Plan will be monitored and, if needed, will be revisited every 6 months. The deliverable itself will be updated at mid-term and will include a list of so far conducted activities.

2.1. Objectives

By setting guidelines, responsibilities and timelines on how, when and where to disseminate the project results, the Dissemination Plan provide the ideal conditions to reach the following objectives:

- Raise awareness of the project's results, benefits and the need of implementing a CO_2-based industry in the chemical sector to mitigate climate change.
- Efficiently disseminate the knowledge generated in VIVALDI to all the actors of the society (from stakeholders to researchers).
- Maximise the impact of VIVALDI's results and ensure replicability throughout European industrial hubs.
- Highlight the potential of CO_2-based added-value compounds beyond the project's sphere to enable replication and up-scaling.

2.2. Expected outcomes to be disseminated

As defined in Art 26.1 of VIVALDI Grant Agreement (GA): "Results" means any (tangible or intangible) output of the action, such as data, knowledge or information – whatever its form or nature, whether it can be protected or not – that is generated in the action, as well as any rights attached to it, including intellectual property rights.

The project's results will be tracked, updated throughout the project and captured in the Exploitation and Business Strategy Plan (EBSP). Using this tool, the consortium and the WP7 leader, in collaboration with WP6, will identify the outcomes that are to be disclosed by other means than exploitation.

A preliminary list of expected results to be disseminated is the following:

- Development and test of hybrid absorption sorbent for CO_2 purification at lab and demo scale.
- Electrode development and characterization at biocompatible conditions.
- Process integration and operation (20 days) of electrocatalytic reduction (ECO_2R) of CO_2 to formic acid (FA) and methanol (MeOH).
- Successful demonstration of product streams at litre scale.
- Bioelectrochemical reactor development and nutrient recovery from wastewaters.
- Strain development and process conditions for microbial fermentation of FA and MeOH to organic acids.
- Single reactor for ECO_2R and fermentation to succinic acid (SA).
- Challenges from process integration for industrial symbiosis (CO_2 conversion, wastewater nutrient recovery, microbial conversion of CO_2-based products).
- Downstream processing and separation of organic acids from fermentation broth.
- Industrial validation of SA and lactic acid (LA) product separation.
- Life cycle sustainability assessment, including aspects of circularity assessment.
- Analysis and recommendations for a supportive regulatory framework.

The dissemination of such results will occur only when full protection of innovations and agreements (among consortium partners but also with external ones) will be reached following the rules and obligations indicated in the GA and CA. The process to fully protect the project result will be supervised by the IB; this board will take care of the innovation activities and IPR issues in VIVALDI project that are addressed in the CA.

2.3. Target audience identification and analysis

We are confident that a wide number of stakeholders will be interested in VIVALDI's results, due to its integrated vision and its symbiotic character.

The different stakeholders have been identified and split into different types of audiences according to their interest in VIVALDI's technical outcomes, current knowledge and perception on the subject, existing barriers and capacity to maximise the project's results. Such identification and analysis support the consortium and the WP7 leader to better adapt and convey the project's results to each stakeholder group, whose behaviour can have an impact on the acceptance, elaboration of regulatory aspects and deployment of CCU technologies.

FIGURE 2. Scheme of target audience of dissemination activities

The scheme above and the stakeholder analysis are then based on current knowledge and are open to future updates and modifications in the case more information will arise during the project.

