

D7.1

Plan for Dissemination, Communication and Exploitation of Results (PDCER)

First Version November 2022

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Funded by the European Union



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Work Package	Work Package 7
Delivery Date (DoA)	November 30, 2022
Actual Delivery Date	November 30, 2022
Abstract:	This deliverable D7.1 introduces the NICKEFFECT Plan for Dissemination, Communication and Exploitation of Results (PDCER), which is a comprehensive and living document that outlines the tools, channels and activities to be put in place throughout the project to ensure successful and consistent visual representation of the NICKEFFECT Project, as well as its activities for successful dissemination of results.

Document Revision History			
Date	Version	Author/Contributor/Reviewer	Summary of Main Changes
20/07/2022	0.1	Danijel Pavlica (F6S)	ToC with Executive Summary
15/08/2022	0.2	Danijel Pavlica (F6S)	Content Update
02/09/2022	0.3	Marina Domingas (F6S)	Content Update
18/11/2022	0.4	Danijel Pavlica (F6S)	Content Update and First Draft
25/11/2022	0.5	Aliona Nicolenco (CID) Elena Guinea (CID)	First Draft Review
26/11/2022	0.6	Naroa Imaz (CID)	Quality Review
26/11/2022	0.7	Maria Lekka (CID)	Quality Review
26/11/2022	0.8	Elena Guinea (CID)	Quality Review
28/11/2022	1.0	Danijel Pavlica (F6S), Marina Domingas (F6S)	Final Update and Version

Dissemination Level and Nature of the Deliverable		
PU	Public	Х
SEN	Sensitive, limited under the conditions of the Grant Agreement	
Nature	R = Report, E = Ethics or, O = Other	R



	NICKEFFECT Consortium				
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NICKEFFECT

Ni-based ferromagnetic coatings with enhanced efficiency to replace Pt in energy and digital storage applications

Grant Agreement: 101058076 Funding Scheme: Research and Innovation Action (RIA) Theme: HORIZON-CL4-2021-RESILIENCE-01 Start Date of Project: 01 June, 2022 Duration: 48 months

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List of Abbreviations and Acronyms		
B2B	Business to Business	
BMC	Business Model Canvas	
СА	Consortium Agreement	
CME	Converse Magnetoelectric Effect	
DC	Dissemination and Communication	
DCO	Dissemination and Communication Objectives	
DCP	Dissemination and Communication Plan	
EC	European Commission	
GA	Grant Agreement	
HADEA	European Health and Digital Executive Agency	
IPR	Intellectual Property Rights	
KERs	Key Exploitable Results	
LCA	Life-Cycle Assessment	
LSM	Level-set Methods	
MITReM	Multi-Ion Transport and Reaction Modelling	
Ni, Pt	Nickel, Platinum	
PDCER	Plan for Dissemination, Communication and Exploitation of Results	
PEM	Polymer Electrolyte Membrane	
PGM	Platinum Group Metals	
SSbD	Safe and Sustainable by Design	
WP	Work Package	

1 Summary

This deliverable D7.1 introduces the NICKEFFECT Plan for Dissemination, Communication and Exploitation of Results (PDCER), which is a comprehensive and living document that outlines the tools, channels and activities to be put in place throughout the project to ensure successful and consistent visual representation of the NICKEFFECT Project as well as its activities for successful dissemination of results. It defines the strategy, activities and tools with which the NICKEFFECT Project will communicate with its stakeholders as well as the timing of the various activities throughout the lifetime of the project. This deliverable represents the linkage between dissemination and communication activities with those activities in other WPs and is important in terms of the marketing success of the project. More precisely, the presented set of rules and standards within the document will govern NICKEFFECT partners through effective communication with target audiences from the starting point of the project.

The PCDER clearly distinguishes between communication, dissemination and exploitation activities. NICKEFFECT **dissemination** implies the public disclosure of the project results with the objective to transfer knowledge and results, enabling targeted stakeholders to utilise the results. The **communication** activities of NICKEFFECT imply strategic and targeted measures to inform and promote the project activities and actions as well as its results to a multitude of audiences to show the impact and benefits of the EU-funded project. The **exploitation** plan of this project consists of getting to a stage in which the knowledge generated on the project might be exploited at a large scale by the project participants themselves or might be attractive to other entities outside the consortium.

This deliverable consists of the following sections:

- **Chapter 1:** This chapter summarises the aim of this deliverable and provides an overview of this document.
- Chapter 2: The second chapter provides a brief introduction to the NICKEFFECT project and its main objectives.
- Chapter 3: This chapter introduces the main objectives of dissemination and communication activities as well as the methodology and approach used in designing the Dissemination and Communication Plan. Finally, this chapter paints an accurate picture of the NICKEFFECT target audiences and crafts the narrative and key messages to be delivered.
- **Chapter 4:** The fourth chapter offers an overview of the NICKEFFECT Dissemination Strategy and presents expected outputs to be disseminated and the engagement strategy.
- Chapter 5: In this chapter, the NICKEFFECT communication strategy is presented with a detailed description of the project visual identity and the channels and tools to be used. It also details on networking and liaison activities with other initiatives.
- **Chapter 6:** This chapter addresses the exploitation plan, and explains initial ways to guarantee that the project outcomes are exploited during and after its lifetime.
- **Chapter 7**: This chapter reflects on the importance of this document and upcoming activities.

The present NICKEFFECT deliverable – prepared within the Dissemination, Exploitation and Guiding & Standardisation Activities. (WP7) – will ensure that all communication and dissemination needs from various WPs and the project, in general, are considered and coordinated.

The strategy and plan of dissemination, communication and exploitation will be continually monitored, updated and reported during the project.



2 NICKEFFECT Project Introduction

Platinum group metals (PGM) are currently highly demanded due to their unique properties which have made them indispensable in different strategic sectors as renewable energy, electric mobility and digital technologies.

Unfortunately, PGMs are costly, and Europe depends on their importation from other continents, which is nowadays a high risk for the development of strategic applications in key industrial sectors. For these reasons PGMs are categorised as critical raw materials (CRM) by the EC. Thus, finding alternatives to them is critical for the EU economy. In this context, **NICKEFFECT project** has identified an opportunity to replace these materials in key applications as electrolysers electrodes, fuel cells catalysts and magneto-electronic devices. The proposed alternative is based on nickel (Ni), an earth-abundant element with ferromagnetic character. To enhance the catalytic performance of Ni, innovative deposition techniques to obtain coatings with ordered and pseudo-ordered porosity, will be developed. The higher surface to volume ratio provided by the increased porosity will allow enhancing catalytic performance or converse magnetoelectric effect (CME) in electronic devices.

NICKEFFECT will develop and validate at least 3 new materials, together with the coating methodologies (including process modelling) and decision support tools for materials selection (integrating safe and sustainable by design (SSbD) criteria and materials modelling).

The NICKEFFECT project brings together a **strong consortium composed of twelve different partners** with complementary profiles and large expertise, covering the special skills, capabilities and certification expected for the project.

2.1 NICKEFFECT Project Objectives

In response to the abovementioned need to find alternatives to the Pt (as CRM) and thus promote resilient EU raw materials value chains for key applications in the twin green and digital transformations, NICKEFFECT project aims:

To develop novel ferromagnetic Ni-based coating materials to replace the scarce and costly Platinum and ensure high efficiency in key applications (electrolysers' electrodes, fuel cells' catalysts and magneto-electronic devices). NICKEFFECT will enhance material properties by increasing the surface to volume ratio (S/V) to achieve great performance as catalyst in HER in WEs and OER in FCs and by providing converse magnetoelectric effect (CME) in electronic devices.

NICKEFFECT will develop and bring to the market new solutions and tools for materials and process modelling as well as for decision making (providing methodologies to follow safe- and sustainable-by-design (SSbD) criteria in materials' design and manufacturing) to support the European industry.

Objectives 01-07 cover scientific aspects that will be needed to make objectives 08-09 possible:

O1. To synthesize ferromagnetic coating materials (by electrodeposition, electroless deposition and sputtering as cost-effective methods) to replace Pt as raw material in specific strategical applications such as catalysts in water splitting electrodes and in FC cathodes, and as free-layer material in voltage actuated digital storage devices.

O2. To develop measures to ensure that the materials are affordable, durable and with increased corrosion resistance for the different working environments.

O3. To develop and validate a computer-based model to simulate the electrodeposition process with complex electrolytes to produce alloy coatings with tuned porosity. The model will facilitate



the process' industrialization, integrating standardization methods and protocols, and will reduce rework, scraps and environmental impact.

O4. To develop and implement a high-throughput computational approach to design materials with targeted properties.

O5. To successfully upscale production process in pilot plant to coat real scale components.

O6. To integrate the developed multi-layered [Co/Ni] coatings into MRAM stacks.

O7. To ensure a safe and sustainable by-design approach and define pathways for the recovery, recyclability, purification and re-use of materials at the end of the products life.

O8. To develop a decision support tool to facilitate the adoption of the safe- and sustainable criteria when designing and producing metallic coatings free of PGMs.

O9. To test and validate the materials developed and the production processes prototypes in industrially relevant environments.

O10: To disseminate and communicate results, create guiding criteria and guiding principles for the European industry.

O11: To develop business models for the exploitation of the project results and the maximization of its impact on medium and longer terms.

