

## **ENEN2plus, Building European Nuclear Competence through Continuous Advanced and Structured Education and Training Actions**

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### **ABSTRACT**

Education and training (E&T) actions in the nuclear field in Europe need persistent efforts to be properly promoted, aiming to maintain and further develop the high level of expertise reached so far. This, also considering the limited attractiveness of nuclear careers for young generations, currently experienced both at Universities and in recruiting for jobs.

The European Nuclear Education Network (ENEN), since its establishment in 2003, has had “the main purpose of the preservation and the further development of expertise in the nuclear fields by higher education and training”.

In almost twenty years, ENEN has deployed efforts in support to E&T in nuclear sectors, with the continuing contributions to EU funded projects, organising the most important actors in the E&T and cooperating with technological platforms and industrial bodies.

Projects ANNETTE and ENENPlus (both led by ENEN) financed student mobility at an unprecedented level in the field of nuclear fission, moving more than 500 learners for a total experience exceeding 43 person years, and in reaching out at the levels of secondary school, BSc, MSc and PhD students.

This created an improved attractiveness for nuclear careers, with a clear benefit for Europe, confirming that Europe is a region in which nuclear studies can be developed at high level also exploiting the excellence achieved by the nuclear industry and the medical applications.

The ENEN2plus project makes use of the experience gained in these recent endeavours, to continue the actions of ENEN in favour of nuclear E&T, in cooperation with a wide Consortium of qualified institutions.

## 1 INTRODUCTION

ENEN2plus project will be a 48 months long collaboration among 51 partners spread over 3 continents (Europe, America, Asia) [1].

The European Nuclear Education Network (ENEN), coordinator of this action, can have its mission summarized as “the preservation and the further development of expertise in the nuclear fields by higher education and training”. In almost twenty years of its existence, ENEN has deployed efforts in support to E&T in nuclear sectors, with the continuing contributions to European Union (EU) funded projects, involving the important actors in the Education & Training (E&T) field and cooperating with technological platforms and industrial bodies. The activities of ENEN have progressed considerably towards better serving the end-users: from the early results of the establishment of the European Master of Science in Nuclear Engineering (EMSNE) Certification [2] and of the ENEN PhD Event and Prize [3], which catalysed and coordinated efforts at the academic level.

Two recently closed projects, both led by the ENEN: ANNETTE [4] and ENENPlus [5] were aimed at advancing ENEN networking capabilities, also by coordinating E&T efforts spent in the sectors of:

- nuclear engineering and safety,
- radiation protection,
- management of radioactive waste
- medical applications of nuclear technologies.

These actions financed student mobility at an unprecedented level in the field of nuclear fission, moving more than 500 learners for a total experience exceeding 43 person years, and in reaching out at the levels of secondary school, BSc, MSc and PhD students.

This created an improved attractiveness for nuclear careers, with a clear benefit for Europe and its prestige as a region in which nuclear studies can be developed at the highest level.

ENEN2plus makes use of the experience gained in these recent endeavours, to continue the actions of ENEN in favour of nuclear E&T, in cooperation with a the largest consortium of qualified institutions who ever was created under a EURATOM fission training scheme.

In figure 1, the ENEN2plus project logo is presented.

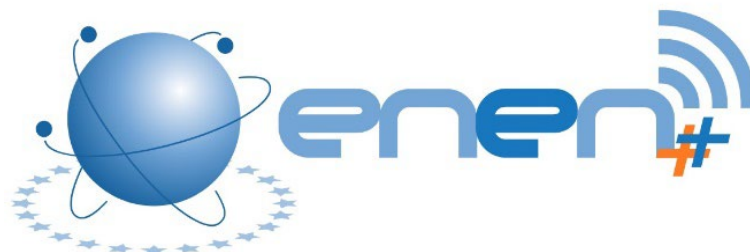


Figure 1- ENEN2plus logo

## 2 PROJECT STRUCTURE

The project work is articulated in 8 Working Packages (WP) each of them focused on a different aspect: analysis, informing, enhancing, developing actions for the nuclear field.

As it can be observed from figure below, several working packages are transversal with focus on: mobility, beyond Europe, dissemination, management. A schematic view of the project work can be found in Figure 2.

