FLEX 4 FACT

Industrial flexibility platform
for sustainable factories

D7.1 COMMUNICATION, DISSEMINATION AND EXPLOITATION PLAN

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DISSEMINATION LEVEL

PU – public, fully open	X
SEN – sensitive, limited under the conditions of the Grant Agreement	

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LIST OF ABBREVIATIONS

ACRONYM	DESCRIPTION
CA	Consortium agreement
CDE	Communication, dissemination, and exploitation
CI	Corporate Identity
DMP	Data Management Plan

DSO	Distribution System Operator
F4F	FLEX4FACT
GA	Grant agreement
GAP	Gender Action Plan
HEU	Horizon Europe
KPI	Key performance indicator
RE	Renewable Energy
TSO	Transmission System Operator

SUMMARY

The FLEX4FACT project aims to make industrial sites and processes more flexible through digitisation, automation, and smart control systems. It will assist industrial stakeholders seeking to integrate more renewable sources into their industrial energy systems and to provide flexibility to the electrical systems via demand response measures. The project communication, dissemination and exploitation activities support these goals and ensure large-scale awareness, understanding and uptake of the project's objectives and results amongst a broad variety of stakeholders.

This deliverable outlines the strategy for communication, dissemination, and exploitation (CDE) activities, during the project lifecycle. The CDE plan provides guidance to all consortium members and ensures a consistent approach to CDE activities. It describes the communication and dissemination objectives, identifies the key target groups, defines key messages, and presents the different communication and dissemination channels and tools developed within the project.

The identified target groups to be reached through communication and dissemination of the project are:

- End users – industrial plant operators,
- Energy providers, distribution system operators,
- Energy and digital solution providers,
- EU research community,
- Technological expert groups, EU working groups, standardisation bodies,
- Public authorities,
- Investors,
- General public.

To address these stakeholders, FLEX4FACT will use the following communication and dissemination activities and channels:

- Creation/production of a project website, social media channels, a roll-up, project brochures and video,
- Regular publication of newsletters and press releases,
- Collaborations with other similar projects, organizations and networks,
- Participation in at least ten international conferences and fairs,
- Publication of at least ten scientific open-access publications,
- Organisation of three showcase events to demonstrate the feasibility of the FLEX4FACT solution to relevant stakeholders.

Communication and dissemination activities will be continuously monitored to assess their effectiveness and if required improved them. The CDE plan will be updated in M30 (D7.7). SIG will provide regular feedback to the steering committee regarding the implementation of CDE activities against the action plan provided in this report.

1 INTRODUCTION

This report is the communication, dissemination, and exploitation (CDE) plan for the FLEX4FACT project. The purpose of this document is to set the strategic framework for communication, dissemination and exploitation tools and activities to achieve the largest possible impact for the project.

The FLEX4FACT project aims to develop an end-to-end ecosystem based on a modular and multi-level architecture to enable flexible production in the energy intensive industries and create the conditions for the necessary energy transition in which all stakeholders can participate and benefit from. Communication, dissemination, and exploitation activities aim at raising awareness of the FLEX4FACT results and paving the way for their future commercialisation and further development in follow-up projects.

The CDE plan will support the specific objectives of WP7 'Community uptake and sustainability, dissemination, exploitation and standardization'. It has 4 main objectives:

1. Inform about the necessity and viability of energy flexibilization in industrial processes and manufacturing to make EU industry more competitive and integrate more renewable sources,
2. Maximize success, visibility, and knowledge transfer through effective dissemination during and after the project,
3. Enhance knowledge exchange and transfer through facilitation of European and international collaborations and active contributions to networks, associations and their activities on training and standardization,
4. Pave the way for exploitation through Intellectual Property (IP) management and by developing an exploitation roadmap, and identifying suitable business models.

On the one hand, the FLEX4FACT communication and dissemination activities aim to increase the general awareness and understanding of industrial flexibility solutions. On the other hand, they aim at supporting the future exploitation of the project results. The CDE plan consists of four main chapters: the second chapter provides an overview of the communication and dissemination strategies and approaches, the third chapter focuses on communication and dissemination activities and presents the target audiences, key messages, channels and activities to be performed while chapter 4 shows how communication and dissemination activities will be monitored and assessed throughout the project by using KPIs. Chapter 5 is dedicated to the project exploitation strategy including the methodology and IP management plan.

The CDE plan will be updated in M30 (D7.7). SIG will provide regular feedback to the steering committee regarding the implementation of CDE activities against the action plan provided in this report. SIG will integrate such intermediate updates in project periodic and final reports, incl. KPIs on reached targets.

1.1 PURPOSE OF THIS REPORT

Sound communication, dissemination and exploitation activities are an integral part of any EU-funded project. Along with communicating project objectives and results, they also contribute to stronger visibility of the EU Research and Innovation funding and bring science and technological development closer to the public. According to Article 17 of the Horizon Europe grant agreement, beneficiaries are required to promote the action and its results by providing targeted information to different audiences (including the public) in a strategic and effective way[1].

This CDE Plan is drafted at an early stage of the project (M6) in order to provide a framework for all partners, helping to effectively communicate and report all relevant activities and outcomes. It summarizes the communication and dissemination activities and tools defined in the project's Grant Agreement and drafts a roadmap towards successful implementation of these activities. The expectations, needs and communication and dissemination plans of project partners were collected with the help of a questionnaire to be able to develop the most suited CDE plan at project level.

1.2 CONTRIBUTIONS OF PARTNERS TO THIS REPORT

The CDE plan is drafted by work package and CDE leader SIG. Inputs from all consortium partners were collected through a questionnaire.

[1] European Commission, European Research Executive Agency, Are you communicating your Horizon Europe project? Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2848/078892

2 APPROACHES FOLLOWED AND RULES TO BE OBSERVED

2.1 MAIN DEFINITONS IN THE CONTEXT OF HORIZON EUROPE

Communication about European research projects should aim to demonstrate the added value of research and innovation for the main project target groups. The projects' communication and dissemination should demonstrate how European cooperation contributes to competitiveness, scientific excellence and solving societal challenges and show the relevance of the results to daily lives of citizens, in terms of job creation, and reduction of emissions. Exploitation activities seek to utilizing the project results in further activities for societal, scientific, economic, and technological purposes.

Communication measures should promote the project throughout its entire lifespan. The aim is to inform and reach out to society and show the impacts and benefits the project will have for citizens. Communication activities include the development of a visual identity (logo, graphic charter…) and a project brochure, the launch of a public website, and social media channels, the production of a general videos, and the regular publication of press releases and newsletters. Communication objectives are:

- Create awareness of the project's objectives, activities, and results,
- Encourage active engagement with stakeholder groups,
- Seek exchange and feedback with target groups,
- Involve external partners in the network to benefit from the solutions after the project.

Dissemination targets the transfer of knowledge and results to enable stakeholders to use and take up results (e.g. through scientific publications), thus maximizing the impacts the project. Dissemination objectives are as follows:

1. Share the project's outcomes and produced knowledge to achieve replicability,
2. Foster strategic partnerships and collaborations to disseminate the project's results,
3. Inform about barriers and difficulties regarding uptake of results,
4. Make the project results available, accessible, and usable to potential users,
5. Improve the visibility and impact of the project.

Successful communication and dissemination also involve tracking and monitoring activities, to ensure their outreach and effectiveness.

Exploitation ensures the effective use of the project results in further research and innovation activities, including among other things, commercial exploitation such as developing, creating, manufacturing, and marketing a product or process, or scientific exploitation intended to advance methods, tools, and scientific knowledge.

2.2 SPECIFIC APPROACH FOLLOWED FOR FLEX4FACT

The main purpose of this CDE plan is to establish clear guidelines to ensure targeted and effective dissemination and exploitation of the project's results. It is expected that the implementation of this plan coupled with partners' activities will achieve maximum awareness of project activities and results. As shown by the following figure, CDE activities should help maximize the impacts of the project and help transform the results into tangible outcomes and impacts supporting the targets of the European commission.

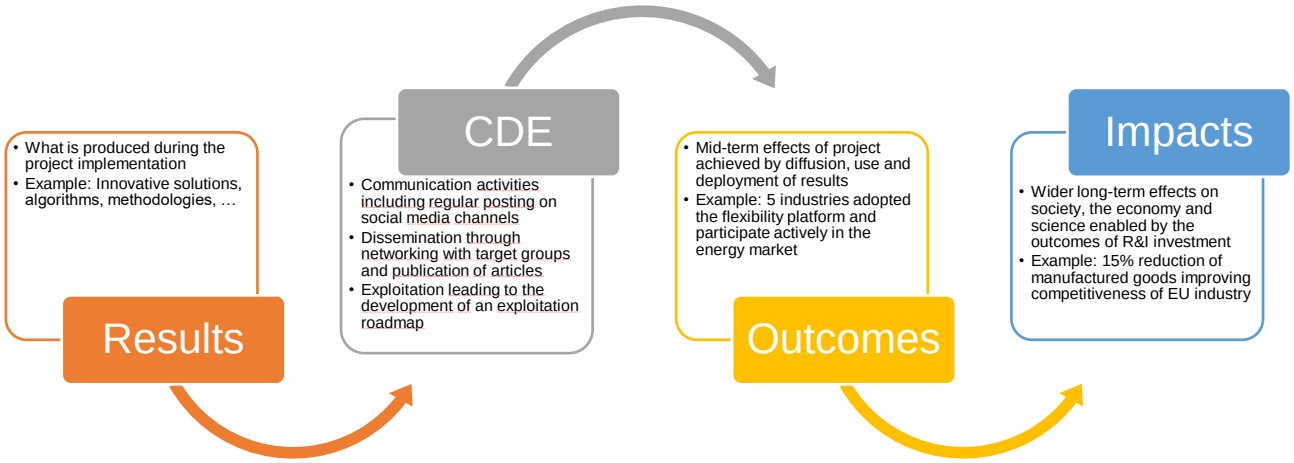

Figure 1: Impact pathway of Horizon Europe project results

The impacts to be reached by the FLEX4FACT project are as follows:

- Economic/technological impact - Reduction of production costs in energy intensive industries and increased uptake of renewable energies through FLEX4FACT' modular hardware and software solutions,
- Economic/technological impact - Creating more and better jobs by transforming the energy supply of energy intensive industries from centralised to decentralised energy systems,
- Scientific impact - Strong European science in the field of digitalisation and automation of manufacturing processes as well as energy management, driven by new high-quality results and knowledge sharing and exploitation with EU research community,
- Scientific impact - Trained and skilled EU workforce boosting the digital industry transition and the use of flexibility from industrial processes,
- Societal impact - Build resilient energy infrastructures, promote inclusive and sustainable EU industries and foster innovation,
- Societal impact - Ensure access to affordable, reliable, sustainable and energy for all by facilitating the integration of renewable energies,
- Societal impact - Reduction of CO_2 emissions, leading to more livable and cleaner industrial cities and better health.