This deliverable with focus in more detail into all the activities that will support the objectives O10 and O11.

3 Dissemination and Communication Plan

Dissemination and Communication (DC) of project results are one of the key activities to maximise their impact. The NICKEFFECT dissemination and communication plan (DCP) serves as a practical tool for efficiently developing and implementing dissemination activities with the overall objective of contributing to achieve the project expected research and innovation impacts. The NICKEFFECT DCP focuses on:

- A. identifying and organising the activities to be performed to communicate the benefits of the NICKEFFECT solutions and technologies and the positive impacts of the development of novel ferromagnetic Ni-based coating materials to replace Platinum;
- B. communicating and disseminating results of the project and technological innovation achieved; and
- C. raising citizens awareness about impacts of EU-funded projects, influencing relevant policy areas and promoting novel NICKEFFECT solutions on the market.

This being mentioned, dissemination and communication activities are separate processes that complement each other. Also, they may often quite much be the same as, for example, overlapping among audiences and communication channels. Recognising this aspect, this document comes as one, but tackles Dissemination, Communication and Exploitation Strategies separately. As such, its goal of its related activities is to encourage and enhance the awareness of the project activities and to publicly disclose the results within Europe and internationally. In addition, the DCP is seen as one of the key elements for attracting the interest of the target audience and encouraging uptake of the NICKEFFECT solutions. To that purpose, the consortium members will therefore capitalise on existing communication channels (e.g., of their institutions) and their own reputation to raise awareness and thereby promote new and even unforeseen interactions with potential end-users.

3.1 Objectives of Dissemination and Communication Activities

NICKEFFECT dissemination and communication efforts are deeply rooted in the project objectives, and the respective KPIs (Table 9). In order to ensure compliance to the project objectives and the KPIs, mainly those relating to engagement of NICKEFFECT stakeholders and exploitation activities, the DCP aims at promoting the NICKEFFECT project and its achievements as well as to engage a wide audience and potential future customers, while addressing the main points that are relevant to them. The specific dissemination and communication objectives (DCO) are presented in Table 1.

Table 1. NICKEFFECT Dissemination Objectives

DCO1	Raise awareness among the key sectors dealt by the project on the role of NICKEFFECT's development of novel ferromagnetic Ni-based coating materials to replace Platinum;
DCO2	Ensure decision-makers are informed about the project, inciting policy related uptake and spill over;
DCO3	Foster synergies with other initiatives, capitalising on existing dissemination channels and networks to ensure efficient communication and understanding of the NICKEFFECT solutions and technologies;
DCO4	Introduce new patterns of conduct in the target groups and end-users of the project results and build networks of early adopters to start generating market demand for the NICKEFFECT solutions and technologies; and
DCO5	Support the exploitation strategy by attracting potential investors and/or financial backers for the post-project market deployment of the NICKEFFECT solutions and technologies.

These specific dissemination and communication objectives have been defined to influence behaviour, develop opinion and to raise awareness of specific target groups, following these steps: **Why** – purpose of the DC action; **What** – the message/content that will be disseminated and communicated; **To whom** – the target audience; **How** – the method of dissemination and communication; **When** – the timing of the DC activities.

Dissemination and communication represent horizontal activities and concentrate on disseminating the results of the NICKEFFECT project itself to a wide range of existing and/or potential audiences. The practical experience and guidance that will emerge from the project work will be of relevance to an array of stakeholders within the EC and beyond and will be of value across different sectors and internationally. Clear channels of communications between the project partners themselves as well as with a broader community will play a crucial role in the success of the project.

3.2 Methodology and Approach

The DCP is designed and elaborated through close interaction among all consortium members, and it seeks to create a multiplier effect on identified and engaged relevant stakeholders (WP7) in order to better reach the potential end-users for the NICKEFFECT outputs (e.g., solutions and new knowledge). The core principles underpinning NICKEFFECT's DCP are simplicity and consistency of interactions tailored to the right person – at the right time – in the right environment. A clear understanding of the user requirements and the usual features of the target stakeholders is a crucial component of both the Dissemination and Communication strategies, which ensure that DC channels are adequate for the target audiences and the types of messages delivered.

Our approach to communication, dissemination, relevant community building and engagement starts with outlining key activities and dependencies that should be considered to increase the effectiveness of the DCP. The following table (Table 2) lists a set of activities and associated questions to be discussed and determined within this document.

Table 2. Key Activities & Critical Questions

Key Activities & Critical Questions			
Activity Critical Questions Chap			
Targeting	Who is our target audience? What is our message?	3	
Methods	How are we going to reach that audience?	3 and 4	
Content Development	What types of content does our audience find engaging? What outputs, results and activities can NICKEFFECT offer?	5	
Timing	When is the right time to reach our target audience?	5	
Evaluation	How effective are our public outreach efforts?	5	

The NICKEFFECT strategy for dissemination and communication will be a setup of activities classified on three different levels, depending on the type of action:

- Dissemination for awareness is aimed at the general public and to those stakeholders that should be aware of the work of NICKEFFECT, but do not require a detailed knowledge of the project.
- Dissemination for understanding targets specific audiences and those stakeholders that may benefit from NICKEFFECT results but are not directly involved in the project such as universities and research institutes, corporations as well as small- and medium-sized enterprises (SME).
- Dissemination for action refers to a change of practice resulting from the adoption of the technologies and methods. The specific audience here will be stakeholders to be clearly identified among the surface engineering and materials engineering community, as well as policymakers and institutions in a position to influence and bring about change within their organisations and/or relevant sectors as well as to advocate for the exploitation of the NICKEFFECT solutions.

To achieve more meaningful and worthwhile interactions with different target audiences, a set of general principles has been adopted and oriented towards the long-term sustainability of the project:

- Long-term relationship building and raising confidence and trust. NICKEFFECT will build respect and recognition, as well as cultivate trust in its ecosystem by leveraging sector-specific expertise and experience to market - the NICKEFFECT offerings to the target audiences.
- Individualised and multi-channel communication. NICKEFFECT will enhance interactions and foster closer links with its targeted audiences by delivering relevant and personalised messages, across various topics important to identified ecosystem stakeholders.

The DCP gives special attention to adequately address gender issues and language accessibility, since it meets established standards on gender and generation inclusiveness. For example, the language used in the dissemination and communication materials and activities of NICKEFFECT avoids gender stereotypes by being proactive and gender-inclusive in the selection of images to be used across the project website and other dissemination and communication channels (including women in active roles). The DC team of NICKEFFECT will also aim to avoid technical language and terminology where possible to make NICKEFFECT results available to a wider audience.

3.3 NICKEFFECT Ecosystem of Stakeholders

The success of the project is not simply related to achieving the deployment of NICKEFFECT innovations, but also depends on the impact it has on the outside world and the relevant stakeholders. Stakeholders can be defined as those with an interest or concern in NICKEFFECT, who impact on or are impacted by NICKEFFECT. Stakeholders thus constitute a broad group of people, groups and organisations who can affect the project decisions and outcomes.

To maximise the impact through communication and dissemination, it is therefore first important to identify and classify which stakeholders NICKEFFECT is targeting (what is done within WP7, T7.2) to structure the right messages and select the right communication tools and channels, and then analyse the power structure to make prioritisations, keeping in mind the dynamics of power, which might shift between stakeholders.

3.3.1 Target Groups and Key Messages

A clear understanding of needs and typical characteristics of the target audiences is an essential part of the NICKEFFECT DCP, which will ensure that communication channels are appropriate for the types of messages being sent. The list of the key NICKEFFECT audience profiles clustered in three target groups along with the expected impact of the DC activities are defined in Table 3.

Level	Target Group	Target Audience Profiles (TO WHOM)	Expected Impacts (WHY)
Dissemination for Awareness	General audience (GA)	General Public: European citizens & stakeholders at large. Civil Society interested in the project. Regulation community, policy makers, admin. European Commission National governments, National decision-makers, Associations: OECD, European standardization bodies (CEN, CENELEC) Related Initiatives: Environmental organisations & regional poles of competitiveness. Projects: Sherlock, Best4hy, etc. RESILIENCE-01-08 projects' partners	Awareness about the project, objectives, results and impact; Increased awareness for the need to find alternatives for the PMGs; Raised awareness about the new technological advances of NICKEFFECT;

 Table 3. Main NICKEFFECT Stakeholder Groups and Expected Impacts of Dissemination and Communication Activities

Dissemination for Understanding/Uptake	External audience directly related to the project results (EA)	Technology developers: Electrochemical and coating industry; Modelling developers/providers, recycling sector, circularity solutions developers Research & academia stakeholders: EU associations, partnerships: Clean Hydrogen /FCH, International electrochemical society, Nanofutures; Universities, RTDs, PhDs and students, research institutions, technological centres, experts.	Advancement in understanding how nickel can be a good alternative to the PMGs; Enhance and stimulate further research and innovation activities between project partners; Create media interest to get their involvement and support; Stimulate and support further research
Dissemination for Action	Audience in connection with the project (PA)	Industry: WE & FC and digital storage OEMs Integrated devices manufacturers (IDM), Foundries End-user industry (industrial sector in general, which may use these types of equipment in their industrial processes).	To validate nickel as a suitable alternative for the PGM income; Reduce industry coasts; A strong brand image

Broad concepts of the key messages have been defined per target group, highlighting the advantages provided by NICKEFFECT and are presented in Table 4.