2.3.1. Industrial stakeholders

Table 3. Analysis of industrial stakeholders

Target Audience	Why they are target	Knowledge and attitude towards the subject	Barriers	Dissemination objective
Bio-based Industries	By replicating VIVALDI's solutions, Bio-based Industries can improve the sustainability of their processes and products, enhancing their environmental and economic competitiveness with the current fossil-based alternatives.	Generally good technical understanding of CCU. Positive aptitude to incorporate induced incremental innovations and the creation of new business models.	Limited knowledge of the current advancements and environmental and economic impact of CCU solutions. Different opinions on CCU versus other sustainable solutions. Lack of policy measures to support CCU deployment could be detrimental.	Share science-based evidence and information on the benefits, costs and technical feasibility of applying VIVALDI's solutions for valorising CO_2 emissions into either added-value or commodity products (creation of new business models). Receive feedback on the project results. Raise awareness on the development of EU and national policies to regulate carbon circularity and CCU.
Chemical companies	Chemical companies are potential up-takers of CO_2-based commodities for the production of novel and more sustainable biomaterials.	Generally good understanding of CCU and CO_2-based products. Moderately positive about sustainable practices to reduce GHG emissions and defossilise the sector.	Limited attention on the current advancements of CCU and CO_2 based products and their potential impact in terms of profitability. Competition with other potential types of commodity products.	Share information on the environmental and economic benefits of VIVALDI's CO_2-based products. Raise awareness on the potential to participate in new business models and attract new consumers. Create opportunities to network and form new partnerships.
Other CO_2 emitters (hard to abate industries, including metallurgic	Cross-sectoral collaboration is a crucial factor to exchange knowledge and promote the	Positive towards reducing GHG emissions through rapid actions. Various degrees of knowledge on CCU	Different opinions, levels of interest and/or misconceptions on CCU solutions.	Raise awareness on the replicability and environmental/economic benefits of VIVALDI's new business models, and the need to reduce

and petrochemical industries)	replication and wider deployment of CCU solutions.	solutions depending on the type of industry and geographical area.	Competition with other solutions to reduce GHG net emissions. Lack of policy measures to support CCU deployment could be detrimental.	the environmental footprint to mitigate climate change. Exchange knowledge on innovative CO_2 valorisation solutions.
Wastewater treatment operators	Wastewater treatment operators could beneficiate from VIVALDI's solution to recover nutrients and generate a new revenue stream. Potential to start new collaborations and industrial symbiosis with adjacent Bis and chemical industries.	Generally good knowledge of nutrients recovery and positive about discovering new technologies and opportunities in this field.	Moderate knowledge on the potential impact in terms of profitability of nutrients recovery solutions.	Share science-based evidence and information on the benefits, costs and technical feasibility of applying VIVALDI's solutions for wastewater nutrients recovery. Receive feedback on the VIVALDI technology's results. Raise awareness on industrial symbiosis opportunities and potential alternative revenue streams.

2.3.2. RTOs, universities and R&D departments of industries of all sizes

Table 4. Analysis of RTOs, universities and R&D departments of industrial stakeholders

Target Audience	Why they are a target	Knowledge and attitude towards the subject	Barriers	Dissemination objective
R&D community	RTOs and universities develop, analyse the impact (e.g. LCA/TEA analysis) and	Good technical understanding of CCU technologies, carbon circularity and industrial symbiosis.	Different levels of acceptance and high competitiveness between the	Share science-based evidence and information on the benefits, costs and technical feasibility of VIVALDI's solutions.

	validate crucial technology for carbon circularity, industrial symbiosis and CCU that are still at low TRL. Prioritisation of research and exchange knowledge is needed to accelerate the development of CCU technologies and increase their impact.	Opinion differs on the benefits and reliability of CCU technologies, carbon circularity and industrial symbiosis.	different CCU technologies.	Receive feedback on the project results. Raise awareness on EU funding programmes related to CCU and create opportunities for knowledge exchange and form new partnerships between RTOs, universities and industries on this topic

2.3.3. Standardisation bodies, policymakers and think tanks

Table 5. Analysis of standardisation bodies, policymakers and think tanks

Target Audience	Why they are a target	Knowledge and attitude towards the subject	Barriers	Dissemination objective
Standardisation bodies	Standardization bodies are key actors for the development of quality standards for VIVALDI technologies, processes, the chemicals produced and the emission accounting methodologies.	Limited knowledge of CCU solutions and CO_2-based products. Positive attitude towards industry-developed cost-effective technologies and processes that help to defossilise industries.	The industry plays an important role in leading the work of standardisation bodies. Therefore, technology solutions at low TRL might not have a high priority on their agendas.	Share science-based evidence and information on VIVALDI's technologies and alternatively generated products, showcasing their quality and industrial uptake to bring confidence to the market.