The following table shows the specific CDE activities that will be implemented to contribute to the achievements of the project impacts. Further information on planned activities is provided in chapters 3 and 5.

Table 1: Correspondence between planned CDE measures and achievements of outcomes and impacts

CDE MEASURES	TARGET GROUPS	OUTCOMES	IMPACTS
D Exchanges with Advisory Committee providing regular feedback **D** Networking activities at EU level **D** Showcase events **E** Series of exploitation workshops to characterise key exploitable results and define IP rights **E** Develop business models and exploitation roadmap	Potential end users and business facilitators (TG1, TG2, TG3, TG4)	- Increase of RE share in energy intensive industries substituting fossil energy sources. - Increased flexibility potential of the industrial sector leading to reduced costs of EU goods and more jobs. - Replication: 50 industrial sites equipped with FLEX4FACT tools by 2030.	- **Economic/technological impact** - Reduction of production costs in energy intensive industries and increased uptake of renewable energies through FLEX4FACT' modular hardware and software solutions. - **Economic/technological impact** - Creating more and better jobs by transforming the energy supply of energy intensive industries from centralised to decentralised energy.
D At least five scientific publications and ten industrial publications **D** Participation in at least 40 exhibitions, conferences, workshops, or industrial events **D** Main lessons learned, and best practices included in project guidebook	Scientific community and technological expert groups (TG5, TG6)	- Young and skilled professional contributing to EU growth. - 100 workers attending workshops. - More women students enrolled in education programs focusing on the digital industry. - Several methodologies and tools published in open access.	- **Scientific impact** - Strong European science in the field of digitalisation and automation of manufacturing processes as well as energy management, driven by new high-quality results and knowledge sharing and exploitation with EU research community. - **Scientific impact** - Trained and skilled EU workforce boosting the digital industry transition and the use of flexibility from industrial processes.
D Training materials included in guidebook **C** EU and national communication campaigns	Public authorities and general public (TG7, TG8)	- Reduction of industry-related emissions and better and safe jobs benefitting all EU citizens.	- **Societal impact** - Build resilient energy infrastructures, promote inclusive and sustainable EU industries and foster innovation. - **Societal impact** - Ensure access to affordable, reliable, sustainable and energy for all by facilitating the integration of renewable energies. - **Societal impact** - Reduction of CO_2 emissions, leading to more livable and cleaner industrial cities and better health.

2.3 COMMUNICATION AND DISSEMINATION OBLIGATIONS ENSHRINED IN GA AND CA

The legal documents signed by members of the consortium, the Grant Agreement, and the Consortium Agreement, contain obligations related to communication, dissemination, and exploitation. This section presents the rules to be followed regarding communication and dissemination (some of these obligations can also be found in D8.1 – FLEX4FACT project handbook) while subchapter 5.3 describes in more details the way in which IP rights are administered within FLEX4FACT.

2.3.1 INFORMING THE GRANTING AUTHORING WHEN PLANNING HIGH IMPACT ACTIONS

According to article 17.1 of the Grant Agreement, beneficiaries must promote the action and its results by distributing target information to multiple audiences. If they engage in communication and dissemination actions expected to have major impacts, they should inform the granting authority in due time.

2.3.2 ACKNOWLEDGEMENT OF EU SUPPORT AND DISCLAIMER REGARDING QUALITY OF INFORMATION

To ensure visibility and transparency, all recipients of EU funds have the legal obligation to explicitly acknowledge that their action has received EU funding (see article 17.2 of the Grant Agreement). The obligation requires all beneficiaries, managing authorities and implementing partners of EU funding to acknowledge the support from the European Union on all communication materials. Therefore, the European Union emblem and the funding statement must be displayed prominently on all printed and digital products, websites, social media channels and other communication products:

Co-funded by the European Union

Furthermore, any communication or dissemination action must use factually correct information. It must indicate the following disclaimer (see article 17.3 of the GA):

"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or [name of the granting authority]. Neither the European Union nor the granting authority can be held responsible for them".

2.3.3 PRIOR NOTICE OF ANY PLANNED PUBLICATION AND DISSEMINATION ACTIVITY

According to article 8.4.2.2 of the Consortium Agreement, prior notice of any publication activity shall be given at least 28 calendar days before the intended publication and a copy of relevant material should be distributed at least with 14 calendar days before publication. Any objection to the planned publications must be made by written notice within 7 calendar days after reception of the notice and 7 calendar days after reception of the material. If no objection is made, the dissemination activity is permitted.

According to article 8.4.2.3, prior notice of any other planned dissemination activity shall be given to the beneficiaries at least 45 days before the activity such as publication or presentation and a copy of the material 30 days before the planned dissemination. The same objection rules than those applying to publications are to be observed. A short list of justified reasons to waive an objection are provided in article 8.4.2.4 of the CA.

2.3.4 PRIOR APPROVAL BEFORE USE OF NAME, LOGOS AND OTHER PARTY' BACKGROUND AND RESULTS FOR DISSEMINATION PURPOSE

According to article 8.4.3 and 8.4.5 of the CA, a party shall not include in any dissemination activity another party's results or background, names, and logos without their prior written approval.

2.4 COMPLIANCE WITH OPEN SCIENCE PRACTICES

2.4.1 OPEN SCIENCE PRACTICES IN HORIZON EUROPE PROJECTS AND EXPECTED BENEFITS

Open Science is defined by Horizon Europe as an approach to the scientific process based on open cooperative work, tools, and knowledge diffusion. Open Science includes open access to scientific publications, research data management and the active engagement of society, as well as optimal dissemination and exploitation of knowledge. In this way the advancement of knowledge can be accelerated by making it more reliable, efficient, and accurate, more easily understood by society and responsive to societal challenges.[2]

By making project results and data accessible to all societal actors, other researchers, innovators, and the public can find and re-use these for their own specific needs. In this way, further research is encouraged, novel solutions can be found, and complex challenges can be tackled. The benefits of open science include[2]:

[2] European Commission, European Innovation Council and SMEs Executive Agency, Scherer, J., Weber, S., Alveen, P., et al., European IP Helpdesk : successful valorisation of knowledge and research results in Horizon Europe : boosting the impact of your project through effective communication, dissemination and exploitation, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2826/437645

- Increased visibility of research, enhanced reputation and better understanding and support (also financially), by presenting research and its results not only to the scientific community, but also to potential industrial partners, policymakers and society at large,
- Exchange of knowledge on cross-sectoral and interdisciplinary levels will help discover novel approaches and solutions,
- Knowledge transfer, uptake and commercialisation of novel technologies and results by industry, decision makers and the scientific community will strengthen Europe's research and innovation landscape,
- Making project results openly available and searchable will spread knowledge and allow that knowledge to be built upon.

Providing open access to peer-reviewed publications resulting from the project is mandatory for Horizon Europe funded projects. This includes articles and long-text formats, such as monographs and other types of books. Immediate open access is required i.e. at the same time as the first publication, through a trusted repository, and using specific open licences (a Creative Commons licence). Open access is encouraged for those publications that are not peer-reviewed. Beneficiaries should also ensure open access to research data via a trusted repository under the principle 'as open as possible, as closed as necessary'. The Open Research Europe (ORE) platform, set up by the European Commission in 2020 can be used as an open access platform for scientific publications to fulfil the open access requirements.

2.4.2 FLEXFACT'S OPEN SCIENCE STRATEGY

FLEX4FACT conforms to the Horizon Europe open science policy[3] and will ensure open access of scientific results generated by the project to interested stakeholders. FLEX4FACT will implement different actions to cope with the open science practices:

1. Disseminate project deliverables and results – as soon as possible – through appropriate means, including their diffusion via scientific publication (Article 17 of the Model Grant Agreement),
2. Ensure open access (online access to research outputs provided free of charge to the end-user) to all peer-reviewed scientific publications relating to its results (Article 17 of the Model Grant Agreement),
3. Manage the digital research data generated in the action responsibly, in line with the FAIR (Findable, Accessible, Interoperable and Reusable) principles (Article 17 of the Model Grant Agreement),
4. In order to provide clarity in intellectual property and assets management and to allow the European Commission to follow up and provide help when needed, the beneficiaries must indicate the owner(s) of the results (Results Ownership List) in the final periodic report (Article 16 of the Model Grant Agreement). Further information is provided in subchapter 5.5.

A Data Management Plan (D8.2) will provide further information on data and publications to be disseminated in an open science manner. It will help planning and structuring the research data

[3] European Commission, Directorate-General for Research and Innovation, Horizon Europe, open science: early knowledge and data sharing, and open collaboration, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2777/18252

management, to ensure that the relevant data is findable, accessible, interoperable and reusable ("FAIR"), as well as define the procedures involved in capturing, handling and managing the research data throughout the project's life cycle and beyond. Open Science should not affect the IP generated by the project's research results and is based on an adequate management of IP. The DMP is aligned with the CDE plan.

2.5 COMPLIANCE WITH OVERALL GENDER STRATEGY

The FLEX4FACT consortium commits to include gender dimension in all communication and dissemination activities.

The EU Gender Action Plan III calls for a gender equitable world and provides a strategic, ambitious policy tool that sends a clear message of the EU's commitment to gender equality and women's empowerment in all areas of its external action[4].