Table 4. NICKEFFECT Key Messages

Target Group	Key Messages (WHAT)	Tools and Channels (HOW)
General audience (GA)	Safety-related aspects (methods, tools, criteria), contributions to Standards, SSbD approaches. LCA, LCC, recycling, transport limitations at high current density for future FC electrodes, LOHC application performances	Website, flyers, videos, newsletters, interviews and featured articles, success stories, social media, media pack (for journalists)
External audience directly related to the project results (EA)	NICKEFFECT materials efficiency, modelling of electrodeposition processes and materials properties, recycling techniques. Safety- related aspects (methods, tools, criteria). NICKEFFECT materials efficiency, modelling of	Website, flyers, videos, newsletters, interviews and featured articles, success stories, social media, events, scientific publications

	processes and materials properties. Technical, economic, environmental & analysis.	
Audience in connection with the project (PA)	NICKEFFECT materials efficiency. Safety-related aspects (methods, tools, criteria), contributions to Standards, SSbD approaches. Technical, economic, environmental & analysis	Website, flyers, videos, newsletters, interviews and featured articles, success stories, social media, events, scientific publications

The list of the target audiences will be reviewed during the project's progress under dissemination activities by all the partners and the next deliverables after WP7 will include the updated list, if applicable.

3.4 Dissemination and Communication Procedures

The involvement of any partner in organised internal or external events or any dissemination activities related to the NICKEFFECT project, must be internally reported, reviewed and approved by the NICKEFFECT Project WP7 Leader (F6S). If dissemination activities include the project results protected through Intellectual Property Rights (IPR), review and approval of the NICKEFFECT IPR manager will be required.

The DC procedure has been set up to:

- I. Produce high-quality NICKEFFECT publications and presentations;
- II. Avoid overlaps and possible disclosure of restricted or confidential information; and
- III. Monitor and record the dissemination activities of the project appropriately.

Table 5 presents a step-by-step detailed plan for events dissemination that every partner must follow.

 Table 5. NICKEFFECT Ultimate Event Communication Guide

Planning

- Communicate with WP7 leader (F6S) to align with the event organiser at least one month in advance
- Determine event goals and objectives
- Define date and location
- Create event name and theme
- Prepare registration forms
- If needed, secure event suppliers (e.g., photographer/videographer, catering)
- If applicable, prepare printed materials to distribute
- Talk regularly with the consortium to discuss important matters
- If applicable, look for possible partnerships
- Prepare social media templates and content to use during the event (F6S responsibility)

Promotion

- Create the event on the website (F6S)
- Produce social media and blog content (F6S alongside the partners involved in the event)

- Spread the message through all partners, channels and stakeholders (F6S)
- Make pre-event information available for attendees (F6S alongside the partners involved in the event)
- If applicable, write and send an event Press Release (F6S alongside the partners involved in the event)

During the Event

Applicable to in-person project organised events

- Double-check that the necessary components are available
- Test Wi-Fi connection
- Keep a list of attendees and check upon their arrival
- Make sure there are indications for all locations
- Ensure that all attendees and/or speakers have an updated schedule
- Keep information updated: posts on social media using diverse visuals, such as photos, videos and lives
- Go over the social media guidelines in the intro session and ask for participants' engagement

Applicable to online events

- Double-check that the necessary components are available
- Test Wi-Fi connection
- Ensure that all attendees and/or speakers have an updated schedule
- Keep information updated: posts on social media using diverse visuals, such as photos, videos and lives

Post-Event

- Report the activity via the **NICKEFFECT Event Report Form** (to be distributed to partners)
- Analyse what worked and where improvements can be made
- Create at least one blog post about the event
- Share event photos and publicity
- Share all material with F6S
- If applicable, publicly thank all attendees for their participation
- Post different contents and, if there will be another event, mention it

4 NICKEFFECT Dissemination Strategy

The main purpose of dissemination activities is to transfer knowledge and results generated within the project to enable others to use and take up results, thus maximising the impact of the EU-funded research. As set out in the Grant Agreement (GA), **partners are obliged to communicate and disseminate the project and its results** by disclosing them to the public, if not stated otherwise. Specific provisions for dissemination (dissemination restrictions) are set out in the GA and the Consortium Agreement (CA).

Also, while performing the dissemination activities, according to the same document, the partners are required to respect the following:

1. Open Access to Scientific Publication, where each partner who plans to publish data in the relevant scientific medium must ensure open access (i.e. free-of-charge online access for any

user) to all peer-reviewed scientific publications relating to its results. In particular, the partners must:

- a. As soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications. Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.
- b. Ensure open access to the deposited publication via the repository at the latest:
 - i. On publication, if an electronic version is available for free via the publisher; or
 - ii. Within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.
- c. Ensure open access via the repository to the bibliographic metadata that identifies the deposited publication. The bibliographic metadata should be in a standard format and must include all of the following;
 - i. The terms "European Union (EU)" and "Horizon Europe";
 - ii. The name of the action, acronym and grant number;
 - iii. The publication date, and length of the embargo period, if applicable; and
 - iv. A persistent identifier.
- 2. Open access to research data (with respect to the digital research data generated in the action "data"). In particular, the partners must:
 - a. Deposit in a research data repository and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate free of charge for any user the following:
 - i. The data including associated metadata needed to validate the results presented in scientific publications, as soon as possible; and
 - ii. Other data, including associated metadata, as specified and within the deadlines laid down in the 'data management plan'.
 - b. Provide information via the repository about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and where possible provide the tools and instruments themselves).

The NICKEFFECT Dissemination strategy follows the EU Guidelines for the successful dissemination of the HORIZON EU project results as well as the obligation defined within the NICKEFFECT Grant Agreement. By disclosing the project results, the focus of the NICKEFFECT dissemination-related activities is threefold:

- To disseminate the respective project results to the audience that may take an interest in the potential use of the results (i.e., researcher community, policy makers, industrial partners, etc.).
- To openly demonstrate clear economic, social and environmental benefits of utilising/adopting NICKEFFECT solution with the targeted users.
- To demonstrate the significance and business opportunities deriving from utilising NICKEFFECT-derived data in new products and services within new sectors/markets.

As for the target audiences of the dissemination defined in Section 3.3.1, the NICKEFFECT Dissemination Strategy is focused on i) the external audience directly related to the project results and ii) the audience in connection to the project. On the other hand, considering the defined level of



the dissemination, the strategy is focused on dissemination for understanding and dissemination for action. Finally, the focus of the dissemination activities in respect to the timeline of the project are presented in Table 6.

Dissemination Activities		
Phase	Focus	
Phase I (M1–M18)	Approach-oriented content: Promotion of the project case studies, and dissemination of existing knowledge related to how nickel can be a suitable replacement for the PGMs.	
Phase II (M18–M48)	Result-oriented content: project intermediate and final results. Dissemination of the results and achievements.	
Post-project period	Result-oriented content: project final results. Dissemination of the results and achievements of the development of materials based on nickel, various analyses and assessments of the project results (mainly through scientific publications and conferences).	

The dissemination activities will focus on the following outputs of the NICKEFFECT project: (i) Interviews & featured articles; (ii) Success stories; (iii) Webinar series; (iv) Open access scientific publications; (v) Presentations at events and conferences; and (vi) Promotional videos.

4.1 Dissemination Activities

Ensuring a dynamic interaction with the NICKEFFECT targeted audiences is important to achieve a long-term impact and market uptake of the project outcomes.

NICKEFFECT will use the great positioning of its partners (as part of initiatives, clusters and platforms, their very proactive participation in conferences and events, and prolific scientific content publication, among others, to reach and influence the different target groups. Each partner will focus on attracting the interest of specific target groups, with F6S as WP7 leader supporting and coordinating them, and making use of its vast industrial network, multiplying the impact of the project results.

All partners are requested to plan their dissemination activities and every two months throughout the project, **the partners will report their achievements as compared to their planned activities.**

The main project dissemination activities are presented in the following subchapters.

4.1.1 Scientific Conferences and Events

NICKEFFECT partners will take part in international and local conferences/meetings, both virtual and physical, outside NICKEFFECT to disseminate the project results and raise awareness around the NICKEFFECT activities and achievements. Each partner will report their involvement with NICKEFFECT at conferences and events that they are attending or hosting. The type of activities and events where the partners are envisioned to participate are: (i) conferences, industry events, exhibitions and joint events with other H2020/HORIZON EU projects (ii) workshops, courses, seminars and training.

A set of conferences that the project should consider attending are already defined in the GA:

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ISE Annual Meeting, EUROCORR, Interfinish, Electrochemistry-Powering a Healthier Planet. ISE Annual Meetings, 2023-2026. ECS biannual meetings, 2022-2026 (1 conference/year; oral presentation), European Fuel Cell Forum Conference (ECFC), Word Hydrogen Energy Conference (WHEC), Hydrogen & Fuel Cells Energy Summit, Porto Portugal (Presenter). 23rd World Hydrogen Energy Conference, Turkey Instanbul (Presenter). EMEA, Workshop on IonExchange Membranes for Energy Applications: Fuel Cells, Electrolysers, Flow Batteries, Germany (Presenter); Intermag series (2023: Sendai, 2026: tba), Magnetics and Magnetic Material (MMM) series (2023: Dallas, 2024: tba, 2025: Palm Beach, 2026: tba), JEMS conference series (2023 ff: tba).

