



**Fuel Recycle and Experimentally Demonstrated
Manufacturing of Advanced Nuclear Solutions for Safety
Project Number: 101060800**



DELIVERABLE D6.6

Communication Package

Lead Beneficiary: EVALION

Due date: 28/02/2023

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For the Lead Beneficiary	Reviewed by Work package Leader	Approved by Coordinator
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Start date of project:

01/09/22

Duration: **48 Months**

Project Coordinator:

Christian Ekberg

Project Coordinator Organization:

CHALMERS

Version: 1.1

Dissemination Level	
PU	Public
RE	Restricted (specify to which group)
SEN	Sensitive

Version control table

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1.0	27/02/2023	J. Peroutková, P. Kořán	Draft and AMO check
1.1	28/02/2023	Ch. Ekberg	Coordinator's check, revision and approval

Project information

Project full title:	Fuel Recycle and Experimentally Demonstrated Manufacturing of Advanced Nuclear Solutions for Safety
Acronym:	FREDMANS
Funding scheme:	RIA
ECGA number:	101060800
Call/topic	HORIZON-EURATOM-2021-NRT-01-02
Coordinator:	Chalmers University of Technology – Christian Ekberg
EC Project Officer:	Renata Bachorzcyk-Nagy
Start date – End date:	01/09/22 – 31/08/26 i.e. 48 months
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EXECUTIVE SUMMARY

The main purpose of the FREDMANS Communication Package is to ensure a unified visibility and presentation of the project main messages, activities and outputs. It comprises the project website, generic presentation, leaflet, poster, and visual identity templates.

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1 INTRODUCTION

The FREDMANS Communication Package comprise the project website, generic presentation, leaflet, poster, and visual identity templates. The main purpose of the Communication Package is to unify the main message of the project and the visibility of the FREDMANS activities and outputs. It has been prepared in cooperation with all partners. The website has been prepared and administered by ENEN. The graphical part was assured by EVALION.

2 VISUAL IDENTITY

The common feature of all the FREDMANS communication materials is the logo that is shown in the Figure 1.

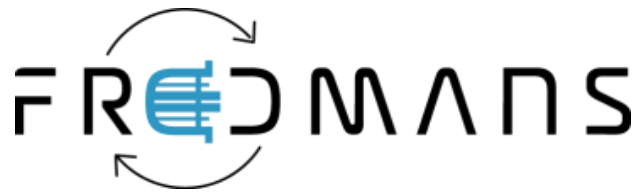


Figure 1 FREDMANS's logo

The project logo is to be used on all the materials that are communicated outside the project to all target groups for promotion and communication that has been described in the Deliverable 6.5 Communication and Dissemination Plan. Concerning the usage of the logo, the EU rules for communication and dissemination are to be observed. In particular, the acknowledgment of EU fundings via the EU logo (see Figure 2) is to be used and the disclaimer:

“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.”



Figure 2 EU logo for acknowledgement of EU funding

When communicating the FREDMANS project, either of the following communication materials or combination should be used matching the occasion more accurately: project generic presentation, flyer, poster, project website, template pptx or docx.

2.1 Project Website

The project website has been created and administered by ENEN and can be accessed through the following link: <https://enen.eu/index.php/portfolio/fredmans-project/> . On this website the main information on the project (description, organization of the work, consortium etc.) as well as news and opportunities provided via the Travel Fund are shown.



DESCRIPTION of the FREDMANS Project

FREDMANS aims to increase safety and efficiency in both nuclear power production as well as the recycling of spent fuel.

Changing from oxide fuel to a more fissile-dense material with higher thermal conductivity can enhance both safety of operation and the economic impact of nuclear power.

At the same time, a transition to a greener society with respect to both the generation and usage of electricity will drastically increase the consumption of finite materials.

Generation is predicted to increase by 16-20 times, in particular as electrification replaces the direct use of fossil fuels for heating and transportation.

Figure 3 FREDMANS project website

2.2 Flyer and Poster

In cooperation with all partners, the project poster and flyer have been prepared and graphically elaborated. These materials will be stored on the project SharePoint in the folder [Promotion materials](#), and, thus, accessible for all project partners.