In line with the EU's Gender Action Plan (GAP), the FLEX4FACT project supports gender equality in three main areas:

1. **Advancing equal participation and leadership**. Women are and will be included in the project work, both as researchers, administrative personnel, and work package/task leaders.
2. **Strengthening economic and social rights and empowering women and girls**. By encouraging women to take leading roles in FLEX4FACT, the project will support women's career advancement, equal access to employment and financial opportunities.
3. **Combatting gender-based violence.** FLEX4FACT Gender Action Plan will take steps to ensure that actors involved in the project follow a code of conduct prohibiting all forms of sexual harassment and other forms of gender-based violence.

FLEX4FACT's GAP is built on "Horizon Europe Guidance on Gender Equality Plans (GEPs)"[5] and the Gender Equality in Academia and Research (GEAR) tool, co-developed by the European Institute for Gender Equality (EIGE) and the European Commission's Directorate General for Research and Innovation.

The main guidelines defined for project communication and dissemination are as follows:

- Increasing the visibility and representation of women in science and engineering by putting women staff in the spotlight when communicating and disseminating results.
- Ensure the timing and locations of project-related meetings are convenient for all participants.
- Provide project information and services through media which all target groups are likely to access.
- Ensure project documentation is provided in local languages, taking account of literacy levels.
- Participate in EU initiatives promoting gender diversity in the energy sector such as

[4] European Commission website, Gender action plan, 25 Nov. 2020, visited on 28.10.2022, https://ec.europa.eu/commission/presscorner/detail/en/IP_20_2184

[5] European Commission, Directorate-General for Research and Innovation, Horizon Europe guidance on gender equality plans, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2777/876509

Women4Energy[6] and Women in Green Hydrogen[7].

Further ideas on how the FLEX4FACT project will contribute to gender equality were collected in the project handbook (D8.1):

- Exchange on the projects' commitment to gender equality and the progress made with project partners,
- Ensure that dissemination activities are carried out equally by all genders,
- Conduct a seminar/lecture on gender equality and gender bias in research,
- Creation of guides and compendia on gender equality to publish on the FLEX4FACT website,
- Prevent harassment during project work.

[6] Women4Energy, official website, visited on 28.10.2022, https://women4energy.eu/
[7] Women in Green Hydrogen, official website, visited on 28.10.2022, https://women-in-green-hydrogen.net/

3 COMMUNICATION AND DISSEMINATION STRATEGY

The project's communication and dissemination strategy has six main objectives:

- Raising awareness of FLEX4FACT solutions,
- Engaging with stakeholders,
- Disseminating the project' results,
- Promoting the FLEX4FACT industrial use cases,
- Setting up feedback channels to gather inputs from the target groups,
- Facilitating the market uptake of results by promoting their economic, technical, scientific, and societal benefits.

The following sections provide an overview of the key messages, target groups and channels as well as activities to be used to achieve these objectives. The results of the communication and dissemination strategy will be constantly monitored in order to assess its effectiveness, its progress, and to implement changes where necessary. This is explained in more depth in chapter 4.

3.1 KEY MESSAGES

To assure a clear communication and dissemination strategy, a set of key messages and topics relevant for the project, has been defined.

The following **key topics** are the most common and relevant for the project and will constitute the backbone of the FLEX4FACT communication activities:

- Industrial flexibility,
- Manufacturing flexibility,
- Energy flexibilization,
- Renewable energy production,
- Energy storage systems,
- Digital twin.

Key messages should be direct, simple, clear, action-oriented concise and consistent (Wilson et al, 2010)[8]. The project partners identified the following **key messages** to be communicated:

- **General messages regarding flexibilization of industrial sites**:
    - Process flexibility and efficient energy storage systems are essential to compensate for fluctuating energy production from renewables,
    - Flexibility solutions are key to increase the use of renewable energies in the industrial sector, thus contributing to the EU Green Deal goals,
    - Energy flexibilization will help move towards a safe, clean, and sustainable EU

[8] Wilson, P.M., Petticrew, M., Calnan, M.W. et al. Disseminating research findings: what should researchers do? A systematic scoping review of conceptual frameworks. Implementation Sci 5, 91 (2010). https://doi.org/10.1186/1748-5908-5-91

industry.

- **FLEX4FACT related messages:**
  - Offer demand response services to external energy agents through a cloud service,
  - Achieve environmentally friendly production through renewable sources integration,
  - Deliver digital tools that will unleash the flexibility potential of industrial processes,
  - Develop digital twins to support the optimisation of industrial processes,
  - Develop solutions making EU manufacturing more cost-efficient and competitive,
  - Integrating renewable energy sources and on-site storage technologies in industrial settings.

3.2 TARGET GROUPS

The following table shows the different target groups to be reached by the FLEX4FACT CDE activities. Additionally, the table lists the interests and main roles of the target groups regarding the project's results as well as examples of local EU stakeholders, identified by project partners.

Table 2 – List of the FLEX4FACT target groups, their interests and main roles and examples of target groups identified by the project partners.

TARGET GROUPS	INTERESTS AND MAIN ROLES	EXAMPLES
TG1 - End users – industrial plant operator	Reduction of energy costs; increased use of renewable energies	
TG2 - Energy provider DSO, TSOs, Energy retailers and aggregators	Selling energy; preventing congestion; balancing out fluctuations in the availability of renewable energies	Plenitude, EirGrid, Iberdrola, Endesa, Naturgy, OEDAS , A2A, Sede , ENTSO-E, ANELL, EnBW
TG3 - Software and Hardware solutions providers – energy solutions – digital solutions	Developing and selling energy/digital solutions that best meet the needs of users; applying FLEX4FACT results and knowledge	Nuvve
TG4 - Investors	Invest money to accelerate the market entry of green innovations and make long-term gains	
TG5 - EU research community	Support EU leadership in digitalisation and energy flexibility; Knowledge exchange	Tekniker, Tecnalia, Leartiker, EERA, EFFRA

TG6 - Technological expert groups, EU working groups, standardisation bodies	Advance standards; leverage fundings; Knowledge exchange	A.SPIRE, ESTEP, PACE, European Clean Hydrogen Alliance, European Circular Economy Stakeholder Platform, BRIDGE, Manufuture, ACER
TG7 - Public authorities	Adopt new rules and legal frameworks	
TG8 – General public	Be informed about latest technological trends and improved quality of life/health	

3.3 PRINTED AND DIGITAL COMMUNICATION CHANNELS AND TOOLS

In order to engage with the target groups presented above, FLEX4FACT will use a large variety of channels and tools in order to communicate and disseminate the project's outcomes. Furthermore, the project will operate as a communication channel to support relevant European Commission Energy Directives and legislation.

Communication and dissemination materials related to the project activities will be based on the FLEX4FACT Corporate Identity (CI) toolkit, which is being developed in Task 7.2 together with a professional design agency. The CI toolkit comprises the project logo, a colour palette, fonts, key visuals and templates for the newsletters, Power Point and word templates (e.g. for deliverables, press releases and articles). The toolkit also includes a short style guide. All elements of the CI toolkit are accessible to the project partners via the project SharePoint repository and will be described in more detail in deliverable D7.2 – Communication and dissemination toolbox and website (M9).

In the following, tools and channels used for the project communication and dissemination are presented.

Project Website

The project website is one of the main communication tools for EU funded projects. The FLEX4FACT project website is to be published by M9 and will be accessible under www.flex4fact.eu. The FLEX4FACT website includes the following content:

- **Project Homepage** - General overview of the project,
- **About FLEX4FACT** - Background, Objectives, Concept, Impact,
- **Consortium** - Short descriptions of the project partners, their contribution to the project and contact information,
- **Pilots** - Company description, use case information, challenges, and benefits,
- **News & events** – News about the project,
- **Resources** – Public deliverables, communication materials,
- **Contact details and newsletter subscription.**

The website will be administrated and maintained by project partner SIG and will be updated on a regular basis with latest results and news concerning the project. Additionally, it will be maintained for at least 2 years after the project. Moreover, the website offers the possibility for visitors to subscribe to the newsletter, to follow the project's Twitter and LinkedIn accounts, and to contact the website administrator (SIG) via a dedicated email address flex4fact@steinbeis-europa.de.

The main target audience of the website are industrial stakeholders and research organisations working on projects and topics related to the flexibilization of industry and, to a lesser extent, people interested in these topics in general. The expected key performance indicator (KPI) for this channel is 500 visits per month, 20% returning visitor rate and 50 downloads/months once public reports are uploaded.

Social media channels (LinkedIn, Twitter)

Social media channels have become an effective way to expand reach and foster stakeholder engagement and interactive communication. Two social media channels have been set up in September 2022 (M4) to support the FLEX4FACT communication and dissemination activities:

- LinkedIn (@Flex4Fact Project): LinkedIn profile
- Twitter (@Flex4Fact): Twitter profile

The accounts are managed by project partner SIG. They will regularly publish general information on the project, participation in events, updates on the project advancement, etc. The consortium will support SIG and provide inputs. Moreover, all partners will contribute to giving the project more visibility via their own channels.

The use of Twitter allows FLEX4FACT to communicate rapidly with a wide audience of engaged users. This platform is an ideal place to share content, connect with similar initiatives, promote events and start lively discussions. As for the current acquisition of Twitter in October 2022, SIG as CDE leader will monitor developments and reserve the right to remove the project from the platform if it is found not to be in line with the general communication and dissemination guidelines of Horizon Europe projects. LinkedIn is used for professional networking and more focused on business-to-business prospects relationships.

The main target audience are stakeholders working on projects and topics related to the flexibilization of the industry, professional networks, similar EU projects, politic decision makers and people interested in these topics in general.

Figure 2 - Screenshot of the FLEX4FACT LinkedIn profile.

Brochure

A project brochure will be created, in order to promote the FLEX4FACT project to a wider audience. The brochure will include an overview of the project, it's technologies and industrial use cases, project partners, links to the website and social media channels etc. It will be distributed during events, conferences and workshops and will be displayed at the partner's offices.