Aside from that list, each partner identified some other events of interest for the NICKEFFECT project. The preliminary list of global events can be seen in Table 7, while the focus of the consortium will be on events organised on the European soil.

Table 7. NICKEFFECT Preliminary List of Events

Conference Name Location & Provisional Dates	Conference Description
<u>FC Expo 2023</u> Tokyo, Japan 15 - 17 March 2023	FC Expo is the world's largest exhibition in the hydrogen and fuel cell industry.
Hannover Messe, Hannover, Germany 17-21 April 2023 (happens every year)	The Hannover Messe is one of the world's largest trade fairs, dedicated to the topic of industry development. It is organized by Deutsche Messe AG and held on the Hanover Fairground in Hanover, Germany.
JCE world 2023 Paris-Nord Villepinte 25-27 April 2023	JEC World gathers the whole value chain of the composite materials, and is 'the place to be' for composites professionals from all over the world.
Nanosafe 2023 Grenoble, France 5 - 9 June 2023	The conference will adapt from Nano safety towards safe and sustainable by design for the 1st year in 2023. This is organized by CEA every two years.
European Fuel Cell Forum Conference 2023 Lucerne, Switzerland (hybrid) 4 - 7 July 2023	The EFCF 2023 will be concerned with low-temperature hydrogen and direct liquid fuel cells including PEM, HT-PEM, AFC, PAFC and AEM-based systems; water electrolysis based on PEM, AEL and AEM; materials and technologies for CO2 reduction.
FEMS EUROMAT 23 Frankfurt on the Main, Germany, 03-07 September 2023 and their upcoming events	FEMS EUROMAT is the premier international conference in the field of materials science and technology in Europe. This conference will continue a successful series of material science conferences.
EUROCORR 2024 Paris, France 1 - 5 September 2024	It covers various areas of Chemistry including Electrochemistry, Electrolysis and Corrosion.
<u>Conference on Industrial</u> <u>Technologies IndTech</u> Belgium	IndTech is an impetus towards improving visibility of industrial technologies, identifying policy options and priorities, sharing of information and comparison of points of views, as well as a



2024	space for networking and finding common goals among industry stakeholders.
ISE meetings (International Electrochemical Society) September 3–8, 2023 Lyon, France	Fundamental aspects of analytical, molecular, physical and bioelectrochemistry will be discussed, as well as their applications to (nano)materials science, energy, environment and biomedicine.
Surface Modification Technologies (SMT) (Location TBD), (Dates TBD)	Covers progress on all aspects of surface modification techniques, from both the macroscopic and microscopic viewpoints.
Stakeholder Workshop on Safe and Sustainable by Design chemicals and materials (Location TBD), (Dates TBD)	Organised by the EC, the aim of the workshop is to present and discuss with stakeholders the draft methodology to define Safe and Sustainable by Design criteria for chemicals and materials.

4.1.1.1 Project Organised Events

NICKEFFECT project should organise 3 events during its lifetime:

- A public, international scientific 2-day workshop to openly disseminate findings to the scientific community and stakeholders by means of selected presentations;
- An event as part of the <u>Semicon Europe conference</u>;
- A final dissemination workshop, co-organised with other projects to establish NICKEFFECT as a reference point in the field.

4.1.2 Webinars, Lectures and Seminars

Webinars, lectures and seminars are a way for encouraging dialogue, sharing and exchanging knowledge about best practices and presenting the outcomes of the test cases, to a highly targeted and interested audience.

A series of 14 webinars is foreseen in the GA as a part of doctoral programmes, international courses, presentations at international conferences and company webinars. NICKEFFECT webinars will take into consideration the Annual electrochemical doctoral school seminar regarding electrodeposition, with external speaker (Prof. Dr. Jon Ustarroz); Course of electrochemistry to an international audience by Prof. Dr. Annick Hubin: FC Expo in Japan, as well as various project partners' webinars.

4.1.3 Publications in Scientific Journals

Scientific journals and magazines are one of the most important dissemination channels for sharing NICKEFFECT results to both industrial and academic communities, creating knowledge impact and enabling the audience to use the results in their own work. The channels will mainly be used by the academic partners in NICKEFFECT (technological dissemination).

The first submissions to conferences and leading technical journals will take place when substantial scientific results emerge from the project. Open scientific results will be added to ResearchGate (i.e., open-access publishing). Alternatively, researchers can also deposit their final articles in a public repository of their choice, ensuring open access to the publication for at least the duration of the project.



4.1.4 NICKEFFECT Project Videos

Two promotional videos will be produced and used in the dissemination channels (e.g., social media, website) and dissemination activities (e.g., project events, webinars) and will target all the identified stakeholders.

The first will be a short video (1 - 3 minutes length) and will be used mostly to explain the NICKEFFECT concept, objectives and goals. Should include topics such as: What is the NICKEFFECT project about; What are the challenges and benefits for the society; Promotion of the project case studies; Dissemination of existing knowledge related to how nickel can be a suitable replacement for the PGMs.

The second video will be a more elaborated video and will demonstrate the achieved outcomes and the lessons learned. Should include topics such as: Dissemination of the results and achievements of the development of materials based on Nickel; Various analyses and assessments of the project results (mainly through scientific publications and conferences).

4.2 Partner Roles and Responsibilities

All partners engage in general communication and dissemination activities at consortium and partner levels, as part of Work Package activities and areas of expertise. Partners will work together in locating and organising relevant activities and cooperate with target audiences, relevant projects and initiatives.

Partners are encouraged to integrate dissemination and communication actions into all NICKEFFECT activities, bringing forward good stories to create synergies with other partners and channel them to a wider audience. Partners are also encouraged to welcome local and national media (press, radio, TV), offering interviews, visits and demonstrations. In addition, some organisations such as Universities have press offices that can be of assistance in choosing and contacting the press.

4.2.1 Partner Obligations and Public Deliverables

As set out in the Grant Agreement (GA), partners are obliged to communicate and disseminate the project and its results by disclosing them to the public. Specific provisions for dissemination (dissemination restrictions) are set out in the GA and the Consortium Agreement (CA).

All deliverables marked as public will be made available as downloads on the project website after they have been approved by Project management handbook & Risk management plan (D8.1) and the European Commission. Dissemination and communication of results from deliverables classified as either confidential or restricted need to be approved by the consortium or the involved partners before any release can take place. The partners' responsibilities in regard to communication activities have been defined as follows:

- All partners have efforts dedicated to communication and dissemination activities, through the channels and tools described in this document;
- The dissemination lead (F6S) will support partners in the implementation of the activities
- All partners are responsible for providing content related to their project activities to enable the creation of blog posts on the project website, as well as content to be used in different channels;
- The development of the project newsletters is a responsibility of F6S, provided that partners provide information and content related to their project activities;

- The management of the social media networks is a responsibility of F6S;
- All partners are responsible for actively interacting with the project social media networks, and;
- All partners are responsible for reporting their communication activities.

5 NICKEFFECT Communication Strategy

The NICKEFFECT communication strategy aims to show the impact and benefits of the NICKEFFECT project. The strategy is adopting a funneled approach, similar to a marketing funnel, to assure a wide, but also targeted communication within the NICKEFFECT target audiences, enable active engagement and achieve efficient communication of the project outcomes. A mixture of communication means (i.e., media and activities) are envisioned to reach distinct target audience groups. A coherent approach including a common visual identity is adopted to synchronise communication activities by the whole consortium. This ensures that fitting media and formats with a custom audience-tailored message are used, maximising impact with available resources during the project.

Easy-to-understand visual content is used to render ideas and benefits practically recognizable to a wide audience. It helps to further increase the curiosity of future end-users who would be guided to more comprehensive knowledge and resources on solutions and services.

Customised material will be communicated to different target audience groups, with a view to building and sustaining the community of engaged stakeholders. Throughout the same manner, useful knowledge will be collected from project deliverables, interactions with partners as well as other target audiences, case studies and partner publications, which will be conveyed via NICKEFFECT communication networks to help promote the project achievements.

5.1 NICKEFFECT Channels and Tools

NICKEFFECT will create and make use of main communication tools and channels including online, offline and interactive (face-to-face) ones that will be implemented by the NICKEFFECT partners to achieve an efficient and effective interaction with the different stakeholders. Some resources are of general intent, whereas some are geared to particular target groups. Building on the knowledge and diverse engagement of NICKEFFECT partners with their audiences, NICKEFFECT will concentrate on the usage of unique communication channels that project partners successfully utilise for their day-to-day interactions with different audiences.

5.1.1 NICKEFFECT Visual Identity

An integrated and consistent visual identity underpins all communication products and tools and forms the basis for a commercial brand. The visual identification (logo and style) of the project will enable external audiences to clearly perceive NICKEFFECT and contribute to the awareness of the project by having a coherent identity from the very beginning of the project. All the dissemination and communication tools (project website, Twitter account and LinkedIn page), materials (presentations, posters, roll up, documents, letters, etc.) and deliverables, will employ the visual identity developed for the project, guaranteeing a professional and consistent look.

