



**Education for zero energy
Buildings using Building
Information Modelling**

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07.7 Exploitation Plan



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1 Executive summary

The exploitation of results is a crucial area of the Erasmus+ project lifecycle. It gives participating organisations the opportunity to communicate and share outcomes and deliverables, thus extending the impact of their projects, improving their sustainability, and justifying the European added value of Erasmus+. Exploitation is about making concrete use of research results during and beyond the project duration. As such, this exploitation strategy plan was developed as a work-in-progress document that weighed and stipulated the gradual development and exploitation of BIMzeED results from the beginning to the conclusion of the project.

The BIMzeED Exploitation Plan, along with the project's Sustainability Plan and Communication Plan maximises the BIMzeED impact in the long-term, enabling the wide uptake of the trainings even after the end of the project. It paves the way towards future exploitation of the results and outputs generated as part of the BIMzeED project. The purpose of the BIMzeED Exploitation Plan is to provide a roadmap for the permanent application and expansion of the training activities, methodologies and portal conducted in the frame of the BIMzeED approach. It is a guide as to how the tool kits and learning units produced in the BIMzeED project can be used by other HEIs, VETs, other training providers and EU projects who will build on our learning units.

This is the final version of the BIMzeED Exploitation Plan and as planned in the draft version at the beginning of the project, it comprises: the BIMzeED target groups, Key Exploitable Results from the BIMzeED project and the Exploitation Activities.

The BIMzeED Key Exploitable Results are:

- 12 Learning Units (LUs)
- E-Learning Platform
- Network of BIMzeED Trainers
- BIMzeED Toolkits
- Research Papers

The Exploitation Activities are:

- BIMzeED website
- Piloting of the Learning Units
- Train the Trainer Course
- Publications, presentations and workshops
- Final conference at EUVSW

2 Introduction

The BIMzeED project focuses on the training needs for the current and future construction industry with the main purpose to encourage 1) better employability 2) low-carbon growth 3) green and NZEB skills 4) increase in youth employment. The challenge of the BIMzeED project is to overcome skills mismatching and improve employability in the current European construction market by improving and extending the existing skills of Trainers, SMEs, site managers, craftworkers and other experienced operatives.

The construction industry across Europe is facing major challenges in achieving energy efficiency targets, in particular for Near Zero Energy Building (NZEB), but they are also experiencing a digital revolution, with Building Information Modelling (BIM). The BIMzeED project intends to improve the human-capital basis of the construction sector, which is identified as a strategic initiative by the European Commission, acting on HEIs and VET systems in Europe. The BIMzeED project aims to support the construction industry, through education and training to upskill on technical innovation and digitalization by:

- Identifying the knowledge and skills gap in BIM and NZEB within the HEIs and construction sector for each partner country.
- Updating the knowledge and skills of Educators and Trainers and SMEs in the field of BIM and NZEB through provision of specific new innovation educational materials
- Stimulating development of new training and education programmes/modules in the fields of BIM/NZEB which can be integrated into existing HEI programme delivery.
- Transferring knowledge of BIM and NZEB to and from other countries
- Strengthening links between lecturers, industry and SMEs with innovative technologies and installations creating connected learning communities (viewing case studies, on-site site visits, industry demonstrations)
- Strengthening employability in teaching and SMEs, known as business development cooperation

To maximise the impact of BIMzeED in the long-term, it is essential to further extend the use, implementation and development of the BIMzeED outputs and to propose specific actions which promote their further exploitation. The BIMzeED Exploitation Plan, along with the project's Sustainability Plan and Communication Plan maximizes the BIMzeED impact in the long-term, enabling the wide uptake of the trainings even after the end of the project. It paves the way towards future exploitation of the results and outputs generated as part of the BIMzeED project. The purpose of the BIMzeED Exploitation Plan is to provide a roadmap for the permanent application and expansion of the training activities, methodologies and portal conducted in the frame of the BIMzeED approach. It is a guide as to how the tool kits and learning units produced in the BIMzeED project can be used by other HEIs, VETs, other training providers and EU projects who will build on our learning units.

This Exploitation Plan comprises:

- Exploitation Roadmap
- BIMzeED target groups
- Key Exploitable Results
- Exploitation Activities

3 Exploitation Roadmap

Figure 1 below shows the steps carried out during the project to develop the Key Exploitable Results and ensure effective exploitation of the project and maximise the impact of the project results.