Roll-Up Banner

A roll-up banner will be designed based on the project CI. It will contain a shortened version of the brochure content and is designed to generally target the visitors of conferences and fairs. It serves for promoting the FLEX4FACT project during events, conferences, workshops etc.

Press releases

Press releases will be published online and in printed magazines, highlighting the project achievements and main advances. They will be uploaded to the website, disseminated via the FLEX4FACT social media channels and by each partner via their own channels (own social media, website and mailing lists, local media and press, etc.). In the course of the project, a total of 7 press releases will be published, approximately every 6 months. Since the targeted audience of press releases can vary substantially, the channels suitable for disseminating press releases will be chosen as appropriate to the situation.

Newsletter

E-newsletters will be published every 8-9 months. They will cover main project progress, news from the industrial use cases and upcoming events. Each edition will contain an editorial and four to five articles. The electronic newsletters will be sent via email to the registered recipients. The newsletter will further be uploaded to the website and disseminated via the FLEX4FACT social media channels.

The main target audience of the newsletters are:

- Stakeholders working on projects and topics related to the flexibilization of the industry
- The project partners' networks
- People interested in the topic of flexible industry

General project presentation

A general FLEX4FACT PowerPoint presentation will be created and shared with all partners. Based on the project results, this presentation will be updated regularly. The presentation contains a non-confidential overview of the project, which will be used for dissemination purposes when for instance attending scientific conferences and fairs.

Project video

A project promotional video will be developed and produced within the first 2 years of the project (M24). It will target a broad audience of business stakeholders and general public by explaining the project' technologies, its economic and social benefits through video animations and partners' interviews and include sequences presenting use cases visualizing the actual implementation. This way, the video will raise awareness of FLEX4FACT project, its activities, and efforts to make industry more flexible.

Accessibility of results after the end of the project

Publications and public deliverables will be made available on openAIRE, Zenodo and the project website. On Zenodo, the possibility of creating a FLEX4FACT community where all papers and results of the project are visible together, will be considered.

3.4 PLANNED DISSEMINATION ACTIONS - PUBLICATIONS, EVENTS AND NETWORKING

Numerous dissemination and communication activities will be carried out within the FLEX4FACT project to engage with stakeholders and promote the project's outcomes. In the following sections the different activities are described in more detail.

3.4.1 PUBLICATIONS

To facilitate the uptake of FLEX4FACT's results in research and ensure knowledge and technology transfer FLEX4FACT will publish at least 10 scientific publications. As a first step the partners identified possible publication topics (see following Table 3). This table will be refined and updated during the project duration, as the project partners achieve results and have more precise plans regarding their planned publications. SIG will upload publications in openAIRE, the online repository Zenodo and on the project public website.

Table 3 – Possible publication topics identified by the project partners.

PARTNER	POTENTIAL TOPICS
Evolvere, SINTEF Energy	Electricity market regulations, definition of flexibility in the FLEX4FACT context
SINTEF Energy	Energy systems modelling, renewable energy integration, capacity expansion optimisation, energy flexibility
UCC	Process mapping, Design Structure Matrix (DSM)
UPC	Algorithms for scheduling production – Algorithms for flexibility offers – Aggregation algorithms
RWTH	Excess energy use, energy flexibility, building simulation, grey-box modelling, model predictive control, carbon footprint reduction, industry-building synergies
SINTEF MAN	Cyber Physical System Manufacturing, Energy efficiency in Machinery and Architecture for Manufacturing
HSAS	Digital Twin modelling, European balancing power markets
ITAINNOVA, IFE	Digital Twin modelling for manufacturing process, Energy Digital Twin

A list of scientific journals that support open access publication is given in the following table. This list of potential journals for FLEX4FACT project publications was gathered through the communication and dissemination survey filled out by the project partners.

Table 4 – List of potential open-access publication platforms to be used for FLEX4FACT' publications

NAME OF JOURNAL	EDITOR	AREA(S) OF INTEREST
Open Research Europe Weblink	European Commission	All
IEEE Open Access Journal of Power and Energy Weblink	IEEE journals	Renewables

IEEE Transactions on Smart Grid Weblink	IEEE journals	Smart grids
European Journal of Operational Research Weblink	Elsevier	Methodology of operational research and the practice of decision making
Renewable Energy Weblink	Elsevier	Renewables
Energies Weblink	MDPI	Renewables
Renewable and Sustainable Energy Reviews Weblink	Elsevier	Renewable and Sustainable Energy
Energy Weblink	Elsevier	Energy engineering and research
Applied Energy Weblink	Elsevier	Energy
Frontiers in Energy Research Weblink	Frontiers	Energy
Procedia CIRP Weblink	CIRP	high quality proceedings from CIRP conferences
Mathematical Methods of Operations Research Weblink	Springer	mathematics, statistics, and computer science
Expert System with Applications Weblink	Elsevier	expert and intelligent systems applied in industry, government, and universities worldwide
International Journal of Production Research Weblink	Taylor & Francis	manufacturing, industrial engineering, operations research and management science
Computer Methods in Applied	Elsevier	mathematical models, variational

Mechanics and Engineering Weblink		formulations, and numerical algorithms
Robotics and Computer-Integrated Manufacturing Weblink	Elsevier	machining processes, modelling and simulation, supply chain management, and resource optimisation

3.4.2 INTERNATIONAL CONFERENCES AND FAIRS

Together with the publication of results in scientific and industrial publications, the visit of international conferences and fairs will be a crucial lever to disseminate the project' findings to a scientific and technical audience. This way, the partners will facilitate the market uptake of the FLEX4FACT solutions, connect with stakeholders, enhance knowledge transfer and exploit synergies with other EU & international projects. Partners of the F4F project plan to participate in at least ten exhibitions, scientific conferences, workshops or industrial events. Scientific conferences will offer a further opportunity for partners to present results in the form of papers and posters.

The following table lists events, relevant to the FLEX4FACT topics, that project partners plan to attend to dissemination results and connect with the main target groups.

Table 5 – List of events with potential participation/contribution of FLEX4FACT.

EVENT NAME, DATE AND LOCATION	DESCRIPTION FROM WEBSITE	WEBSITE
ENLIT Europe 29 Nov – 1 Dec 2022 Frankfurt, Germany	Enlit is a constantly growing, inclusive and end-to-end forum that addresses every aspect of the energy agenda.	Weblink
ICORES 2023 19-21 Feb 2023 Lisbon, Portugal	Bringing together researchers, engineers, faculty, and practitioners interested in both theoretical advances and practical applications in the field of operations research.	Weblink
World Sustainable Energy Days 28 Feb – 3 Mar 2023 Wels, Austria	The annual conference is a leading event on the energy transition and climate neutrality with over 650 participants from over 60 countries.	Weblink
Energy Storage World Forum	Evaluating Energy Storage for large scale, C&I and microgrid at the economic and technical level.	Weblink

May 2023 Berlin, Germany		
ETG Kongress 03-04 May 2023 Wuppertal, Germany	Regulatory framework and business models for the energy transition, digitalisation of the energy transition, components and technologies for the energy transition, sector coupling and electromobility, projects and applications)	Weblink
All-Energy Exhibition and Conference 10-11 May 2023 Glasgow, Scottland	Connect suppliers of renewable and low carbon energy solutions and policy makers to developers, investors, buyers and a number of professionals from around the world, facilitating business and knowledge exchange.	Weblink
E-World – energy & water 23-25 May 2023 Essen, Germany	Information platform for the energy sector, gathering international decision makers.	Weblink
The Smarter Europe 14-16 June 2023 Munich, Germany	The focus is on renewable energies, decentralization and digitalization of the energy industry as well as cross-sector solutions from the electricity, heat and transport sectors.	Weblink
IBPSA conference 4-6 Sep 2023 Shanghai, China	Strategy and techniques toward the carbon neutralization; energy transition for smart metropolis; performance driven building design; system operation with big data; simulation techniques and software development; indoor environment and human behavior; the renaissance of cultural heritage.	Weblink
Smart Energy Systems International Conference 12-13 Sep 2023 Copenhagen, Denmark	Presenting and discussing scientific findings and industrial experiences related to the subject of Smart Energy Systems based on renewable energy, District Heating Technologies, e-fuels and energy efficiency.	Weblink
CISBAT 2023 13-15 Sep 2023 Lausanne, Switzerland	OPERATION - energy management, efficiency, control WELL-BEING - comfort, health, indoor environment CIRCULARITY - materials, embodied energy, construction	Weblink
Metering Days 2023	Smart metering technologies and the national rollout	Weblink

17-18 Oct 2023 Fulda, Germany	plans.	
CIRP CMS 2023 24-26 Oct 2023 Cape Town, South Africa	Manufacturing in an age of disruption	Weblink
IEEE PES ISGT 23-26 Oct 2023 TBD	Powering solutions for decarbonized and resilient future smartgrids.	Weblink
Sustainable Places Conferences TBD	Platform for the dissemination of research, the organisation of workshops, EU project clustering and networking with regard to technology transfer, renewable energy integration and energy security.	Weblink
European Sustainable Energy Week TBD	The European Sustainable Energy Week (EUSEW) focussing on the REPowerEU plan, digitalisation, energy efficiency and a fair energy transition for all.	Weblink
Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES) 24 – 29 Sep 2023 Dubrovnik, Croatia	Advancement and dissemination of knowledge on methods, policies and technologies for increasing the sustainability of development by de-coupling growth from the use of natural resources and by a transition to a knowledge-based economy.	Weblink

3.4.3 SHOWCASE EVENTS TOGETHER WITH USE CASE PARTNERS

Three showcase events, one per project year, will be organized together with use cases INAVENTA, BARNA STEEL SA and SEACSUB SPA to demonstrate the feasibility of the FLEX4FACT solution to relevant stakeholders to promote the project and boost market uptake:

1. Introductory workshop organized by BARNA in Spain,
2. Business stakeholder workshop organized by INAVENTA in Norway,
3. Forum on flexibility and demand response in the energy domain organized by START4.0 and SEAC in Italy.