LIST OF THE PARTNERS

- 1 Coordinator: CHALMERS TEKNISKA HOGSKOLA AB (CHALMERS), Sweden
- 2 EVALION s.r.o. (EVALION), Czech Republic
- 3 KUNGLIGA TEKNISKA HOEGSKOLAN (KTH), Sweden
- 4 BLYKALLA REAKTORER STOCKHOLM AB (LeadCold), Sweden
- 5 REGIA AUTONOMA TEHNOLOGII PENTRU ENERGIA NUCLEARA (RATEN), Romania
- 6 EUROPEAN NUCLEAR EDUCATION NETWORK (ENEN), Belgium
- 7 AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE (ENEA), Italy
- 8 ANSALDO NUCLEARE SPA (ANN), Italy
- 9 ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE (CTU), Czech Republic
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- 11 WESTINGHOUSE ELECTRIC SWEDEN AB (WESTINGHOUSE), Sweden
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- 14 FONDAZIONE ARIA (FONDAZIONE ARIA), Italy
- 15 JOINT RESEARCH CENTRE - EUROPEAN COMMISSION (JRC), Belgium
- 16 PAUL SCHERRER INSTITUT (PSI), Switzerland
- 17 NATIONAL NUCLEAR LABORATORY LIMITED (NNL), United Kingdom

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Christian Ekberg, che@chalmers.se

Project duration:
September 2022 – August 2026

Project Website:
<https://enen.eu/index.php/portfolio/fredmans-project/>

FREDMANS |
Fuel Recycle
and Experimentally
Demonstrated
Manufacturing
of Advanced Nuclear
Solutions for Safety

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The FREDMANS project aims to **increase safety and efficiency** in both nuclear power production as well as the recycling of spent fuel. Changing from oxide fuel to a more fissile dense material with higher thermal conductivity can enhance both safety of operation and the economic impact of nuclear power. At the same time, a transition to a greener society with respect to both the generation and usage of electricity will drastically increase consumption of finite materials. Electricity generation is predicted to increase by 16–20 times, in particular as electrification replaces the direct use of fossil fuels for heating and transportation. The nuclear industry can mitigate their part of the resource use through the recycling of spent nuclear fuel. This can enhance the actual power output by about 100 times. However, today there has been no full industrial demonstration of the complete recycling of nuclear fuel, although one time recycling, including of plutonium, has been used on large scale for many years e.g., in France.

Among the advanced nuclear fuels, the nitrides are selected in FREDMANS as a model fuel. Especially for nitrides it may be more energy efficient and economically advantageous to recycle not only the fissile material, but also the required isotopically enriched N-15 that is otherwise currently a costly raw material. Advanced manufacturing methods such as **3D printing of fuels** as well as **beyond state of the art recycling techniques** will be investigated. The project sets objectives that address the overall goals of the SET plan, SNETP and EERA JPNM SRA to answer the specific aims relating to the safety of advanced fuels and their recyclability. **We will prove that advanced fuels are a viable option** for industrial use that can enhance the safety, sustainability and economics of nuclear power operation.

MAIN OBJECTIVE

Based on the need to advance knowledge through a well-founded science-based approach focusing on **increased safety, applicability and recyclability of advanced fuel types**, the FREDMANS project will create a foundation for greater industrial maturity of these fuels. The underpinning idea is that even if these fuels have superior behaviour in-reactor, they cannot be effective for a sustainable Gen IV fuel cycle unless their recyclability is proven and preferably can be integrated with existing or similar future separation systems. The model fuel used will be the nitrides since it is one of the more complex fuel chemistries suggested.

Therefore, the FREDMANS project's main objective is to provide a structured R&D framework integrating the research on advanced fuel fabrication and reprocessing issues, together with addressing the associated different waste fractions and the industrial application of the results. In pursuit of this aim, FREDMANS will focus on the following pillars for the selected fuel types:

- Dissolution (of irradiated and unirradiated fuel)
- Conversion (from solution to a solid precursor)
- Fabrication (microspheres and pellets using advanced techniques such as additive manufacturing and spark plasma sintering)
- Handling of the waste from the above processes
- Safety of the selected processes.