Figure 1 Exploitation Roadmap

To ensure the content created for the learning units was relevant, it was important to carry out a skills gap analysis. This will maximise the impact of the learning units as it is bridging the skills gap and bringing new content to the market. By identifying the HEIs and VETs in each partner country, a database of contacts was created allowing for greater impact of the learning units as the HEIs and VETs can incorporate the learning units into their courses or teach them as stand-alone courses. The establishment of a network of trainers will also allow for greater exploitation and impact as they too can incorporate the learning units into their courses or teach them as stand-alone courses. The development of the learning units and e-learning portal was a key factor of the exploitation roadmap as the learning units are the main key exploitable result from the project and their impact will be felt long after the project has finished as the content can be used for other projects and incorporated into other courses. The piloting of the learning units was also a key step on the exploitation roadmap as it allowed the project partners to take the feedback and adjust the content of the learning units accordingly to ensure they are of the highest standard.

4 An overview of the BIMzeED target groups

Target Group	Targeted Impact	Communication Means	Level
Direct beneficiaries: HEIs lecturers, HEIs academic managers, VETs trainers	Raise awareness, stimulate deeper understanding of the project outcomes, Stimulate further action/ impact: Train and up-skill with innovative methods, delivery and knowledge of BIM and NZEB	All members of the consortium and NSGs to make use of their networks to reach other HEIs, VET/ training providers throughout the EU taking advantage of the database of major educational partners	National (through the HEIs consortium members, HEIs associated partners and key stakeholders), European through the ACE
Direct beneficiaries: apprentices and students	Raise Awareness, stimulate deeper understanding of the project outcomes, stimulate further action/impact, receive training	Through HEIs and VET/ training providers, resulting from the adoption of the LUs. Outputs of BIMzeED promoted by all partners	National (through the HEIs consortium members and HEIs associated partners), European through the ACE
Direct beneficiaries: SMEs and employees	Raise Awareness, stimulate deeper understanding of the project outcomes, Stimulate further action/impact	Through Industry associations & sector organisations involved in the consortium	National (through the SME consortium members and NSGs), European through ACE and FIEC, as an associated partner
Indirect beneficiaries: Policy makers	Raise Awareness, Stimulate deeper understanding of the project outcomes, such as skill gaps and new training	Implications of long-term impacts of the BIMzeED training and approach to be brought to the attention of policy makers and public authorities in partner countries through all consortium partners, NSGs, Associated partners	National through NSGs and Associated partners, European through ACE
Indirect beneficiaries: Building owners	Raise Awareness, Stimulate deeper understanding of the project outcomes	Outreach through partners' networks, Housing Agencies and Local Authorities within NSGs	National through partners and NSGs, EU level through ACE's network (to UIPI)
Indirect beneficiaries: Industry providers	Raise Awareness, Stimulate deeper understanding of the project outcomes	Through partners' networks and Industry representatives within	National through NSGs and Associated partners, European through FIEC

5 BIMzeED Key Exploitable Results

The Key Exploitable Results of the BIMzeED project were defined during the 2nd partner meeting in Szentendre, Hungary. The partners were split into two groups; HEIs and Industry, to take part in an Exploitation Workshop. As a result, the following Key Exploitable Results were identified:

Learning Units

Twelve learning units designed and developed in conjunction with HEIs, VETs, SMEs and industry through national workshops. The learning material is based on the principles of distance learning, with a particular focus on the Blended Learning approach using advanced technologies suitable for future on-line, classroom and on-site deliveries. The short learning units are designed to be stand-alone trainings but also suitable for the introduction into existing modules and programmes at levels EQF 4-7. The learning units are available to access for free through the BIMzeED website (www.bimzeed.eu). Future projects can now build on these learning units by integrating them into current courses or developing the content further.

E-learning Platform

E-Learning is a fast-moving field in relation to education and training. The development and implementation of an effective, efficient and user-friendly portal through which training content can be openly accessed and assessed is a vital component of such a training approach. An E-Learning platform was developed for the BIMzeED learning units. The platform is hosted on a proven Virtual Learning Environment (VLE), Moodle and be accessible internationally. The development of the training platform facilitates the use of a range of Technology Enhanced Learning (TEL) tools to support the pedagogical education and training approaches defined in WP3. The platform supports individual access as well as group activities and integrates such tools as E-Portfolios/Webinars/Discussion Forums/Polls.