These events will combine site visits and workshops related to topics of the project. They are intended to build a community of followers around the project and help the project partners to connect

with potential end users of the FLEX4FACT solutions.

3.4.4 SYNERGIES/INTERACTIONS WITH OTHER PROJECTS AND INITIATIVES

Projects under the same call often share goals and aim at similar audiences. Connecting and clustering with likeminded beneficiaries, e.g. by following their social media channels, can attract each other's followers, enlarging the community of interested individuals and organisations.

FLEX4FACT aims to implement fifteen dissemination actions to actively build synergies with and share knowledge with similar R&D projects and networks/clusters (e.g. A.Spire, EFFRA, Spanish rubber cluster, Norwegian Solar Energy Cluster).

Possible synergies are:

- Exchange of knowledge though workshops and participation in EU networks,
- Build on experience gained during the implementation of the projects,
- Joint communication activities (e.g. common participation in events and joint presentations/workshops, common newsletter articles, etc.),
- Cross-feeding of social media channels.

EU projects identified for collaboration are listed in the following table.

Table 6 - List of projects with suitable for building synergies.

PROJECT	PROGRAM	SHORT DESCRIPTION
TRINEFLEX Weblink	HORIZON.2.4 – Digital, Industry and Space	Transformation of energy intensive process industries through integration of energy, process, and feedstock flexibility.
FLEXIndustries Weblink	HORIZON.2.4 – Digital, Industry and Space	Digitally enabled flexible Industries for reliable energy grids under high penetration of Variable Renewable Energy Sources
s-X-AIPI Weblink	HORIZON.2.4 – Digital, Industry and Space	self-X Artificial Intelligence for European Process Industry digital transformation
CONVERGING Weblink	HORIZON.2.4 – Digital, Industry and Space	Social industrial collaborative environments integrating AI, Big Data and Robotics for smart manufacturing
Circular TwAIn Weblink	HORIZON.2.4 – Digital, Industry and Space	AI Platform for Integrated Sustainable and Circular Manufacturing
RE4DY	HORIZON.2.4 –	European Data as a Product Value

Weblink	Digital, Industry and Space	Ecosystems for Resilient Factory 4.0 Product and Production Continuity and Sustainability
STAND4EU Weblink	HORIZON.2.4 - Digital, Industry and Space	Boosting the Exploitation of Standardisation Inputs from European Projects
DENIM Weblink	H2020-EU.2.1.5. – Industrial leadership	Digital intelligence for collaborative Energy management in Manufacturing
BD4OPEM Weblink	H2020-EU.2.1.1. – Industrial leadership	Big Data for OPen innovation Energy Marketplace
FEVER Weblink	H2020-EU.3.3 – Societal challenges	Flexible Energy Production, Demand and Storage-based Virtual Power Plants for Electricity Markets and Resilient DSO Operation

Networks and clusters for possible collaborations identified by the consortium are listed in the following table.

Table 7 - Networks and clusters identified by the project partners for possible collaborations.

NETWORK/CLUSTER	SHORT DESCRIPTION
Processes4Planet Weblink	The Processes4Planet (P4Planet) Partnership aim is to transform the European process industries to achieve circularity and overall climate neutrality at the EU level by 2050 while enhancing their global competitiveness. CELSA participates in the working group on energy (see next section for further information).
EFFRA Weblink	The European Factories of the Future Research Association (EFFRA) is a non-for-profit, industry-driven association promoting the development of new and innovative production technologies.
NCP4Industry Weblink	European Network of HE Cluster 4 Industry National Contact Points
IEA	The IEA is the global authority for energy efficiency data,

Weblink	analysis and policy advice.

3.4.5 CONTRIBUTIONS TO PROCESSES4PLANET AND FURTHER PARTNERSHIPS

The Processes4Planet (P4Planet) Partnership[9] is a co-programmed EU public-private partnership implemented as part of the Horizon Europe programme. It aims to transform the European process industries to achieve circularity and overall climate neutrality at the EU level by 2050 while enhancing their global competitiveness. It has three objectives: 1. Developing and deploying climate neutral solutions, 2. Closing the energy and feedstock loops and 3. Achieving global leadership in climate-neutral and circular solutions, accelerating innovation and unlocking public and private investment.

P4Planet established six permanent working groups dedicated to several topics such as: energy, resources and circularity, process optimisation and CCU, framework conditions, industrial symbiosis/Hubs4Circularity and societal innovation. SIG and CELSA are partners of the partnership and seek to regularly participate in working group meetings and P4Planet events to promote the latest results of FLEX4FACT.

Collaborations with further EU networks and initiatives will be strengthened: partner SINTEF manufacturing will participate in activities of the European Factories of the Future Research Association (EFFRA) is a non-for-profit, industry-driven association promoting the development of new and innovative production technologies[10]. BARNA STEEL is member of ESSA[11], the European Steel Skills Agenda, a partnership aiming at the identification of skill needs and demands for building appropriate training and curricula and development and promotion of successful sectoral recruitment and upskilling schemes. BARNA will continue working together with ESSA and share findings related to the FLEX4FACT project, while partner SPS will actively contribute to the activities of the Spanish rubber cluster.

3.4.6 FLEX4FACT'S ADVISORY COMMITTEE (AC)

An Advisory Committee (AC) will be formed to provide regular feedback and support the dissemination activities of the project. Several workshops will be organised together with the members of the AC throughout the project to discuss progress of FLEX4FACT and collect feedback from potential future end users of the developed solutions. The formation of this committee and coordination of activities will be managed by partner START4.0.

3.4.7 PUBLICATION OF A PROJECT GUIDEBOOK

The project guidebook will be one of the most important dissemination tools of FLEX4FACT. This guidebook will contain a short presentation of challenges faced by the industrial sector in EU, a

[9] Aspire, official website, visited on 07.11.2022, https://www.aspire2050.eu/p4planet/about-p4planet
[10] EFFRA, official website, visited on 07.11.2022, https://www.effra.eu/effra
[11] ESSA, official website, visited on 07.11.2022, https://www.estep.eu/essa/

detailed presentation of key exploitable results of FLEX4FACT, and a description of newly produced training materials. This guidebook will be written in an easy and accessible way to be suitable for as many target groups as possible. It will be made available to the general public for download on the project webpage and a few printed copies will be handed to project partners to foster the uptake of results.

3.5 STAKEHOLDER OUTREACH

The following matrix provides a rough overview of which communication and dissemination tools and channels are suitable for reaching the main target groups. The overall aim of this matrix is to tailor the communication and dissemination activities to the main target groups in order to maximize the impact of the communication and dissemination activities. The table contains crosses and crosses in brackets indicating for which target groups the tools and channels are most suitable: a cross indicates that a media is suitable for a target group while a cross in brackets indicates that the content of the media is only partially suitable for a target group. This table shows, for example, that the website is a communication and dissemination channel providing information in an easy and accessible way adapted to all target groups, while demonstration events and scientific publications are suitable only for a limited audience having already first knowledge of energy and industry related topics.

Table 8 - Matrix of communication and dissemination tools and channels tailored to the target groups.

	END USERS	ENERGY PROVIDERS, DSO	SOLUTION PROVIDERS	EU RESEARCH COMMUNITY	TECHNOLOGICAL EXPERT GROUPS	PUBLIC AUTHORITIES	INVESTORS	GENERAL PUBLIC
Website	X	X	X	X	X	X	X	X
Social media	X	X	X	(X)	(X)	X	X	X
Brochure	X	X	X	(X)	(X)	(X)	(X)	X
Roll-Up	X	X	X	(X)	(X)	(X)	(X)	(X)
Newsletter	X	X	X	(X)	(X)	(X)	(X)	X
Press release	X	X	X	(X)	(X)	(X)	(X)	X
Networking	X	X	X	X	X	X	X	(X)

activities								
Conferences and Fairs	(X)	(X)	(X)	X	X	(X)	(X)	
Scientific publications	(X)	(X)	(X)	X	X	(X)	(X)	
Showcase events	X	X	X			(X)	(X)	
Project guidebook	X	X	X	X	X	X	X	X

3.6 AGENDA OF PLANNED ACTIVITES

The communication and dissemination activities planned by the FLEX4FACT consortium until the end of the project are detailed in the following table. The list will be further refined and completed in the course of the project.

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Table 9 - Communication and dissemination activities planned by the FLEX4FACT consortium.

TITLE	PLANNED DATE	INVOLVED PARTNERS	DESCRIPTION AND ACTION POINTS
Launch of the Website	M9	SIG + all partners	Project website will be published.
Continuous updates of website	M9-M42	SIG + all partners	Upload of communication and dissemination Materials (brochure, public deliverables, newsletters, press releases). Write and publish news articles on project advancement, participation to events, etc.
Continuous posts on social media channels (LinkedIn + Twitter)	M3-M42	SIG + all partners	Communication of non-sensitive information about the project and its progress to raise awareness amongst targeted audiences.
Publication of press releases	M1-M42	SIG + all partners	A minimum of 7 press releases will be prepared in the course of the project.
Publication of newsletters	M1-M42	SIG + all partners	E-newsletters will be published every 8-9 months.

Showcase event N°1	Between M6–M18	BARNA, Spain	Introductory workshop
Publication of project video	M24	SIG + all partners	A project video will be released in M24.
Showcase event N°2	Between M18–M30	INAVENTA, Norway	Business stakeholder workshop
Showcase event N°3	Between M30–M42	START4.0 and SEAC, Italy	Forum on flexibility and demand response in the energy domain
Final conference/event	M42	SINTEF	Final event to present the main results and network with the main target groups to support exploitation and uptake of results

4 MONITORING AND EVALUATION OF COMMUNICATION AND DISSEMINATION ACTIVITIES

The results of the communication and dissemination strategy will be constantly monitored in order to assess its effectiveness and the general progress and make changes where necessary. A mid-term evaluation of the strategy will be carried out and the CDE plan will be adapted to consider changes. To monitor communication and dissemination activities, Key Performance Indicators (KPIs) have been identified and defined.