5.1.1.1 NICKEFFECT Logo

The development of a visual identity and a project logo ensures project outputs are consistent and easily recognisable. The Project Coordinator provided the first version of the NICKEFFECT Logo, which

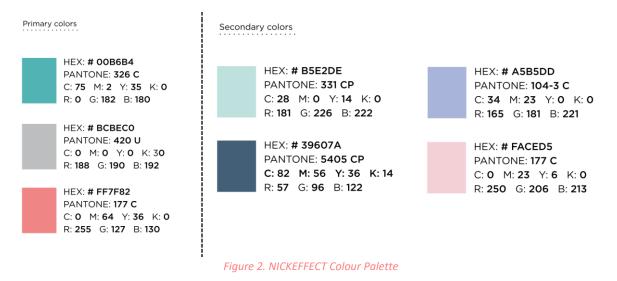
all partners agree should be kept. F6S had the logo vectorised and presented a brand book with a clear NICKEFFECT logo concept and a colour Pantone. The NICKEFFECT Logo is presented in Figure 1.



Figure 1. NICKEFFECT Logo

5.1.1.2 Colour Palette

Apart from the logo, colour is the most effective visual clue to communicate and represent the NICKEFFECT brand. Colours (Figure 2) were selected inspired by the original logo and also in the elements around the NICKEFFECT ecosystem. They represent NICKEFFECT at the highest level and should be present in all communications to ensure our materials reflect a cohesive NICKEFFECT image or visual story. The palette consists of the following primary colours: Tiffany Blue, Gray and Congo Pink. A few secondary colours were also defined to give more flexibility to the visual elements (e.g eliminate contrast issues). The secondary colours are: Powder Blue, Maximum Blue Purple, Metallic Blue and Light Red.



5.1.1.3 EU Funding Acknowledgement

Across all outputs of the NICKEFFECT project, and accompanying the logo, a text concerning the source of the project's funding will be provided along with the European flag, as shown in Figure 3.



Figure 3. EU Funding Acknowledgement

In addition, any dissemination of results must indicate that the:

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency (HADEA). Neither the European Union nor the granting authority can be held responsible for them.

5.1.1.4 Document Templates

The NICKEFFECT consortium partners are provided with a Word Deliverable Template (Figure 4) and PowerPoint template (Figure 5) to ensure standardisation of the project documentation and representation with a unique visual identity throughout the project lifetime. The templates are made available in the intranet file repository system. Additional presentations will be designed by the Communication Manager as needed in the frame of project activities. Partners should use the NICKEFFECT PowerPoint template when presenting the project and/or its outcomes at internal and external events. Template examples are presented in the figures below.

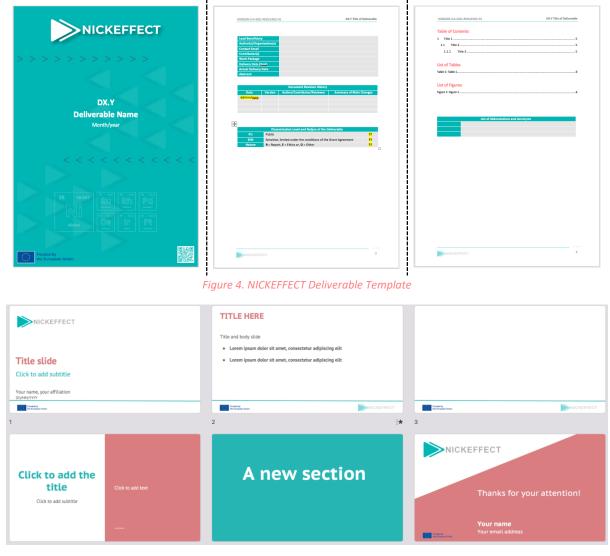


Figure 5. NICKEFFECT PowerPoint Template

5.1.1.5 Visuals and Graphics

Several templates and visuals (Figure 6) were prepared to present the project on social media channels. The visuals are being developed according to each channel's needs, using the NICKEFFECT visual identity. The project logo is present in every template, to maintain coherence throughout all communication efforts.

It is highly important to create strong, unique visuals that are appealing, in order to ensure that our message is heard and seen throughout all the platforms.





Figure 6. NICKEFFECT Social Media Visuals - Examples

5.1.2 NICKEFFECT Online Presence

5.1.2.1 NICKEFFECT Website

The internet is an unrivalled source of information and has become a very important channel for communication. The NICKEFFECT website¹ has already been developed (Figure 7, Figure 8, Figure 9) and its first version was released during M4. The website is the main interface for communication with the public and is suitable for addressing the various target audiences in NICKEFFECT, who can quickly click on their area of interest. It contains the most important information about the project and will be enriched continuously.

The NICKEFFECT website is a key management tool, capable of improving the communication and dissemination of project activities and results to a wide range of stakeholders at all levels, as well as the general public and local citizens.

F6S updates the project website based on contributions from all partners. The website hosts information on the aims, objectives, solutions and scope of NICKEFFECT. Also presents the partners and their expectations about the project, working material and activities, as well as downloadable promotional material, deliverables, PowerPoint presentations and videos.

In a more advanced phase, it will be a crucial tool to showcase key findings and success stories. Its management ensures contemporary content and up-to-date news relevant to the project remit.

¹ <u>https://nickeffect.eu/</u>



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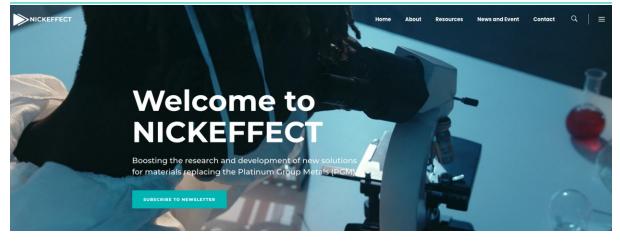


Figure 7. NICKEFFECT Website Landing Page

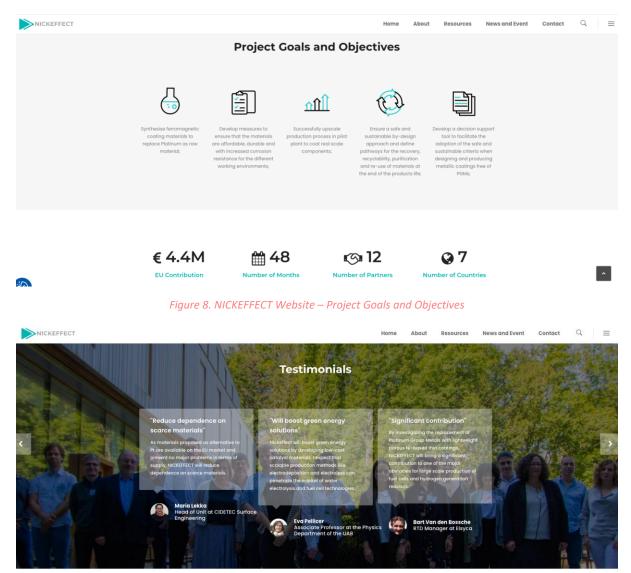


Figure 9. NICKEFFECT Website – Partners' Testimonials

The Privacy Policy together with the Terms and Conditions have also been included in the NICKEFFECT website, set for the general rules and policies governing the visitors' use of the website.

The website has direct access to social networks by clicking on the icons situated booth on the side menu and on the footer of the website. In this way, it will be easy for every user to participate when



the website is visited. To achieve the most efficient updates/changes on the NICKEFFECT website, the consortium is set to follow the instructions that are detailed below:

- Updates and changes requested by email: a description of the required integration/change should be given in an attached file in .docx format (not in the text of the request email);
- If the integration/change refers to documents or files to be uploaded in the public website, these must be attached to the e-mail;
- The description should contain a clear distinction of the type of the requested integration/change, specifying which part(s) of the website need(s) to be changed, providing the link(s) of the webpage(s) to be upgraded;
- The use of abbreviations should be avoided; however, if included, abbreviations must be made explicit, at least the first time they are quoted in the description of the required integration/change; and
- Events to be integrated in the Events Section must be sent with all the necessary information (date, title, location, program and link), to provide a homogeneous level of details and information content.

Given the nature and progress of the activities during the project lifetime and related information, the NICKEFFECT website is to be continuously updated and populated with relevant content.

5.1.2.1.1 NICKEFFECT Consortium Members' Websites

NICKEFFECT Partners use their own websites to promote the general awareness of the NICKEFFECT project, pinpoint their specific role in their own network of stakeholders and some partners will create specific pages for the project. Some partners have started from day one publishing news about NICKEFFECT and continue to post on a regular basis, while other partners (e.g., some case study partners) will only use certain official channels when a more definite and developed stage of the project is achieved.

5.1.3 NICKEFFECT Social Media Channels Mix

To broaden the target audience while establishing two-way communication channels, the presence of the NICKEFFECT project in social media channels will be encouraged. To ensure maximum usability and exploitation, the focus has been given to the social media channels that NICKEFFECT partners have been using regularly and successfully to communicate and interact with their customers and other stakeholders.

Posts will be shared to support the flow of news and content will be added continuously. Some partners will use their social media channels only for special occasions. NICKEFFECT uses different social media channels to increase visibility, share knowledge faster, promote the results and interact with the public, especially the stakeholders involved at the pilot sites. By using social media, NICKEFFECT meets people where they are, thereby gaining important insight. NICKEFFECT can take advantage of networking and viral effects, making it possible to increase awareness considerably.

The NICKEFFECT project has established two social media channels: a LinkedIn page and a Twitter account. Some hashtags have also been researched and the following have already been put to use: #coating #nickel #sustainability and #research.