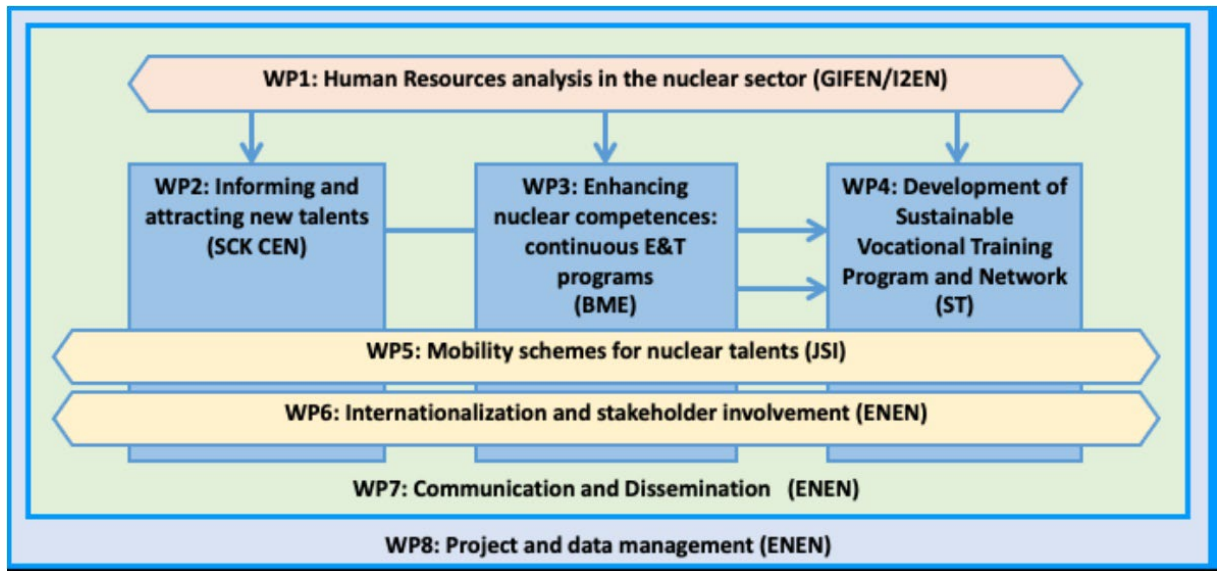


Figure 2- Schematic view of ENEN2plus project work

### 2.1 WP 1 – Human Resources analysis in the nuclear sector

The overarching objective of WP1 is to evaluate which workforce is needed by the nuclear sector in Europe today and point out if there are any gaps in the Education and Training (E&T) field when looking at the needs.

The working package is articulated in 3 tasks in order to analyse the specific needs for:

1. The European nuclear industry
2. The human resources needs of research centres, waste management agencies and technical safety organisations
3. The human resources needs in non-power applications

This working package will provide the input for WP2/3/4.

### 2.2 WP2 – Informing and attracting new talents

The major outcome of this working package will be the creation of a hub, a single point of entry for all information on nuclear education, training, job opportunities and access to facilities.

At the same time, in order to attract new talents to the nuclear field, career events will be organised to facilitate the networking between young professionals and potential employers.

Competitions, summer schools, awards for outstanding work in nuclear research will be instituted to reach out towards pupils and teachers. All this will promote a transdisciplinary approach and creating awareness on how broad the spectrum of nuclear application is.

### **2.3 WP3 – Enhancing nuclear competences: continuous E&T programs**

WP3 aims at analysing the existing offer of E&T programs and develop new material on new themes and topics. At the same time, a revision of the existing E&T strategy in nuclear will be performed.

The events organised within this WP will be targeting in particular Bachelors, Masters and PhD students (e.g. the ENEN PhD Event and Prize [3]). There is also the will to network with the Young Generation and more cross-professional organisations to stimulate the collaboration across different branches of the nuclear field.

### **2.4 WP4 – Development of Sustainable Vocational Training Program and Network**

This WP focuses on the VET offer in the nuclear field. VET stands for Vocational Education and Training and is currently quite fragmented.

This WP aims at analysis the current VET offer, identify what are the key nuclear domains which suffers shortage of VET courses and suggest how to possibly resolve this criticality by creating and operating a Nuclear VET learning community.

### **2.5 WP5 – Mobility schemes for nuclear talents**

WP5 is entirely dedicated to mobility opportunities, to grant access to infrastructures and job perspectives. The project aim is to provide mobility for about 1000 learners and an equivalent to over 130 person-years.

Mobility will be made possible for European learners (EU member state citizens) aiming for mobility anywhere but also for non-European learners (citizens from any<sup>1</sup> countries) who wish to come to Europe.

Another goal is to identify opportunities for sustainable fundings for mobility schemes which go beyond the duration of ENEN2plus.

### **2.6 WP6 – Internationalization and stakeholder involvement**

This WP groups all actions devoted to engage partners outside Europe. The scope is to provide the necessary set of Educational and Training actions to nuclear domains that are missing the expertise at EU level as of today.

There will be actions dedicated to build nuclear competences cooperating with America, Asia and international institutions.

### **2.7 WP7 – Internationalization and stakeholder involvement**

This WP is transversal to the whole project and aims at giving the maximum possible visibility to the project. In order to achieve this outcome, WP7 will widely disseminate the project results, assure the communication with relevant stakeholders and support the outreach to potential beneficiaries thanks to the collaboration of all consortium members.

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<sup>1</sup> rules and possible exemptions as defined by the European Commission and relevant EU member states apply in full.

## 2.8 WP8 – Project and data management

The last WP is in charge of managing the largest consortium in an EURATOM funded action for E&T.

## 3 CURRENT PROJECT STATUS AND VISION

The Project ENEN2plus has kicked off in June 2022 and will last for 4 years (i.e. 48 months, until May 2026). It will build upon the good practises and all the Education and Training actions carried on during ENENPlus [5] and ANNETTE [4].

The consortium is exceptionally large embedding 51 partners from three continents - Europe, America, Asia and it is comprised also of International Organisations. It is the largest and most integrative nuclear E&T efforts ever attempted in the EURATOM Fission Training Scheme.

ENEN2plus foresees an encompassing mobility scheme which aims at supporting with about two million EUR over 100 person-years of nuclear career-enhancing experience for about 1.000 learners.

Furthermore, a hub will be created, to serve as central information point for those offering and seeking nuclear E&T opportunities (including jobs and internships).

Moreover, sustainable vocational training programs and networks will be developed.

All these actions will be pursued along with informing and attracting new talents and enhancing nuclear competencies by continuous E&T programs.

## ACKNOWLEDGMENTS

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## REFERENCES

- [1] ENEN2plus webpage under the ENEN website:  
<https://enen.eu/index.php/portfolio/enen2plus-project/>
- [2] EMSNE Certification website: <https://enen.eu/index.php/emsne-certification/>
- [3] ENEN PhD Event and Prize website: <https://enen.eu/index.php/phd-events/>

- [4] ANNETTE website: <https://enen.eu/index.php/portfolio/annette-project/>
- [5] ENENPlus project website: <https://enen.eu/index.php/portfolio/enen-plus-project/>