4.1 KEY PERFORMANCE INDICATORS AS TOOLS FOR MONITORING OF COMMUNICATION AND DISSEMINATION ACTIVITIES

WEBSITE	KPI 1: visits per month KPI 2: returning visitor rate KPI 3: downloads per month

In order to keep track of the website activities, web analytics will be installed. The expected KPI's are: 500 visits per month, 20% returning visitor rate and 50 downloads/months once reports are uploaded. This will be tracked monthly.

SOCIAL MEDIA ACCOUNTS	KPI 4: number of followers KPI 5: number of posts KPI 6: number of post interactions KPI 7: number of people reached/post

To get an overview of the social media activities, the number of followers, the number of tweets, the number of post interactions and the number of people reached per post are monitored.

The following table shows the social media activities since the implementation of the social media accounts in M3 up until M6 (25.11.2022). It appears that the number of followers and post impressions achieved via LinkedIn was significantly higher than those achieved via Twitter.

MONTH	LINKEDIN				TWITTER			
	N° Followers	N° posts	N° post impressions	N° people	N° Followers	N° Tweets	N° Post impressions	N° people

				reached / post				reached / post
M6	74	5	5,187	1,037	38	5	1,155	231

The numbers will be tracked over the course of the project with the aim to further increase the number of followers and people reached. This will be achieved by constantly posting and interacting with people and other accounts.

NEWSLETTER	KPI 8: Number of newsletters issued KPI 9: Number of newsletter subscribers

Within the project 5 newsletters will be issued every 8-9 months. The newsletters are promoted through the social media channels, the website and by partners. To monitor the performance of the FLEX4FACT outreach activities, the number of subscribers to the newsletters will be tracked.

NEWSLETTER	DUE DATE	TOPICS	PUBLISHED	SUBSCRIBERS
N°1	M8		-	
N°2	M16		-	
N°3	M24		-	
N°4	M32		-	
N°5	M40		-	

PRESS RELEASE	KPI 10: Number of press releases issued

Every 6 months press releases will be published online and in printed magazines. They will be uploaded to the website, disseminated via the FLEX4FACT social media channels and by each partner via their own channels (own social media, website and mailing lists, local media and press, etc.).

The first press release was issued in June 2022(M1). A link to the press release published on the website of project coordinator SINTEF can be found here: Weblink.

BROCHURE	KPI 11: Number of copies distributed

The project brochure will be used to promote the project to a wider audience. It will be distributed during events, conferences and workshops and will be displayed at the partner's offices. To keep track of stakeholders reached through the brochure, the number of copies distributed to the partners will be monitored.

PUBLICATIONS	KPI 12: Number of publications

To keep track of the number of publications published by the partners, they will be monitored here. At least ten scientific open-access publications will be produced.

CONFERENCES AND FAIRS	KPI 13: Number of conferences visited

The partners will participate in and contribute to at least ten exhibitions, scientific conferences, workshops, or industrial events. In order to get an overview over all contributions and participations by the partner, they will be documented here.

NETWORKING ACTIVITIES	KPI 14: Number of networking interactions

FLEX4FACT aims to actively build synergies with and contribute to similar R&D projects and to networks/clusters through at least fifteen dissemination actions. All networking interactions will be documented here.

4.2 KPIS VALUES AT THE END OF THE FIRST REPORTING PERIOD (BY M18)

The following table with updated KPI values presents the results achieved by M18.

Table 10: KPIs to monitor the progress of the communication and dissemination activities

ACTION	CHANNEL	KPIS (OBJECTIVES FOR THE WHOLE PROJECT	ACHIEVED BY M18
COMMUNICATION	**Website**	KPI 1: visits per month (500 visits per months) KPI 2: returning visitor rate (20% returning	The webpage was launched in M9. Between M9 and M18 the website on average had:

	visitor rate) KPI 3: downloads per month (50 downloads/months)	KPI 1: 1021 visits per months KPI 2: 39% returning visitor rate KPI 3: 17 downloads per months
Social Media Accounts	KPI 4: number of followers KPI 5: number of posts KPI 6: number of post interactions KPI 7: number of people reached/post (common objective for all KPIs is to further increase the number of followers and people reached)	KPI 4: 182 followers on LinkedIn, 163 followers on Twitter KPI 5: Average number of posts per month: 3 KPI 6: Average number of post interactions: LinkedIn 74, Twitter 6 KPI 7: Average number of people reached / post: LinkedIn 888, Twitter 91
Newsletter	KPI 8: Number of newsletters issued (5 newsletters will be issued every 8-9 months) KPI 9: Number of newsletter subscribers	2 newsletters issued
Press release	KPI 10: Number of press releases issued (a total of 7 press releases will be published)	2 press releases issued: the first one just after the start of the project and the second one in M15
Brochure	KPI 11: Number of copies distributed (100 copies distributed per	100 flyers in different languages distributed to the

		project partner)	partners at the partners meeting in Trondheim
	Publications	KPI 12: Number of publications (at least 10 scientific open-access publications)	3 submitted publications, but not all were published by M18
	Conferences and fairs	KPI 13: Number of conferences visited (at least 10 participations in conferences and fairs)	FLEX4FACT was presented at 4 events, mostly scientific dissemination events
DISSEMINATION	**Networking activities**	KPI 14: Number of Networking interactions (15 main networking interactions with similar R&D projects and clusters/networks)	6 networking actions so far (1 participation in Process4Planet forum, contacts initiated with the 2 EU projects FLEXIndustries and TRINEFLEX and 3 networks jointed - A. SPIRE, ENGINE Initiative and FlexCommunity)

4.3 LISTS OF MAIN COMMUNICATION AND DISSEMINATION ACTIVITIES PERFORMED

The two following tables show the main communication and dissemination activities conducted during the first project period of FLEX4FACT.

4.3.1 COMMUNICATION ACTIVITIES

Table 11: List of performed communication activities

Communication activity name	Description	Who? Target audience	How? Communication Channel	Outcome	Status
FLEX4FACT Website	FLEX4FACT Project website with general information on the project, resources, news and events etc.	Citizens	Website	Project Website	Ongoing
FLEX4FACT brochure	FLEX4FACT brochure with information about the project. The brochure is distributed by all project partners	Citizens	Print materials (brochure, leaflet, posters, stickers, banners)	2400 project brochures distributed to all project partners	Delivered
FLEX4FACT roll-up	FLEX4FACT Roll-Up with information about the project. This will be used to promote the project at conferences and events.	Research communities	Print materials (brochure, leaflet, posters, stickers, banners)	FLEX4FACT Roll-Up	Delivered
FLEX4FACT social media channels	LinkedIn and Twitter Account informing about news from the project.	Citizens	Social Media	Two social media channels	Ongoing
Blog article on SINTEF website	Blog article on the webiste of project coordinator SINTEF introducing the FLEX4FACT project. Title: Integrating more renewables in the industry energy mix. (05/2022)	Industry, business partners	Website	Project Introduction on SINTEF website	Delivered

Communication activity name	Description	Who? Target audience	How? Communication Channel	Outcome	Status
News article on RWTH website	News article about the project kick-off published on the university website: Kick-off of the Horizon Europe project FLEX4FACT with EBC participation (06/2022)	Research communities	Website	News article on RWTH website	Delivered
1st FLEX4FACT Press Release	1st press release informing about the project kick-off and the project objectives. (06/2022) https://flex4fact.eu/wp-content/uploads/2023/01/1st_Press_release_FLEX4FACT.pdf	Industry, business partners	Press Release	1st FLEX4FACT Press Release informing about the project start	Delivered
FLEX4FACT project page on partner website	Pages dedicated to the FLEX4FACT project on the website of RWTH, SiG, UPC, SINTEF, Start 4.0 and Albsig with general information about the project.	Industry, business partners	Website	Project Pages informing about FLEX4FACT	Delivered
CELSA LinkedIn Post about project participation	LinkedIn post on the participation of CELSA in the FLEX4FACT project. (11/2022)	Industry, business partners	Social Media	LinkedIn post	Delivered

Communication activity name	Description	Who? Target audience	How? Communication Channel	Outcome	Status
CELSA LinkedIn post about the use case visit	LinkedIn Post about the use case visit to the CELSA Barcelona Plant by the FLEX4FACT project partners. (11/2022)	Industry, business partners	Social Media	LinkedIn post	Delivered
Video about Inaventa Use Case visit	Video with Interviews from the Use Case visit at Inaventa Solar by the FLEX4FACT project partners. (12/2022) https://www.youtube.com/watch?v=W65EGBDGnDY&feature=youtu.be	Industry, business partners	Video	Video about Use Case visits	Delivered
News article about the Use Case Visits	News article about the Use Case Visits in Italy, Germany, Spain and Norway published on the RWTH website. (12/2022)	Industry, business partners	Website	News article on RWTH website	Delivered
Article about Sustainable Manufacturing	News article about sustainable manufacturing at Inaventa Solar with mention of the FLEX4FACT project. (03/2023)	Industry, business partners	Website	Website article	Delivered

Communication activity name	Description	Who? Target audience	How? Communication Channel	Outcome	Status
1st FLEX4FACT Newsletter	1st newsletter published with general project information, news about the use case visits etc. (03/2023) https://flex4fact.eu/?mailpoet_router&endpoint=view_in_browser&action=view&data=WzcsIjIyNDc0MTF	Citizens	Newsletter	1st FLEX4FACT newsletter	Delivered
Newsarticle about the General Assembly	News article about the General Assembly in Trondheim by RWTH, Itainnova and Standard Profil	civil society	Website	News article	Delivered
Processes4 Planet project forum	Social media post by Start 4.0 about F4F participation to the Processes4Planet project Forum (09/2023)	Industry, business partners	Social Media	LinkedIn Post	Delivered
2nd FLEX4FACT Press Release	2nd Press release with news about the Project progress. This involves the SanFlex Decision Tool, the Digital Twin development etc. The Press release was distributed by all project partners. (08/2023)	Industry, business partners	Press Release	2nd FLEX4FACT press release	Delivered