5.1.3.1 Content Types

The overall purpose of our content marketing efforts will be to support the target audience's journey towards decision-making (i.e., utilisation of NICKEFFECT services and technologies). In this regard, the following types of content will be developed as shown in Table 8.

Table 8. NIKEFFECT Types of Content

Attract	Engage	Maintain	Galvanise
Educational content about the project scope and objectives, partners' presentations, partners' testimonials	Blog posts, articles, success stories, case studies, Interviews and showcase of results and key findings	Email marketing, social ads and retargeting initiatives	Events, demonstrations, workshops, conferences, etc.

Examples of NICKEFFECT social media posts and announcements can be seen in Figure 10.

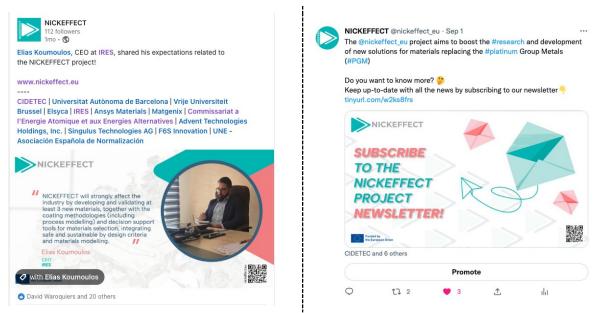


Figure 10. Examples of NICKEFFECT Social Media posts (LinkedIn and Twitter)

5.1.3.2 LinkedIn Page

The LinkedIn project page² (Figure 11) is utilised for targeting content to very specific industries, companies and researchers as it is a channel for business networking with more than 433 million members. It is a place open to all who are interested in learning about NICKEFFECT opportunities, infrastructure and services, sharing opinions, asking questions and getting more involved with the project.

<u>Frequency of posts:</u> once to twice per week throughout the project, increasing in frequency during critical phases, such as events and results sharing. LinkedIn will be sustained by content created by F6S and also content provided by the partners.

² <u>https://www.linkedin.com/company/nickeffect-eu/</u>





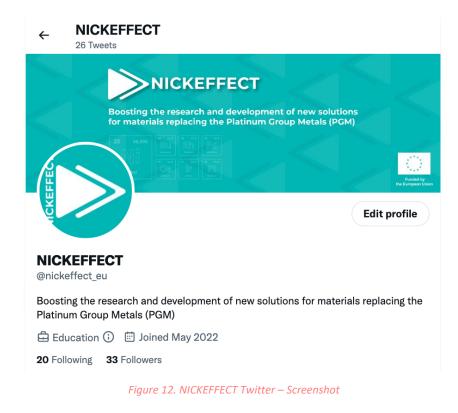
Research Services · San Sebastián · 112 followers

Figure 11. NICKEFFECT LinkedIn – Screenshot

5.1.3.3 Twitter Account

The NICKEFFECT Twitter account³ (Figure 12) will be used with the objective of providing accurate, new and well-curated information to all interested parties. The content will be meaningful and interesting, but delivered in a light manner, assuring the proximity with the readers. A community will be formed around the research topics associated with the project. This way, NICKEFFECT is going to have a well-defined network & community, assuring its message is delivered to the right audiences.

<u>Frequency of posts</u>: two to three times per week throughout the project, increasing in frequency during critical phases, such as events and results sharing. Twitter will be sustained by content created by F6S and also content provided by the partners.



³ <u>https://twitter.com/nickeffect_eu</u>

5.1.3.4 Other Channels

Besides the listed channels, NICKEFFECT will also communicate with audiences through email, meetings, demonstration events, distributing important news, sending press releases, inviting to engage as well as doing presentations. Partners will target relevant online newsrooms with articles and contributions as well as offer interviews.

Relevant EC channels such as newsrooms and blogs will be targeted, and contributions made to the coordinated dissemination portal as part of the collaboration with support actions and other large-scale pilots.

In a more advanced phase of the project, NICKEFFECT will also create and maintain its own **YouTube** channel that aims to disseminate all the video material the project tends to gather.

5.1.4 NICKEFFECT Newsletter

An online newsletter will be developed and delivered according to the most important moments of the project, such as the conclusion of any phase of the project or a remarkable event or activity. It will also include the latest news from the field or from other projects working on relevant topics.

All NICKEFFECT partners will be asked to contribute to the newsletters with content and to give their feedback whenever necessary, in order to ensure the involvement of all partners and to encourage a discussion that will allow the growth of the content quality. A new newsletter will be released more and less every 6 months (M6, M12, M18, M24, M30, M36, M42 and M48). These will be carefully designed to be appealing and engaging, maximising their reach and assuring that the opening rate is high, and the bouncing rate is low.

Website visitors may subscribe to the project's newsletter. There is a subscription button on the header of the website, to make sure the visitors see it when they access the website. Anyone will also be able to unsubscribe at any given point from the NICKEFFECT Newsletter (through a link provided in each issue of the newsletter) and all the collected data will be stored and saved in accordance with the GDPR compliance. This data will not be accessible to other third parties.

To stay engaged and competitive in interactions, NICKEFFECT will take into account the following:

- Responsive email design for better engagement: Mailchimp, a real-time e-mail marketing automation platform will be used to design and distribute responsive, targeted e-mail campaigns, with the enhanced reading experience. Additionally, the platform will facilitate reporting and analytics.
- Dynamic customisation and personalisation: The e-mail double opt-in form on the NICKEFFECT website will require only the name and an email address.

NICKEFFECT	Home About Resources	News and Event Contact Q
	Subscribe to Newsletter	
	Name Email Address	
	I consent to receive the Nickeffect Newsletter. Subscribe	





The newsletters will be sent by email to subscribers and shared on NICKEFFECT social networks. There will also be an archive on the news part of the website for the newsletters, where they can be read by anyone at any time. In order to achieve a broader distribution and facilitate the engagement of as many stakeholders as possible, the NICKEFFECT partners will be encouraged to distribute the newsletters to their network of contacts.

5.1.4.1 Joint Newsletter with the NOUVEAU Project

The NICKEFFECT project is in communication with the RESILIENCE-01-08 project NOUVEAU to assess the viability of having a joint newsletter. NOUVEAU project also focuses on the replacement of the PGM, but in different application fields. In this sense, having a joint newsletter would:

- Increase the audience to whom the newsletters are delivered since it would aggregate subscribers brought by both projects. This would disseminate the NICKEFFECT message to more people;
- Increase the chances of people reading the newsletter. The audience would be less saturated if receiving only one newsletter with all the related content, instead of two.

If the joint newsletter is something that we can accomplish, a combined visual identity will need to be created, in order to have a visual look for the newsletter that represents both projects. All the other points mentioned for the newsletter, will be carried on as planned.

5.1.5 NICKEFFECT Promotional Material

5.1.5.1 Mass Media Communication and Press Releases

Press releases will be produced as relevant pieces of news, especially target regional, national and European electronic media. Indicative electronic media platforms and journals that will be targeted are, for example, surface engineering and materials engineering community. Partners will also be asked to distribute the press releases to relevant media within their own regions/countries as well as to their professional networks and to publish it on their websites. The first press release⁴ has already been published.

A continuous cooperation with press and media will be promoted by all NICKEFFECT partners. All press releases will also be available on the NICKEFFECT project website as well as social media channels.

Local, regional and national newspapers, journals and magazines that cover surface engineering and the materials engineering community will be utilized to communicate and inform a wider audience about NICKEFFECT project objectives, activities and achievements. Here, information about the NICKEFFECT project will be mostly written in national language of the partners in a scientific jargon-free style to allow the respective audience to understand the objectives of the project and the benefits it brings to them.

5.1.5.2 Printed Materials

Diverse types of promotional material will be designed for print and when possible, this material will also be available in digital form, especially concerning the environmental impact printed material has. Partners will be invited to share this promotional material on suitable occasions, thus putting NICKEFFECT directly in the hands of the right set of target audience.

⁴ <u>https://nickeffect.eu/2022/07/boosting-the-research-and-development-of-new-solutions-for-materials-replacing-the-platinum-group-metals-pgm/</u>



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Figure 14. NICKEFFECT Roll-Up

An A3 info poster has been designed to help explain how NICKEFFECT target groups may benefit from the NICKEFFECT solutions and services. Although the information is in English, it can be translated into other languages, but the content should be kept as close as possible to the message that is conveyed in the original text. The editable file is available on the project's intranet file repository system.

The production of communication material might also include other materials that the partners might find relevant to have present at events such as: postcards, stickers, folders, notebooks and t-shirts. These will be prepared by request and in advance and distributed at relevant events. A roll-up banner stand will be designed for display at events hosted by NICKEFFECT and various external events of relevance to the project. The roll-ups and other material (Figure 14) will be printed by partners locally, following the recommended layout and design suggestions to ensure consistency.

A 1-pager flyer will be produced until M12, explaining the concepts of NICKEFFECT. It will be updated by the end of the project to showcase the outcomes and results.

It is also envisioned that when the project reaches a more mature state, attractive reports, factsheets, policy briefs, scientific posters, exhibition materials, etc., might be created to help further disseminate the project results and outcomes.

5.2 Networking and Liaison with Other Initiatives

Project partners will also disseminate project activities and outputs beyond the involved territories by participating in networking, informal personal meetings. Whenever possible official NICKEFFECT presentations will be used to present the project results and activities at different stages of project development.