Policy makers	In order to reach the EU climate strategies and targets, public authorities need to build a positive policy framework that encourages the development and deployment of reliable technologies that help hard to abate industries to decrease their carbon footprint and use more efficiently scarce resources.	Moderate understanding of CCU, carbon circularity and industrial symbiosis at the EU level. Knowledge levels of national and local authorities vary depending on the geographical area and the presence of national actors or initiatives in place.	The development of CCU technologies might not be high on the EU and national climate strategy agendas due to a lack of knowledge and competition with other solutions. Difficulty to understand the subject due to its complexity and to identify and include CCU experts in the discussion. Fragmentation of responsibilities among EU and national policymakers.	Disseminate high-level evidence and information on the reliability and profitability of innovative solutions to achieve carbon neutrality and move towards a circular economy. Share policy recommendations to help develop a positive policy framework. Raise awareness on the role of policy frameworks and financial support to support the upscaling of CCU technologies.
Think tanks and/or topical organisations (e.g. NGOs and industrial associations)	The acceptance of CCU technologies from think tanks and/or topical organisations is essential to ensure advocacy actions that include the entire sector and beyond it. Such organisations have also a direct influence on public acceptance and industries perception.	Generally limited understanding of CCU, carbon circularity and industrial symbiosis, with significative variations according to the type of organisations.	Limited knowledge, technical and not technical, of CCU solutions and their benefits for the environment, the economy and society. Potential confusion between CCS and CCU.	Disseminate high-level evidence and information on the safety and profitability of innovative solutions and their benefits. Initiate collaborative advocacy actions (e.g. joint letters, workshops, etc.).

2.3.4. General public

Table 6. Analysis of the general public stakeholders

Target Audience	Why they are a target	Knowledge and attitude towards the subject	Barriers	Dissemination objective
Final consumers / general public	Public awareness and acceptance are essential to allow the uptake of new business models and the large-scale deployment of cleantech solutions. Public perception of the risks posed by climate change is key to supporting urgent policy measures to reduce GHG emissions.	Very limited knowledge of CCU, carbon circularity and industrial symbiosis. Misconceptions and/or scepticism in adopting CO_2-based consumer products.	Difficulty in understanding technical and scientific results. Potential confusion between CCS and CCU. Reluctance towards changing habits and adopting new products.	Raise awareness on the characteristics and safety of CO_2-based products and the role of CCU technologies in achieving a climate-neutral economy.

2.4. Dissemination tools and channels

A variety of means have been identified to disclose the project's outcomes to the target audience. VIVALDI consortium and WP7 leader will use the entire palette of such means to maximise their impact in the market, scientific community and society.

The selection of one tool or channel instead of the other depends on the project result, the target audience and the objective of the dissemination activity. The tools and channels will be matched with the project outcome and audience in chapter 3 "Implementation Plan and Governance".

The main tools and channels identified for dissemination activities are the following:

2.4.1. Peer-reviewed scientific articles

- **Characteristics:**

VIVALDI's R&D progress will be disseminated via articles and publications in a selection of peer-reviewed scientific journals that are well-known in the scientific community and that are the most appropriate for the type of topics dealt with within the project.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

- **Selection of journals:**

Table 7. Selection of peer-reviewed scientific journals

Journal	Appropriate for which outcome	WP
Science of the Total Environment, Bioelectrochemistry, Applied Energy, Environmental Science and Technology, Water Research	Bioelectrochemical systems, circular and integrated systems in BI	WP1 WP2 WP3
ChemSusChem, ChemElectroChem, Journal of CO_2 utilization	ECO_2R and GDEs	WP1
Nature Biotechnology, Applied Environmental Microbiology, Metabolic Engineering, Biotechnology and Bioengineering	Strain development and yeast fermentation advances	WP3
Separation and Purification Technology, Chemical Engineering Journal	Technical developments in conversion and separation technologies	WP4
Journal of Cleaner Production, Sustainability, International Journal of LCA	Sustainability and circularity assessments	WP5

2.4.2. Bilateral meetings

- **Characteristics:**

Bilateral meetings are the most appropriate tool to disseminate the project's outcomes to those stakeholders that most likely will make direct use of them, such as:

- Policy makers taking up VIVALDI's analysis and recommendations on the regulatory measures.
- Standardisation bodies seeking scientific evidence to justify the need for standards in the CCU value chain that allow accelerated market entry of CCU chemicals.
- Chemical companies interested in adopting the organic acids produced.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

2.4.3. News releases

- **Characteristics:**

VIVALDI foresees the publication of news releases at strategic times when milestone achievements will be reached. The news releases will ensure rapid disclosure of outcomes achieved to selected media well established among the identified stakeholders and the wider community. While the content of the news releases will be mainly in English, the media will be reached at local, national and European levels.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

2.4.4. Consumer dissemination package

- **Characteristics:**

A tailor-made package to communicate high-level outcomes on the quality and sustainability benefits of CO_2-based chemical products as alternative to fossil-based ones. The package includes tools such as brochures, informative videos, accessible articles and posts on VIVALDI's website and social media channels.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

2.4.5. Participation in scientific conferences and workshops

- **Characteristics:**

  The active participation of VIVALDI's consortium at relevant events (in person, hybrid or online), such as conferences and workshops to present the project's outcomes, is of great importance to increase the project's and its outcomes visibility and uptake.