Communication activity name	Description	Who? Target audience	How? Communication Channel	Outcome	Status
Future Steel Forum	LinkedIn Post by Celsa about the Future Steel Forum acknowleding the participation to the FLEX4FACT project. (09/2023)	Industry, business partners	Social Media	LinkedIn Post	Delivered
Press Release by SINTEF	Press release: Energy Innovation in the European Manufacturing Industry: Highlights from FLEX4FACT's First Year (10/2023)	Industry, business partners	Press Release	Press release by SINTEF	Delivered
Joint Webinar	Social media post about webinar "Unlocking Energy Flexibility for Sustainable Industrial Processes" by IFE. (10/2023)	Industry, business partners	Social Media	LinkedIn Post	Delivered
Roll-Up by Inaventa Solar	Roll-up on Inaventa's R&D activities, incl. FLEX4FACTfor the BYGG REIS DEG 2023 Fair in Norway. (10/2023)	Industry, business partners	Print materials (brochure, leaflet, posters, stickers, banners)	Roll-Up	Delivered

Communication activity name	Description	Who? Target audience	How? Communication Channel	Outcome	Status
ENGINE Newsletter	Participation to the ENGINE Initiative Newsletter with a short text about the joint webinar. (11/2023)	Innovators	Newsletter	Participation to newsletter	Delivered
Newsarticle in Italian	Article about F4F project with overview of interim results based on 2nd Press Release within online magazine by Start 4.0. (10/2023). https://www.bitmat.it/news/flex4fact-la-svolta-nellinnovazione-ene	Innovators	Media article	News Article in Italian	Delivered
2nd FLEX4FACT Newsletter	2nd FLEX4FACT newsletter published with an interview and news about the project. (11/2024)	Innovators	Newsletter	FLEX4FACT Newsletter	Delivered
SET plan	UPC participated to the SET Plan Conference and showcased their projects. A roll-up with information about FLEX4FACT was shown. (11/2023)	Research communities	Event (conference, meeting, workshop etc.)	Roll-Up presentation at Conference	Delivered

4.3.2 DISSEMINATION ACTIVITIES

Table 12: List of performed dissemination activities

Dissemination activity name	What? Type of dissemination activity	Who? Target audience Reached*	Why?Description of the objective(s) with reference to a specific project output	Status of the dissemination activity
Paper presentation at CIO2023	Conferences	•Industry, business partners •Innovators •Research community	Project partner UPC presented two papers showcasing their findings from their work within the FLEX4FACT project (07/2023)	Delivered
Paper presentation at APMS 2023	Conferences	•Industry, business partners •Innovators •Research community	Paper presentation by SINTEF at the APMS Conference in Trondheim. (09/2023)	Delivered
Oral presentation at the SDEWES 2022 conference	Conferences	•Innovators •Research community	ITA presented Standard Profil IS and the proposed Digital Twin	Delivered

Dissemination activity name	What? Type of dissemination activity	Who? Target audience Reached*	Why?Description of the objective(s) with reference to a specific project output	Status of the dissemination activity
Processes4Planet Project Forum	Clustering activities	•Industry, business partners •EU institutions •Research community	SINTEF presented the project at the Processes4Planet Project Forum in Brussels. The forum provided a opportunity to exchange ideas and promote collaboration between projects (09/2023)	Delivered
Joint webinar with TRINEFLEX and FLEXIndustries	Collaboration with EU-funded project	•Industry, business partners •Innovators •EU institutions •Civil society •Research community •Specific enduser communities	FLEX4FACT hosted a webinar together with the EU-projects TRINEFLEX, and FLEXIndustries. The joint webinar focused on energy flexibility in the industrial sector (10/2023)	Delivered
EASN International Conference	Conferences	•Industry, business partners •Innovators •Research community	Oral presentation of the FLEX4FACT project by SINTEF at the International Conference on Innovation in Aviation and Space, discussing about the transition to energy on demand (09/2023)	Delivered

5 EXPLOITATION STRATEGY

FLEX4FACT's exploitation strategy is driven by minimizing the time to market of the FLEX4FACT solutions such as the cluster aggregator platform, to accelerate the flexibility provision by industrial sites and the uptake of renewable energy sources energy intensive industries as fast as possible.

5.1 METHODOLOGY

Several exploitations activities will be performed to ensure that the most promising results are exploited after project end: a series of exploitation workshops will help identify and characterise the main exploitable results, business intelligence activities consisting of patent analysis and technology watch will contribute to have a better understanding of the competitive environment and market trends as well as barriers to future market entry. Detailed business case analysis will be conducted to take into account the variety of technology pathways, the specificities of European energy markets, industry sectors and players that are involved in the deployment of the FLEX4FACT solution. The following figure[12] shows the 6 pillars/steps of IP management in collaborative research projects to be followed by FLEX4FACT. Further information on IP rights management are provided in subchapter 5.3.

Pillar 1 - IP used	• IP needed to implement the project. It includes the pre-existing knowledge and IP of partners (also called background IP).
Pillar 2 - IP created	• Project results (foreground IP). Exploitation workshops will help characterise these results and agree on ownership.
Pillar 3 - IP assessment	• Results will be assessed with regard to readiness and possible use for commercial use though business intelligence activities.
Pillar 4 - IP protection	• Protection may included formal legal rights such as patents, copyrights, database rights and design rights.
Pillar 5 - IP exploitation	• Can start once IP protection and exploitation strategy are defined. May include transfer of IP to third party.
Pillar 6 - IP post project management	• Management of IP agreements and costs and revenues sharing related to exploitation of results.

Figure 3: The six steps of IP management in collaborative Horizon Europe research projects

[12] European Commission, IP management in collaborative Horizon Europe projects, 2021, https://cms.eurice.eu/storage/uploads/news/files/Ip-management-in-collab-horizon-projects.pdf

An internal training on IP will be performed as part of the first exploitation workshop. The main goal of this workshop is to present basic information on exploitation and IP management in Horizon Europe projects so that all partners are aware of the main rules and requirements related to background and foreground IP.

These activities will be complemented by workshops with members of the advisory committee, external stakeholders, and potential end users to validate the project results and assumptions underlying business models.

5.2 PRELIMINARY LIST OF EXPLOITABLE RESULTS

The following table presents a preliminary list of exploitable results of FLEX4FACT. This list will be completed, and the exploitable results will be characterised during the exploitation workshops. It will be described in more depth which exploitation measures will be required to ensure the future uptake of results, how interested parties will have access to results and what are the most promising exploitation pathways for the results. Furthermore, it will be investigated how the results can support the achievements of wider impacts of the European Commission and what are the necessary conditions for a successful exploitation by considering external factors and barriers to remove not directly linked to the project (e.g. regulatory and legal aspects such as new laws, financial and economic aspects such as public funding schemes and competitors).

Table 13: Preliminary list of the main FLEX4FACT' exploitation results

CATEGORY	PROJECT RESULTS	INTENDED EXPLOITATION STRATEGY
All	F4F system reference architecture	Scientific, commercial
Flexibility	Methodology and tools for the flexibilization of manufacturing processes	Scientific, commercial
Renewable energy	Methodology and tools for the integration of renewable energy sources into industrial settings	Scientific, commercial
Industry, IT	Digital twins of industrial sites and associated data collection strategy	Scientific, commercial
Industry, IT	Software to optimize planning and scheduling of manufacturing process	Commercial
All	Aggregation platform - software for managing the flexibility provision of F4F industrial clusters	Commercial

IT	Cyber-security modules and date security solutions of the F4F cloud platform	Commercial
IT	Hardware and software architecture of F4F cloud platform	Commercial
All	Results of techno-economic and life cycle assessments	Scientific

5.3 IP RIGHTS MANAGEMENT PLAN

This section presents the way in which IP rights will be handled in the FLEX4FACT project. Most of the information presented in the following table are extracts from the Grant Agreement – Article 16 on IPR, background and results. The project will follow general recommendations[13] on IP rights management in research projects developed by the IP helpdesk.

Table 14: Rules and obligations regarding IP rights management of the FLEX4FACT project

SCOPE	RULES AND OBLIGATIONS
Access rights to background and results	Access rights for implementing the action Beneficiaries must give each other access to the background and results on a royalty free basis identified as needed for implementing the action. Access rights for exploiting the results The beneficiaries must grant each other access under fair and reasonable conditions, to results needed for exploiting their results. Requests for access must be made, unless agreed otherwise in writing, up to one year after the end of the project.
Ownership of results	Results are owned by the beneficiaries that generate them. Two or more beneficiaries own results jointly if they have jointly generated them.
Protection of results	Beneficiaries must adequately protect their results – for an appropriate period and with appropriate territorial coverage – if protection is possible and justified.
Exploitation of results	Beneficiaries must up to four years after the end of the action use their best efforts to exploit the results directly or have them exploited indirectly by another entity, in particularly through transfer of ownership or licensing.

[13] The European IP helpdesk, Successful valorisation of knowledge and research results in Horizon Europe, 2022, https://op.europa.eu/en/publication-detail/-/publication/ca9e23d5-aa5b-11ec-83e1-01aa75ed71a1/language-en/format-PDF/source-253824310

	If despite a beneficiary's best efforts the results are not exploited after within one year after the end of the project the beneficiaries must use the Horizon Results Platform to find interested parties to exploit the results. If results are incorporated into standards, the beneficiaries must ask the standardisation body to include the funding statement in the standard.
Transfer and licensing of results	<u>Transfer of ownership</u> The beneficiaries may transfer ownership of their results, provided this does not affect compliance with their obligations under the Grant Agreement. The beneficiaries must ensure that their obligations are passed on to the new owner and that this new owner has the obligation to pass them on in any subsequent transfer. Moreover, they must inform the other beneficiaries with access rights of the transfer at least 45 days in advance unless agreed otherwise. <u>Granting licenses</u> The beneficiaries may grant licenses to their results, including on a exclusive basis, provided this does not affect compliance with their obligations. Exclusive licences may be granted only if all the other beneficiaries concerned have waived their access rights.