NICKEFFECT will promote its activities and collect regular information and news regarding coating and materials engineering by monitoring and collaborating with relevant online media blogs, news portals, publications and other media. NICKEFFECT will also establish close ties with other relevant initiatives under EU-funded, international or national programmes helping to achieve higher awareness and impact on the target groups. The partners will consider participating in each other's events and organising common events. To support this purpose, close linkages will be established on both centralised and decentralised project levels.

Specifically, during the whole length of NICKEFFECT, the consortium will make a close contact with the proposals funded under the RESILIENCE-01-08 topic, to share knowledge and align approaches regarding criteria and guiding principles for sustainable-by-design principles and LCA (i.e., integrating safety, circularity and functionality of advanced materials, products and processes throughout their lifecycle). NICKEFFECT project will also promote the interaction with other topic-related projects to share knowledge, methodologies and best practices. Such interaction will be presumably via virtual meeting and/or workshops, to share knowledge and thus enrich the scientific and technical advances in the field. Task 8.3, which is led by CID, will monitor activities related to liaison and networking.

5.3 Policy Impact Communication

The NICKEFFECT research findings are expected to be of high relevance to policymaking. The DCP overall framework serves as a solid base and support for planning and implementation of the NICKEFFECT Policy Impact activities. In particular, it provides general rules and procedures with respect to publishing and disclosing the project results; planning and reporting of dissemination and communication activities as well as unifying presentation and disclosure of the project results and achievements. On the other hand, the tools and channels that have been setup within the DCP will facilitate partners in reaching the policy relevant audience and communicating policy relevant outputs and activities within the NICKEFFECT Project.

It is envisaged that the following NICKEFFECT forms and outputs will lead to policy influence and impact:

- I. Developing criteria and guiding principles for the application of SSbD in metallic coating materials. NICKEFFECT project will interact with the OECD's WPMN (working party on manufactured nanomaterials).
- II. Contributing to achieving full standardisation: by analysing the applicable standardisation landscape and contributing to the ongoing and future standards in specific topics, promoting the inclusion of the outcomes of the project that can be easily used by the European or international industry, maximising the impact of the project.

UNE will ensure communication with standardisation bodies and policymakers, to be updated and to contribute towards NICKEFFECT solutions as best practices. Moreover, interaction with European Policies will be achieved by ADV's participation in working groups (roadmaps and standards). Interaction with policymakers will be done via CEN, CEMELEC, OECD's Working Party on Manufactured Nanomaterials.

5.4 Timeline of Communication and Dissemination Activities

Communication and dissemination activities are planned in accordance with the stage of development in the project. Although a number of communication actions will take place during the first half of the project, the most significant dissemination activities will take place as intermediate and final research and innovation results are available. The dissemination will follow the AIDA model:

- Awareness to attract the attention of the target audience;
- Interest of the target audience;
- Desire of the target audience to know more about the project; and
- Action to lead the target audience toward

According to this principle, three phases are considered:

- Initial phase (Awareness): focused on increasing the visibility of the project and mobilising stakeholders and multipliers. At this phase, the main activities will be related to the implementation of the communication/dissemination tools (website, social networks and visual identity), preparation of dissemination material, general presentations of the NICKEFFECT project, the distribution of publishable abstracts and progress resumes.
- Intermediate phase (Interest/Desire): focused on disseminating available initial data and evidence on scientific advances and technological results. Each partner will contribute at specific levels according to their expertise and technical activities focused on informing and

engaging the target stakeholders when preliminary results become available. The project results and their future applications will be presented in journals and conferences to specialise the audience with the objective of stimulating the interaction with the concerned scientific and industrial community and determining the expectations of the stakeholders.

 Final phase (Action): focused on encouraging further exploitation of the NICKEFFECT outcomes (transfer to other industries, market of new products, replicability). At this phase, the results of the validation of the NICKEFFECT approach and the transferability analysis will be presented in journals, conferences and relevant events.

The general timeframe of the NICKEFFECT PCDER in relation to the project objectives, impacts as well as implementation and exploitation activities are presented in Figure 15. As can be seen, the dissemination activities are envisioned as an ongoing dialogue with the potential NICKEFFECT result users during both the project and the period after the project is finished. Logically, the dissemination activities are more weighted towards the second half of the project as the first outcome of the NICKEFFECT solutions is being developed and tested. On the other hand, communication activities follow the timeframe of the project – from the M1 to M48.

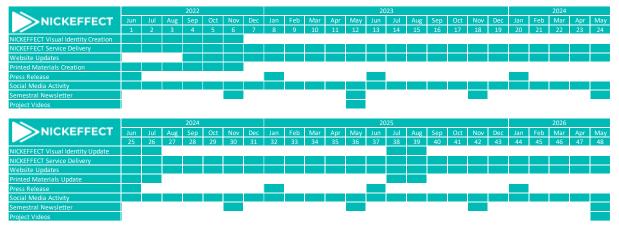


Figure 15. Gantt Frequency of NICKEFFECT Dissemination and Communication Activities

5.5 Monitoring of Communication and Dissemination Activities

Monitoring is the continuous and systematic process carried out during the project, which will generate data on the implementation. To achieve the successful implementation of Dissemination and Communication activities, and fulfilment of the relevant objectives, a systematic monitoring will be carried out throughout the project implementation.

The impact of the NICKEFFECT communication activities will be monitored on an ongoing basis and reported in the relevant deliverables (D7.2 Report on Communication, Dissemination and Exploitation Activities and final business plan – M48; and further iterations of this document – M12, M42, M48).

The monitoring system (Table 9) will provide evidence on whether the NICKEFFECT Dissemination and Communication Plan (DCP) is being implemented as initially planned and scheduled.

It will also address possible implementation problems and identify whether further action is required to ensure that objectives are met. Emphasis is given on the pre-assessment of information needs, on the monitoring frequency and the method of collecting evidence.

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Table 9. Dissemination and Communication KPIs

Indicator	КРІ	Source and Methodology		
Online Dissemination				
Number of pageviews on the website	4000	Information registered in Google analytics Information registered in the social media administrator panel		
Number of social media followers	500	Information registered in the social media administrator panel		
Number of social posts	100	Information registered in the social media administrator panel		
Number Interviews & featured articles	5	Regular reporting on dissemination activities		
Number of Success stories	6	Regular reporting on dissemination activities		
Number of newsletters	8	Regular reporting on dissemination activities		
Number of webinars	14	Regular reporting on dissemination activities		
Offlin	e Dissemi	nation		
Number of open access scientific publications	17	Regular reporting on dissemination activities		
Interactive (Face-To-Face) Dissemination				
Number of events where partners present their work	16	Regular reporting on dissemination activities		
Number of project organised events	3	Regular reporting on dissemination activities		

Furthermore, to assess the quality of communication and dissemination, the project uses the following methods:

- Press coverage: partners report back on local press coverage (explained in 3.4) to indicate the effect of communication and dissemination and measure the relation between the messages and their perceptions. The result will indicate what the point of interest is, and this can be used to generate more similar stories or expose a need to adjust the strategy.
- II. Feedback: input from events and new contacts established are registered by partners, and any new opportunities, which come from activities, are reported. Feedback can help to evaluate the quality of the outcome, reveal new or confirm stakeholder needs, measure the impact and indicate whether the strategy works or has to be revised.
- III. Website: The Google Analytics system that will be used for the website has a built-in statistical feature, which will provide data on number of live viewers, number of archived views from

which countries they view and for how long. This data will be used to assess the success of the website content and its presence across the internet.

Communication and dissemination efforts will be classified according to the level of impact: communicate to build an understanding of the goals and the benefits, communicate to build a deeper understanding of the benefits, and communicate for action.

6 **Exploitation Plan**

The main objective of the exploitation is to maximise the adoption of NICKEFFECT results beyond the duration of the project. The development of the exploitation strategy is a flexible process that has to be tailored to the need of the project and project partners. To build the strategy efficiently the projects' exploitation strategy and the partners' individual strategies have to be considered in parallel. It is highly recommended to build the exploitation strategy and plan together with the partners in the frame of exploitation workshops to be organised by the exploitation manager. This will provide the necessary transparency to allow partners to get the understanding about each other expectations.

In conclusion, the **NICKEFFECT Exploitation Plan** will aim to strengthen and speed up the market uptake of all project outputs by developing an exploitation strategy for all outputs and by supporting the partners involved with further exploitation activities during the different stages of the project.

6.1 Methodology and Tools for Project Exploitation

With respect to project aims, size, duration and consortium composition among other factors, exploitation plans can vary enormously from one project to the next. It is of utmost importance to tailor the strategy to the projects needs and the possible users of the project results. Nevertheless, there are a number of useful methodologies and tools, which can be applied in a varying composition to best suit a project. Some of the methodologies and tools are described within this deliverable.

During brainstorming sessions, the Project took a very simple approach towards the exploitation by conducting a three-step-analysis starting with the following questions:

Which project results have high exploitation potential?

Once expected results from the partners were understood, and products and services involved in the project are defined, an individual questionnaire about the exploitable results of each partner will be addressed in order to be able to elaborate an individual exploitation plan. The following paragraphs gather a first approach for the exploitable results, that will be conducted with next iterations of this deliverable.