  VIVALDI's partners and the WP7 leader will:

  - Identify the events with higher priority.
  - Exchange information and coordinate the participation at the identified events conferences and workshops.
  - Agree on the most appropriate dissemination tools to be deployed at each event (e.g. exhibition booth, poster, participation as speaker, etc.).

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

- **List of conferences (Non-exhaustive):**

Table 8. List of conferences for possible participation

Conference	Motivation
Conference on CO_2-based fuels and chemicals	Appropriate forum to introduce VIVALDI's concept and early work
ACI's Carbon Dioxide Utilisation Summit	Appropriate to disseminate progress achieved in WP3 on bioproduction of organic acids

International Conference for Bioresource Technology	Appropriate to disseminate findings in ECO_2R and fermentation (WP1, WP3)
International Conference on GHG Control Technologies	Appropriate forum for sustainability and circularity assessment (WP6, WP7, WP8)
(EU & International) ISMET Conferences	Appropriate to disseminate results made in WP1 and WP2 on BES for nutrient recovery

2.4.6. Advisory Board

- **Characteristics:**

The inclusion of the members of the Advisory Board in the dissemination activities and their activation as ambassadors of VIVALDI within their network will ensure a broader diffusion of the project's outcomes.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

2.4.7. Thematic workshops

- **Characteristics:**

Thematic workshops will be organised by the VIVALDI consortium in collaboration with supporting stakeholders and/or other EU and national projects. These workshops constitute an effective opportunity not only to disseminate the project's outcomes, but most of all to tackle common challenges and extend the knowledge exchange beyond the VIVALDI community.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

- **Potential European funded projects to collaborate within the workshops' organisation:**

Table 9. List of European funded projects for possible collaboration

Project	Link
OCEAN (EU-767798)	Oxalic acid production from CO_2
BECCU (FI)	Specialty chemicals from CO_2 from biomass operations
CO2EXIDE (EU-768789)	Electrochemical conversion of CO_2 to ethylene oxide
BIOCONCO2 (EU-761042)	Microbial platforms for the conversion of industrial CO_2 to chemicals
CO2SMOS (EU- 101000790)	Advanced chemicals production from biogenic CO_2 emissions
CATCO2NVERS (EU- 101000580)	Creating added-value chemicals from bio-industrial CO_2 emissions

- **Identified topics for workshops with potential repetition according to the project's needs:**
  - Integrated systems for wastewater valorisation (industrial symbiosis).
  - Knowledge exchange and regulatory framework for accelerated deployment of CCU solutions.
  - Two innovation workshops with off-takers and consumers have been planned in Task 6.2 to feed into the exploitation strategy and the business plan of VIVALDI.

2.4.8. Training sessions and webinars

- **Characteristics:**

Training sessions and webinars complement thematic workshops as they are meant to reach a broader audience of stakeholders. Topics can vary depending on the progress reached and the project's needs. The purpose of such events is to explain VIVALDI's results as well as improve the stakeholders' knowledge on CO_2 valorisation technologies and raise awareness about the need to adopt CCU technologies at large scale.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

2.4.9. Final dissemination conference

- **Characteristics:**

  The final conference will offer an overview of all the progress and key outcomes reached throughout the project to a wide spectrum of stakeholders.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public
■	■	■	■	■			■	

2.4.10. Project meetings

- **Characteristics:**

  Internal project meetings organised regularly are also a channel to disseminate VIVALDI's results among the partners in an equal and simultaneous way. In these meetings, external stakeholders may also be invited on an ad-hoc basis if specific needs arise.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public
■	■	■	■	■	■	■		

2.4.11. Interaction and collaboration with clusters and platforms

- **Characteristics:**

  Thematic clusters and platforms like BIC or Water Europe gather a wide community of organisations from different fields but with common interests. Interacting with them is a valuable opportunity to disseminate VIVALDI results to a wider audience.