Network of BIMzeED Trainers

All partners aimed to recruit educators with an open call to HEIs and VETs for a limited number of 30 training places in each country. It was critical that a suitable number of educators who provide training in a number of construction-related areas participate, thereby ensuring that the resources developed have application widely. The selection of educators was based upon specific criteria according to the content, the national context and the desired educators' profile. The selected educators were provided with the training content, training and assessment methodology and material for the learning units before the workshop, providing prior learning. This network of trainers from across Europe are now trained to deliver the BIMzeED learning units. They can deliver them as stand-alone courses or integrate the content into other relevant courses which they teach.

BIMzeED Toolkits

A set of toolkits was developed with guidelines for the educators and the students on how to utilise the E-Learning platform and access information from the project results. The toolkit includes a short, summarised set

of instructions for HEIs on how the project resources and the E-learning platform could be used to enhance their undergraduate, post-graduate and VET Programmes. These toolkits have been made available on the project website here: <https://bimzeed.eu/reports/> for future trainings in other HEIs and VET organisations to assist with the sustainability of the training learning units.

Research Papers

Several research papers were published which allows the knowledge and key findings from the BIMzeED project to be used for future projects. These papers include:

1. Method for Building Information Modelling Supported Project Control of Nearly Zero-Energy Building Delivery. Available to read [here](#).
2. Education in BIM and NZEB in order to improve the quality of buildings. Available to read [here](#).
3. Improving competences of engineers and workers in the AEC industry for delivering NZEBs. Available to read [here](#).
4. Education for Zero Energy Buildings using Building Information Modelling. Available to read [here](#).
5. How to achieve Nearly zero-energy buildings standard. Available to read [here](#).
6. Recognised Micro-Learnings to Support the Digital Journey in the Construction Industry. Available to read [here](#).
7. Sustainable Energy Skills in the Construction Sector 2.0. Available to read [here](#).

6 Exploitation Activities

In order to maximise the impact of the BIMzeED project Key Exploitable Results, the following exploitation activities have been carried out.

BIMzeED website (<http://www.bimzeed.eu>) is a key tool for the project in providing access to information and resources from the project. It is structured around the relevant target groups i.e., HEIs, VETs, Students, SMEs etc to allow users to get direct access to the specific information they require. Maintaining the BIMzeED website is a key exploitation activity because it contains access to the online e-learning platform as well as all of the resources and publications produced as part of the project. Tipperary Energy Agency will continue to maintain the website for two years after the project end to ensure it remains an up-to-date resource for future projects.

Piloting of the Learning Units A number of learning units were piloted in 4 partner countries - Ireland, Spain, Croatia and Hungary. The piloting target HEI and VET students and SMEs in the construction sector. Once the pilot course was completed, students completed a post survey questionnaire to evaluate the pre learning and post learning understanding. The results of the piloting activities and the various evaluation tasks and impact analysis fed back into the partners to allow them to consider appropriate adjustments, improvements and modifications to the training materials and resources.

A **Train the Trainer Course** was developed to target all of the educators on the Network of Trainers developed by the BIMzeED consortium. The Train the Trainer course consisted of pre-recorded videos and surveys which could be completed individually anytime, therefore it did not require any live assistance or presence of a trainer. The participants completed the course in their own time. Once they had completed the course, the trainers were then given access to the LU content in Moodle. This network of trainers from across Europe are now trained to deliver the BIMzeED learning units. They can deliver them as stand-alone courses or integrate the content into other relevant courses which they teach.

Publications, presentations and workshops

Academic papers were submitted to relevant journals to showcase the research and outcomes from the project. From M18 to M30, Train the Trainer and Training programmes were implemented in each country. The workshops presented the learning units, methodologies and portal and dissemination materials. All partners took every opportunity to promote the project through other events.

Final conference

The project hosted an online conference during European Vocational Skills Week in April 2022, at the end of the project to promote and made available the outputs and results from the project. This event targeted European participants and received over 170 registrations. The recording of the two-hour conference can be watched on the BIMzeED website [here](#) and the project [YouTube Channel](#).

7 Conclusion

The BIMzeED Exploitation Plan, along with the project's Sustainability Plan and Communication Plan maximises the BIMzeED impact in the long-term, enabling the wide uptake of the trainings even after the end of the project. It paves the way towards future exploitation of the results and outputs generated as part of the BIMzeED project. The Exploitation Plan outlines the Key Exploitable Results from the BIMzeED project. It is the responsibility of each Consortium Partner to identify the developed key exploitable results and support their exploitation in order to maximise the BIMzeED impact in the long-term, enabling the wide uptake of the trainings even after the end of the project.

The exploitation plan is closely linked to the sustainability plan in which a collection of letters of intent of HEIs and VETs are included indicating the future exploitation of the LUs.