In the **first stage**, all results with potential for commercialisation will be identified, and such potential will be evaluated, thus confirming or discarding their business opportunity. In the **second stage**, business plans for the results selected will be designed. The **third stage** will develop exploitation plans defining the specific actions to execute such business plans.

The first step is the identification of **Key Exploitable Results (KERs)**. In this phase, the collective input of all project partners will be required. Apart from jointly defining, characterising and prioritising the

exploitable results, it is suggested to possibly group some of these into clusters. This promotes the formation of synergies boosting exploitability of the project as a whole.

Subsequently, an **analysis of the market landscape** will conducted to evaluate the strategic fit of the suggested KERs to the market. The main objective of this step was the analysis of the attainability of a successful exploitation including all its various influences.

Moreover, involvement of **strategic implementation tools** to maximise the impact of the project results is necessary. This might be achieved by several methods including further research, licensing, new services/products, joint ventures or standards.

When engaging in exploitation activities, these are the key objectives that should be followed by all partners:

- Establish and maintain mechanisms for effective exploitation, and coordinate all levels and types of exploitation of the knowledge produced by the project.
- Inform stakeholders and targeted user communities where a two-way interaction will take place with the project development and encourage interactions/networking.
- Ensure that information is shared with appropriate audiences on a timely basis and by the most effective means.
- Channel the project's results to a truly wide international audience, in particular in those areas where the proposed solutions will lead to immediate society impacts.

6.2 Key Exploitable Results (KER)

F6S will carry out a questionnaire within consortium partners to verify if they envisage any additional Key Exploitable Results of any nature – such as products, services, software, policy recommendations, etc. – as a result of their participation in NICKEFFECT. Prior to the project start, NICKEFFECT Project Partners anticipated the commercial exploitation of the following results shown in Table 10.

Result	Owner/s	Preliminary exploitation route / strategy
Ferromagnetic non-PGM porous coatings: new materials; new production techniques.	CID, UAB	New spin-off: 1) engineering and/or coating services; 2) Licensing (B2B)
Modelling software package (2D FE model using MiTReM for electrodeposition)	ELS	ALC; possibly PLC+YLC licensing (B2B). Utility model
Online decision-making support tool	ANSS, IRES	SW licenses; consultancy services (B2B)
Materials modelling tool	MGX	Selling SW licenses (B2B)

Table 10. Identification of Key Exploitation Results (KER) with Commercial Potential

For **non-commercial results**, the project has also analysed the exploitation routes:

 CID will gain new knowledge in electrodeposition techniques and Ni-based coatings with tuned porosity susceptible of being applied in different applications other than PEM WE, PEM FC and MRAMs.

- CID, UAB, CEA and ADV will use data from lab experiments and upscaled demonstration tests for future R&D.
- VUB will generated new knowledge on MITReM coupled with LSM to be used in future R&D projects.
- UAB, VUB, CEA, CID and ADV will generate new knowledge and publish OA contents that can be used by them and other stakeholders in further related research.
- VUB, UAB, ADV will contribute to knowledge transfer for academic purposes in PhD, MSc thesis and lectures.
- CEA will be able to reach proof of concept validation for bimetallic coatings' metal recovery, which will be the basis for future R&D and possibly commercial exploitation.
- ADV will improve its positioning in the sector of water splitting technologies, increasing its current portfolio.
- ADV and SING will benefit from showcasing NICKEFFECT results, obtaining cost-efficient alternatives to its current products as well as new functionalities.
- UNE and all partners will contribute to generating new standards and establishing a roadmap for standardisation.
- F6S will identify new stakeholders to make its network grow and find new links and market niches.

6.3 Individual Partner Exploitation Plans

NICKEFFECT partners have a strong interest in **guaranteeing the continuation of the project activities and impacts** amongst its end-beneficiaries, as this would positively affect their own competitiveness and growth. In this context, NICKEFFECT partners will contribute to the development and sustainability of an efficient ecosystem and exploit the outcomes within their internal activities and networks.

F6S will **convey a survey on each of the individual exploitation plans** that will be integrated into the overall exploitation strategy, considering the assets of those partners involved, and reported with the iteration planned due M12. All the partners are committed to the exploitation of NICKEFFECT results beyond its completion in order to ensure the sustainability of the results.

6.4 Initial Business Modelling

The objective of the business modelling activities in NICKEFFECT is to derive a set of business models, business cases and plan to support sustainable uptake of the NICKEFFECT offerings in eventual commercial operation. For this to happen, commercial exploitation of the NICKEFFECT offerings and individual components is foreseen, upon which additional commercial features can be developed.

The process that is used to develop the above-mentioned objectives will be inspired by the **Lean Startup Methodology** principles. This methodology was designed as a scientific approach targeted at startups for them to quickly and efficiently develop products that fit customer requirements and expectations for rapid market uptake. While the NICKEFFECT offerings are not directly in the intentions of the Lean Startup Methodology, its principles can be adapted to the process used in NICKEFFECT.

Due to the public nature of this deliverable, concrete plans won't be detailed, but finally presented in D7.2 due M48. Nevertheless, it is relevant to mention that NICKEFFECT will focus on four different **business cases**, namely:

- 1. Novel ferromagnetic Ni-based coating materials free of Pt and its production processes;
- 2. MITReM (Multi-Ion Transport and Reaction Modelling)+LSM (level-set methods) SW package;

- 3. Online LCA (Life-cycle assessment) tool;
- 4. Machine Learning-based materials modelling and prediction tool.

The **Business Model Canvas** (BMC) will be used to visualise elements of the project, as if it was a company. The BMC visualises a business structure in a simple way, but it also allows experiment with the modification of the blocks and one can estimate trade-offs.

6.5 Legacy and IP Rights

As a general rule, NICKEFFECT will follow the provisions of Horizon Europe on knowledge management and protection, as set out in the Grant Agreement (GA) and developed in the Consortium Agreement (CA).

The key IPR-related issues to be considered in collaboration with CID (PC) and F6S (WP7 leader) are ownership and protection of knowledge and access rights; management of the partners' background; and management of the IP results jointly developed by several partners within the project. Optimal IPR protection options (e.g., patent, utility model, copyright, trademark, confidentiality), will be proposed in line with the business model options and considering possible co-ownership. The findings and recommendations for IPR protections will be included in the final exploitation plan (part of D7.2).

Post-project planning the IPR protection options are formulated in the CA in line with the preliminary business model options identified in the Exploitation Plan within WP7.

6.6 Exploitation Monitoring

NICKEFFECT exploitation strategy aims to guarantee that the project outcomes are exploited during and after its lifetime. Therefore, this strategy needs to be adapted to the different stages of the project and take into account that as the project develops and the results are delivered, there will be a higher focus on results and exploitation activities.

Furthermore, the final iteration of the plan, D7.2 (M48) will provide more detailed information about NICKEFFECT exploitation strategy and the actions that will be implemented during and after the project's lifetime. Table 11 provides an overview of the next steps/actions that will be implemented during next couple of months.

Actions	Description
Internal discussion of the exploitation and sustainability strategy	During the project lifetime, project partners will discuss internally NICKEFFECT exploitation strategy. In addition, sessions dedicated to exploitation will take place in NICKEFFECT consortium meetings so that the final exploitation take into account inputs from all the project partners. F6S (as WP7 Leader) will support/guide the internal discussions about exploitation and will collect all the inputs from the discussions.
Definition of further KPIs	NICKEFFECT will discuss the KPIs defined in the proposal to successfully measure the effectiveness of the exploitation of the project results. The KPIs will be discussed internally during the Consortium Meetings and presented in D7.2 due M48.
Enlargement of the exploitation actions	The enlargement of the exploitation actions will be discussed internally during the Consortium Meetings and presented in D7.2.

Table 11. Next Steps on Project's Exploitation Plan



Use of dissemination and communication tools Dissemination and communication tools (especially the project website, newsletters, and social media) will be continuously used to disseminate NICKEFFECT results and outcomes.

NICKEFFECT project's activities are and will be **monitored**, **evaluated**, **and continuously modified/updated** as part of the ongoing quality control and management. The objective of the performance monitoring of exploitation is to guarantee that the project achieves the aims defined in the exploitation plan.

7 Conclusion

This deliverable (D7.1) introduces the NICKEFFECT dissemination, communication and exploitation plan, a comprehensive and living document, which outlines the tools, channels and activities to be put in place throughout the project to ensure wide acceptance and sustainability of the NICKEFFECT Project.

This document outlines the strategy, activities and tools with which the NICKEFFECT Project will communicate with a range of stakeholders as well as the timing of the various activities throughout the lifetime of the project. The Consortium recommends a periodic review of this document to ensure it includes up-to-date contents and opportunities for disseminating and communicating project information.

In addition, as strategies are evaluated, updates should be made as needed. Since the project is still in an early phase, the dissemination plan designed in this report will be considered as a living plan that will go through a number of iterations through the project, specifically with relation to the existence of events suitable for dissemination, many of which are still not known at the time of writing.

In the upcoming months, partners will continue working in the identification and further elaboration of the Key Exploitable Results, strategic business plan linked to each KER and the final Intellectual Property Rights generated during the project. Once expected results from the partners are understood, and products and services involved in NICKEFFECT Project are identified, an individual questionnaire about the exploitable results of each partner can be addressed in order to be able to elaborate an individual exploitation plan.