FREDMANS METHODOLOGY

Most of the work performed in FREDMANS are experimental work. This means that in this project we actively contribute to keep the experience and knowledge about handling substantial amounts of radioactive material active in Europe. The added value is that we automatically transfer knowledge in this field to younger co-workers and students in a world where modelling takes more and more precedence.

ORGANIZATION OF THE WORK

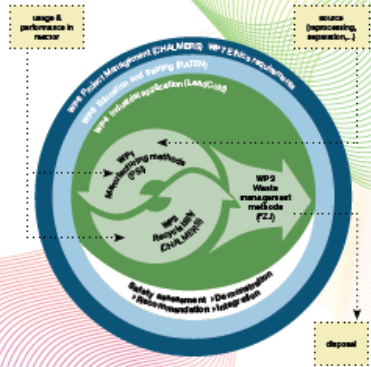


Figure 4 FREDMANS Flyer

FREDMANS
Fuel Recycle and Experimentally Demonstrated Manufacturing of Advanced Nuclear Solutions for Safety

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Project Duration
September 2022 – August 2026

Project Website:
<https://www.eu-industry4portals/fredmans-project/>

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Figure 5 FREDMANS Poster

2.3 Generic Presentation and Templates

To ease and unify the communication of the FREDMANS main messages, a generic presentation has been prepared. In a template ppt, the basic information on the project (duration, funding, consortium, budget etc.) are given together with goals and objectives and work structure. It is stored on the FREDMANS SharePoint in the Promotion materials folder as well.

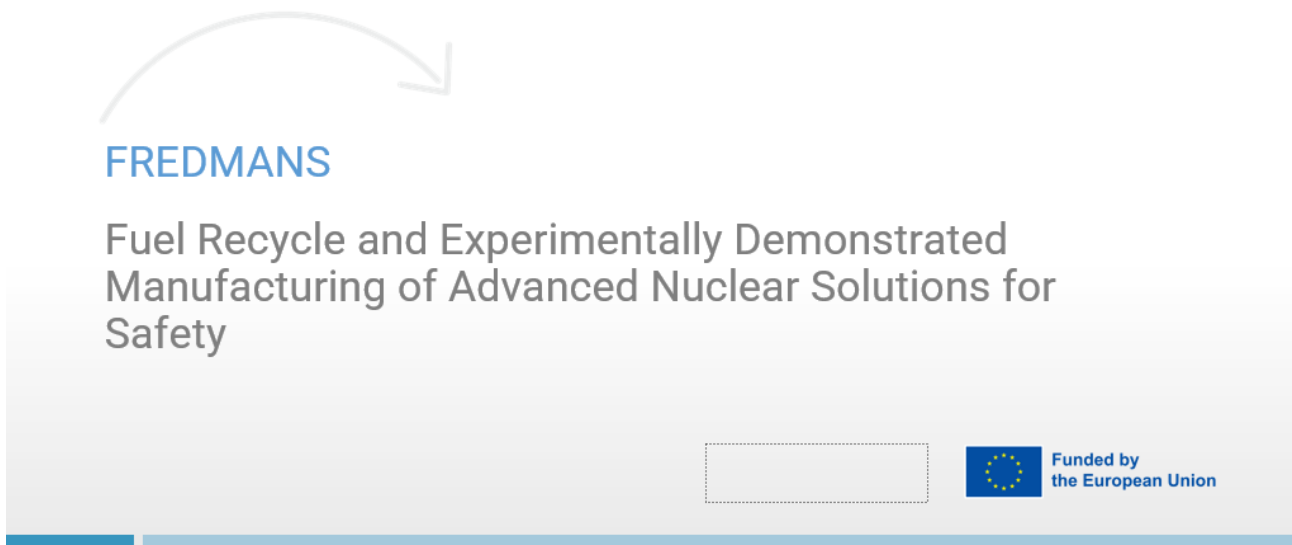


Figure 6 The first page of the FREDMANS generic presentation

Besides the filled-in generic poster, the partners have got at their disposal the pptx and docx templates that are to be used for communication of the project outside the project consortium above all to build the notion and awareness of the FREDMANS project activities and outcomes under the same visual picture.