5.4 PROCEDURES TO SAFEGUARD EXPLOITATION

In addition to the management of IP rights, further measures to safeguard successful exploitation of project results will be implemented. This includes:

- Keeping confidential all data, documents or materials that is identified as sensitive regarding the future exploitation of results: Members of the Advisory Committee will have to sign a non-disclosure agreement and the information and results to be shared with this body will be thoroughly assessed before diffusion to avoid any infringement on partners' IP.
- Assessing and balancing the varying exploitation interests of beneficiaries through exploitation workshops and bilateral discussions to come up with a common strategy in line with the expected impacts and partners' interests,
- Assessing the compatibility of IP management strategy with the project dissemination strategy. It will be key to find the right balance between IP protection for safeguarding the partners' interests and the implementation of open science practices to share cutting-edge knowledge with the EU research community. Beneficiaries may decide not to provide open access to research data if this goes against the beneficiaries' legitimate interests. If so, this will be indicated in the Data Management Plan (see public deliverable 8.2).

5.5 FLEX4FACT'S EXPLOITATION ROADMAP

The exploitation roadmap will be one of the final deliverables summarising all exploitation results of FLEX4FACT (deliverable D7.5 labelled sensitive). This report will contain a short overview of the market of smart and digital manufacturing, key facts on flexibility provision by industrial stakeholders

and integration of renewable sources into industrial settings in EU. Furthermore, it will present the list of key exploitable results including their:

- Description,
- Ownership status (in addition a so-called “Research Ownership List” will be included in the final project report),
- Sector of application and,
- Planned protection measures – if applicable.

6 CONCLUSIONS

The FLEX4FACT project addresses a large variety of stakeholders, from industrial plant operators to public authorities and the general public. Accordingly, the communication and dissemination activities within the project use a broad variety of tools and channels to address all these stakeholders and connect with them. Communication and dissemination activities will aim to further increase stakeholders' interest in the project and to support the uptake of results of the FLEX4FACT project.

This document will serve as a roadmap for the implementation of CDE activities for all partners. It will be regularly updated throughout the project and the activities will be monitored to ensure that objectives are met and be able to adapt the content and planning of activities if it appears that adjustments are necessary.

7 ANNEX

7.1 ANNEX I: QUESTIONNAIRE SENT TO ALL PARTNERS TO COLLECT INPUTS FOR THE COMMUNICATION AND DISSEMINATION STRATEGY

FLEX4FACT comm/diss/ex plan - Questionnaire

Dear partners,

With this questionnaire, we want to collect your feedback regarding planned communication and dissemination activities to be implemented in the course of the project. The answers will help draft the joint communication, dissemination, and exploitation (CDE) strategy (D7.1) intended to maximise the impacts of the project.

We would be very happy if you could take 10 to 15 minutes to fill this survey. The more information you provide the easier for us to draft a comprehensive CDE plan. Thanks in advance for your support!

Many thanks,

Karoline and Paul from SIG

General information

Question 1. Please provide your contact details (name and email address) and the name of your company.

Target Groups

Target groups are stakeholders interested in the results of the project and whom F4F wants to reach out to ensure knowledge transfer and future exploitation of results.

As a reminder the main target groups of F4F are:

1. End users - industrial plant operators. Role - these are the future users of F4F solutions
2. Energy provider, distribution system operator. Role - sell energy and prevent grid congestion by activating flexibility
3. Solutions provider - energy and digital solutions (software and hardware). Role - develop and sell solutions best adapted to industrial site operators
4. EU research community. Role - support EU leadership and foster innovation in digitisation and energy flexibility
5. Technological expert groups, EU working groups, standardisation bodies. Role - advance

standards, leverage funding

6. Public authorities. Role - adopt new rules, adapt legal frameworks, support roll-up of solutions

7. Investors. Role - invest money to accelerate the market entry of green innovations and make long-term gains

8. General Public. Main interests - be informed about latest technological trends and solutions aining at reducing emissions from industry such as those developed in F4F

Question 2. Are there other important target groups - not considered in the list above - that should be included in our CDE strategy, due to their importance regarding the achievement of project impacts?

Question 3. Can you give us some examples of organisations/stakeholders you know that belong to target group 2 - Energy providers, distribution system operators? (preferably organisations with which you or your organisation is in contact)

Question 4. Can you give us some examples of organisations/stakeholders you know that belong to target group 4 - EU research community? (preferably organisations with which you or your organisation is in contact)

Question 5. Can you give us some examples of organisations/stakeholders you know that belong to target group 5 - technological expert groups, EU working groups, standardisation bodies? (preferably organisations with which you or your organisation is in contact)

General information

1.Please provide your contact details (name and email address) and the name of your company.

Open Science Dissemination

Open science is the movement to make scientific research (including publications, data, physical samples, and software) and its dissemination accessible to all. It encompasses practices such as publishing open research, campaigning for open access, encouraging scientists to practice open-notebook science.

Open science is at the heart of Horizon Europe strategy regarding the dissemination of research results.

Note: Not all results to be produced by the project shall be disseminated in an open science manner. One of the objectives of the exploitation activities will be to find the right balance between IP protection for safeguarding the partners' exploitation interests and the implementation of open science practices for sharing cutting edge knowledge with the EU research community..

Question 6. Will your organisation produce data or tools to be shared with the public / EU

community?

If yes, please specify:

- What kind of data or tool will you produce (broad topic)?
- What online repository do you plan to use?
- In which year, approximately, will the results be produced and shared?

Question 7. Is your organization planning to publish a scientific publication?

If yes, please specify:

- What will be the (broad) topic of the publication?
- Name 2-3 scientific journals you could publish it in.
- In which year, approximately, will the publication be issued?

Participation in conferences/fairs and networking with similar projects/initiatives

Results should be disseminated to the main target groups by presenting them at industrial fairs or conferences. Collaborations with similar projects, networks and initiatives should be strengthened

Question 8. Do you plan to participate in any industrial fairs or conferences?

If yes, please specify:

- Fairs/Conferences on which topic would you visit?
- Name 2-3 examples of fairs/conferences you would like to visit. (in your country, in EU, worldwide) and indicate in which year it is expected to take place

Question 9. Do you know other projects (national, European, international) with a similar topic, with which FLEX4FACT could interact/share knowledge with? Please also specify the type of cooperation/synergy possible.

Question 10. Do you know other initiatives/working groups/networks that focus on the same topic, with which FLEX4FACT could interact/share knowledge with? Please also specify the type of cooperation/synergy possible.

General remarks

Question 11. Do you have any other ideas or remarks regarding the FLEX4FACT communication and dissemination strategy?

7.2 ANNEX II: FIRST PRESS RELEASE OF FLEX4FACT

Brussels, June 30th, 2022

European project FLEX4FACT: FACILITATING THE PROVISION OF FLEXIBILITY SERVICES FROM INDUSTRIAL LOADS TO BOOST INTEGRATION OF RENEWABLE SOURCES IN THE EU

Horizon Europe project FLEX4FACT has just started

The FLEX4FACT project officially started on June 1st 2022 and will run for 42 months. A hybrid kick-off meeting held on June 16th and 17th brought together 23 organisations from 5 European countries representing the consortium. During the meeting, partners had the opportunity to introduce their competences and skills and to discuss and validate an action plan for the upcoming weeks and months of the project. With the successful launch, the partners can now start implementing the project.

FLEX4FACT Kick-off meeting, 16-17 June 2022 (Barcelona, Universitat Politècnica de Cataluna)

An end-to-end solution for industrial sites and stakeholders

FLEX4FACT aims to make industrial sites and processes more flexible through digitisation, automation, and smart control systems. It will support industrial stakeholders seeking to integrate more renewable sources into their industrial energy systems and to provide flexibility to the electrical systems via demand response measures. FLEX4FACT will develop an end-to-end solution made of 1. tools supporting the definition of pathways for increased renewable penetration in industrial sites, 2. digital twins of 5 different industrial sites based on real use cases from the industrial partners of FLEX4FACT, 3. a module for manufacturing process planning & control and 4. a cloud platform allowing industrial sites to participate in the ancillary energy market. Cutting-edge technologies including edge computing, AI and machine learning will be deployed to optimise the energy management of industrial sites. All solutions will be developed in a modular way to allow for easy replication and upscaling in the EU.

Boosting the digital and energy transformation of the EU industry

The developed tools and knowledge are expected to accelerate the digital and energy transformation of the industrial sector in Europe and support the uptake of new renewable sources in the EU power grid. Industrial partners will be able to reduce their dependence on fossil fuels, reduce energy costs and switch to renewable sources, while generating additional revenues through the provision of flexibility services. This will increase the competitiveness of the EU industry. Additionally,

FLEX4FACT will help secure the EU leadership in research and innovation in the cyber-physical transformation of manufacturing, leading to the creation of a skilled workforce. Furthermore, the project supports the EU Green Deal through reduction of GHG emissions and creation of conditions for more liveable industrial cities.

The FLEX4FACT project in short

The project, coordinated by SINTEF Manufacturing AS, started in June 2022 and will run until November 2025. It consists of 23 partners from Norway, Spain, Germany, Italy and Ireland:

Sintef Manufacturing AS, Sintef Industry AS, Sintef Energy AS, CITCEA-UPC and DOPS from Universitat Politècnica de Catalunya, Instituto tecnologico de Aragon, Steinbeis-Europa-Zentrum, Evolvere SPA societa benefit, Aingura IIOT SL, Ikergune, We Plus S.p.a., Centro di competenza Start 4.0, Standard profil Spain SA, Inaventa solar AS, Seacsub SPA, Barna Steel SA, University College Cork, Capgemini Engineering, Fachhochschule Albstadt-Sigmaringen, Institutt for energiteknikk, Rheinisch-Westfaelische technische Hochschule Aachen, Stam SRL, Sener ingeniera and sistemas SA and Theben AG.

FLEX4FACT is receiving funding from the European Union's Horizon Europe research and innovation programme under grant agreement 101058657. The European Commission is co-funding the project with nearly € 18 million.

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