- **Audience:**

BIs	Chemical companies	Other CO_2 emitters	Wastewater treatment operators	R&D community	Standardisation bodies	Policy makers	Think tanks	General public

3. Implementation plan and governance

3.1. Implementation plan

The implementation plan explains in detail the dissemination activities that will be implemented throughout the project. All the key elements described so far in Dissemination Plan are hereby combined, guiding the VIVALDI consortium and WP7 leader in disseminating each project's outcome in an effective and impactful way.

The VIVALDI implementation plan looks at:

- The project's results to be disseminated.
- Dissemination tool and channel.
- Time and location (when applicable) of each activity.
- Partners involved.
- Target audience.

Table 10. Implementation plan

Result	WP	Task	Lead Partner	Timeframe	Tools and channels	Target audience
Development and test of hybrid absorption sorbent for CO_2 purification at lab and demo scale	WP1	1.1	LTU	M1-M24	• **Scientific publications** (e.g. Journal of CO_2 Utilisation, Journal of Environmental Chemical Engineering, Industrial & Engineering Chemistry Research) • **Conference proceedings** (e.g. annual Carbon Capture Technology & Expo)	• R&D community • BIs • Chemical companies • Other CO_2 emitters
Electrode development and characterization at biocompatible conditions	WP1	1.2 1.3	VITO UFZ	M3-42	• **Scientific publications** (e.g. ACS Catalysis, Bioelectrochemistry, Catalysis Science and Technology) • **Conference proceedings** (e.g. biannual Carbon Dioxide Conversion Catalysis Conference)	• R&D community • BIs • Standardisation bodies
Process integration and operation (20 days) of electrocatalytic reduction (ECO_2R) of CO_2 to formic acid (FA) and methanol (MeOH)	WP1	1.3	UFZ	M3-42	• **Scientific publications** (e.g. ChemSusChem, Energy and Environmental Science) • **Conference proceedings** (e.g. annual Conference on CO_2-based Fuels, Chemicals and Polymers)	• BIs • Chemical companies • Other CO_2 emitters • R&D community

Successful demonstration of product streams at litre scale	WP1	1.4	AVT	M8-M36	• **News item** on the successful production of the first litres	• BIs • Chemical companies • Other CO_2 emitters • Policy makers • Think tanks
Bioelectrochemical reactor development and nutrient recovery from wastewaters	WP2	2.1 2.2 2.3	LEITAT UAB	M1-M30	• **Scientific publications** (e.g. Water research, Chemosphere, Journal of Chemical Technology and Biotechnology) • **Conference proceedings** (e.g. annual International Conference for Bioresource Technology, biannual ISMET conference) • **News item** on successful validation of nutrient recovery from industrial streams	• Wastewater treatment operators • BIs
Strain development and process conditions for microbial fermentation of FA and MeOH to organic acids	WP3	3.1 3.2 3.3	BOKU UAB	M1-M36	• **Scientific publications** (e.g. Journal of Bioscience and Bioengineering, Applied Environmental Microbiology) • **Conference proceedings** (e.g. biannual FEMS)	• BIs • R&D community
Single reactor for ECO_2R and fermentation to succinic acid (SA)	WP3	3.4	UAB	M21-M45	• **Scientific publications** (e.g. Bioresource Technology, Journal of CO_2 Utilisation) • **Conference proceedings** (e.g. annual International Conference for Bioresource Technology, annual Carbon Dioxide Utilisation Summit)	• BIs • R&D community • Chemical companies • Other CO_2 emitters • Policy makers

					• **News item** on the successful production of succinic acid from process integration • **Webinar** (presenting breakthroughs in single reactor CCU and bioconversion systems)	
Challenges from process integration for industrial symbiosis (CO_2 conversion, wastewater nutrient recovery, microbial conversion of CO_2-based products)	WP2 WP3		UAB BOKU	M1-M45	• **Workshop**	• R&D community • Wastewater treatment operators • BIs • Chemical companies • Other CO_2 emitters
Downstream processing and separation of organic acids from fermentation broth	WP4	4.1 4.2	PROC	M18-M46	• **Scientific publications** (e.g. Separation and Purification Technology, Chemical Engineering Journal) • **Conference proceedings** (e.g. Bioprocessing Summit Europe)	• BIs • Chemical companies • Other CO_2 emitters
Industrial validation of SA and lactic acid (LA) product separation	WP4	4.3	NVMT	M12-M45	• **News item** on successful validation of product recovery and use at industrially relevant environment	• Standardisation bodies • Policy makers • Think tanks • BIs • Chemical companies • Other CO_2 emitters • Wastewater treatment operators