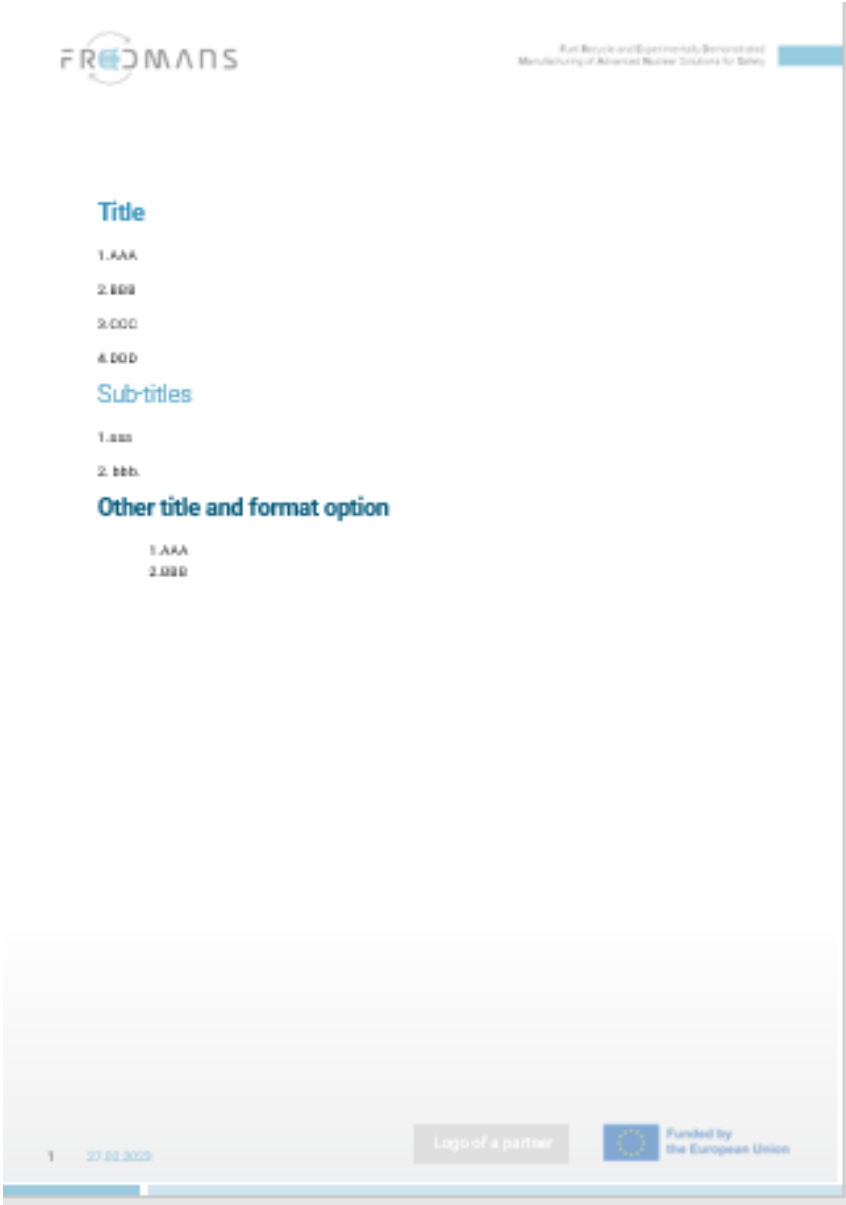


Figure 7 FREDMANS docx template

3 CONCLUSIONS

The FREDMANS Communication Package has been prepared as planned and shared with the partners for their wide usage to create a common and clear picture of the FREDMANS goals, objectives, activities and outputs.