Life cycle sustainability assessment including aspects of circularity assessment	WP5	5.1 5.4	UVIC	M7-M48	• **Scientific publications** (e.g. Science of the Total Environmental, Journal of Cleaner Production) • **Conference proceedings** (e.g. biannual International Conference on GHG Control Technologies) • **Dissemination package** (brochure combining technical developments and results of assessments to be disseminated largely) • **Webinar** (highlighting the combined results of technical developments and assessments, and replicability potential)	• Standardisation bodies • Policy makers • Think tanks • R&D community • BIs • Chemical companies • Other CO_2 emitters • Wastewater treatment operators • General public
Analysis and recommendations for supportive regulatory framework	WP6	6.4	CVE	M1-M48	• **Workshop/webinar** with further relevant EU projects on common issues (e.g. regulatory challenges, a common platform for knowledge exchange, business models, etc.) • **Briefing notes and bilateral meetings** addressed to policymakers and further stakeholders to raise awareness on such common challenges	• Policy makers • Standardisation bodies • Think tanks • BIs • Chemical companies • Other CO_2 emitters
Compilation of results	ALL		ALL	M48	• **Final dissemination conference**	• Policy makers • Standardisation bodies

						• R&D community • Think tanks • BIs • Chemical companies • Other CO_2 emitters • Wastewater treatment operators • General public

3.2. Key performance indicators

The effectiveness of the VIVALDI dissemination activities will be regularly monitored and reported thanks to quantifiable key performance indicators (KPIs) that allow the consortium and the Communication and Dissemination Officer (Lara Tottolo, CVE) to assess the achievement of the dissemination plan's objectives.

Table 11. KPIs of dissemination activities

Criteria	KPI/yr.	Target Value
Number of publications published in peer-reviewed scientific journals	5	20
Number of bilateral meetings organised	2	8
Participation in scientific conferences/workshops		15
Number of thematic workshops organised		3
Number of news releases published	2	8
Number of training sessions and webinars organised	1	4

3.3. Partners responsibilities

3.3.1. Partners tasks and governance

All consortium partners are part of the dissemination activities and act as multipliers. The entire consortium will be involved in the dissemination activities, which will be undertaken in a coordinated way, exploiting synergies and avoiding overlaps.

Partners' involvement is required in tasks such as:

- Generating and disseminating publications.
- Supporting the organisation of thematic workshops, training sessions and webinars.
- Participate and represent VIVALDI project at bilateral meetings, scientific conferences and workshops.
- Provide partners with appropriate dissemination material (e.g. presentations).
- Contribute with appropriate content in the generation of dissemination material (e.g. news releases, articles for VIVALDI's newsletter, etc.).

Each partner shall also use its own dissemination network and channels (such as websites, newsletters, social media, events and workshops) to ensure maximum visibility of VIVALDI's results and impact.

In order to record, report and assess the success of any dissemination activity, all partners need to report the dissemination activities they will undertake to VIVALDI Communication and Dissemination Officer (Lara Tottolo, from CVE).

3.3.2. Rules and obligations:

Article 29 in the GA establishes the rules and obligations that apply to the Consortium Partners to disseminate the Results.

According to it, unless it goes against their legitimate interests, each VIVALDI partner must – as soon as possible – disseminate their results by disclosing them to the public by appropriate means (other than those resulting from protection or exploiting the results) and including in scientific publications (in any medium).

This does not change the obligation of the partners to protect results as it is stated in Article 27 of the GA, the confidentiality obligations in Article 36 of the GA, the security obligations in Article 37 of the GA or the obligations to protect persona data in Article 39 of the GA, all of which still apply.

Each partner that intends to disseminate its results must give advance notice to all partners of at least 45 days – unless agreed otherwise – together with sufficient information on the results it will disseminate. This will give chance to any other partner to object within 30 days of receiving notification, showing that its legitimate interests in relation to the results or background would be significantly harmed. In these cases, the dissemination may not take place unless appropriate steps are taken to safeguard these legitimate interests.

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