



SKILLS  
INSTRUCT  
INSTRUMENTS  
CONSTRUCTION

**Developing capacity  
for supply of  
continuing  
qualification services**



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## D4.8

# Developing capacity for supply of continuing qualification services through blended learning systems

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## 1. Introduction to the demo objectives

The need to implement this demonstration project is driven by the reported small number of trainees in energy efficiency and renewable energy related courses and professions in Bulgaria. As the initial and unofficial analysis of BUILD UP SKILLS BG2030 showed, only less than 1/3 of the 2030 targets have been achieved in the previous ten-year period. This is due to both insufficient supply of services and the delay to enact the new regulations for nearly energy-zero standard for new buildings and for increase in the minimum required energy class for renovated buildings. However, the lack of a continuing professional development system and the barriers encountered by construction companies in terms of cost and time required to deliver training remain relevant. This is why the introduction of such a Continuing Professional Development (CPD) system is considered one of the most appropriate ways to overcome them.

At the time when the INSTRUCT project began, good conditions existed to make progress in this direction, as a series of meetings to discuss national education standards were held with the Ministry of Education and Science. Training sessions were also organised for teachers from vocational professional high schools for civil engineering and architecture, again under the supervision of the Ministry of Education. During these meetings and trainings, the idea for a coherent CPD system was presented and initial approval was obtained for its implementation, taking into account the need to establish an Industry Council for sustainable development of the construction sector. In this Council, government institutions, training centres and sectoral organisations would agree on the structure, content and functioning of such a system. Alongside this, the results of a number of other projects were already available - from BUILD UP SKILLS ENERPRO<sup>1</sup>, through Train-to-nZEB<sup>2</sup> and Fit-to-nZEB<sup>3</sup>, to the more recent CraftEdu<sup>4</sup> and BUS League<sup>5</sup> projects, which provided an opportunity to present different schemes, and to propose a generic one for Bulgaria.

Unfortunately, the political uncertainty that has gripped the country since the INSTRUCT project was launched (Reuters, 2023), along with the COVID-19 pandemic and growing geopolitical uncertainty, have prevented the structuring of an Industry Council. Although the proposed idea of a framework for a continuing professional development system was further developed and presented to more than 1600 stakeholders, it has not been implemented in practice to this moment. Nevertheless, with the launch of the new BUILD UP SKILLS BG2030 project, which has involved the national VET and sustainable energy development agencies and industry organisations and construction professional associations, it is considered that the conditions are in place for such a system to be established. This would address the shortcomings and underdevelopment of the introduction of sustainable skills training in construction.

In detail, demonstration initiative 8 “Developing capacity for supply of continuing qualification services through blended learning systems (Eastern Europe - Bulgaria)” focuses on the development of a

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<sup>1</sup> [https://www.buildup.eu/sites/default/files/bus\\_projects/build\\_up\\_skills\\_roadmap\\_en\\_0.pdf](https://www.buildup.eu/sites/default/files/bus_projects/build_up_skills_roadmap_en_0.pdf)

<sup>2</sup> <http://www.train-to-nzeb.com/>

<sup>3</sup> <http://www.fit-to-nzeb.com/>

<sup>4</sup> <https://www.craftedu.eu/>

<sup>5</sup> <https://busleague.eu/>



modular training platform with practical training experience within the broader BUILD UP Skills platform and creates capacities for on-site training and demonstration activities. In addition, it integrates the existing capacities developed under various projects financed under the Horizon 2020 programme of the EU. The local actors involved are:

- National Agency for Vocational Education and Training
- Sustainable Energy Development Agency
- Bulgarian Construction Chamber
- Bulgarian Association for Insulation in Construction
- University of Architecture, Civil Engineering and Geodesy
- Municipal Energy Efficiency Network EcoEnergy
- Product manufacturers and distributors of resource efficient building materials and components

The performance indicators targeted within this demonstration initiative are mainly located in Impact area 6 “Improved collaboration and understanding across different trades and professional groups”, requiring capacity building engagement meetings and information 12 times reaching in average 40 people resulting in 480 professionals; in addition, the wider network developed with the support of INSTRUCT activities should contain roughly 1000 people. Additionally, the demo supports the Energy skills certification requirement within Impact area 8 “Legislative changes stimulating the demand for energy skilled construction workers/professionals”, as well as the demonstration of reduction in the gap between designed and actual energy performance through improved quality of construction in impact area 9.

The links of Demonstration Project 8 with the other tasks of the INSTRUCT project are concentrated in the use of the toolkit developed in the initial stages of the project work, described as Work packages 2 and 3. It encompasses research done on EU-level to demonstrate the role of training and education in achieving energy efficiency in buildings across the whole value chain, while identifying skills gaps and opportunities for improvement. The results of this analysis directly lead to the definition of a matrix of learning outcomes (qualifications framework), necessary for enhancing the training and education of the construction sector and of requirements towards new instruments and training methodologies. These outcomes are then accordingly applied into further project work, which aims at ensuring recognition of energy- related skills at regional and/or national levels through creation of “skills registers”, to guarantee a coherent and sector-wide set of course models are developed and sustained. There is also a feedback loop, i.e. the development of activities in Bulgaria supplies content to the reporting materials developed at this stage of the project. In particular, the work in the beginning of the project has delivered significant and very important content to the continuing professional development scheme developed in Bulgaria, through the integration of learning outcomes from different professions and specialties that have optimised or complemented existing content. Similarly, the results from another task in the project provided new tools and ideas for the practical application of qualification and certification courses within the system under development. Work in this project task concentrated on the definition of requirements for instruments, facilitating mutual recognition of energy skills and qualifications in the construction sector. Materials from the running in parallel nZEB Roadshow and BUS League projects were also used in this process.





## 2. Connection to other tasks in INSTRUCT project

In terms of work package 3 of the project, dealing with ensuring recognition of energy- related skills at regional and/or national levels through creation of “skills registers”, the certification and registration system for professionals who have undergone training, originally developed by Bulgarian Association for Insulation in Construction (BAIC), was further developed in the framework of Demonstration Initiative 4.8.

Collaborations with numerous suppliers of products, materials, and components for nearly Zero Energy Buildings (nZEB) have been further elaborated through various outreach meetings and capacity building initiatives. These efforts were also linked to the series of product exhibitions and joint trainings held with them. On the other hand, Task 3.5 from the INSTURCT project: "Identifying the added value of trained professionals to the quality of construction sites" was largely useful for developing evidence materials and conducting a communication campaign targeting end users. In turn, the activities under this demonstration package and related to the development of a qualification scheme and blended learning modalities, were particularly important for information dissemination and communication activities. As a result, activities on the 4.8 demo underpinned more than 15 outreach events and was also presented at a number of international events. This enabled a total of over 2000 direct participants to be reached in these formats. As a positive outcome of this campaigns, several media appearances enabled this idea to direct more attention and to attract the participation of the various stakeholders. It is expected that the development of the project analysis will provide the necessary conditions for the actual practical implementation of the continuing professional development system, which will certainly benefit from the results of the INSTRUCT project.

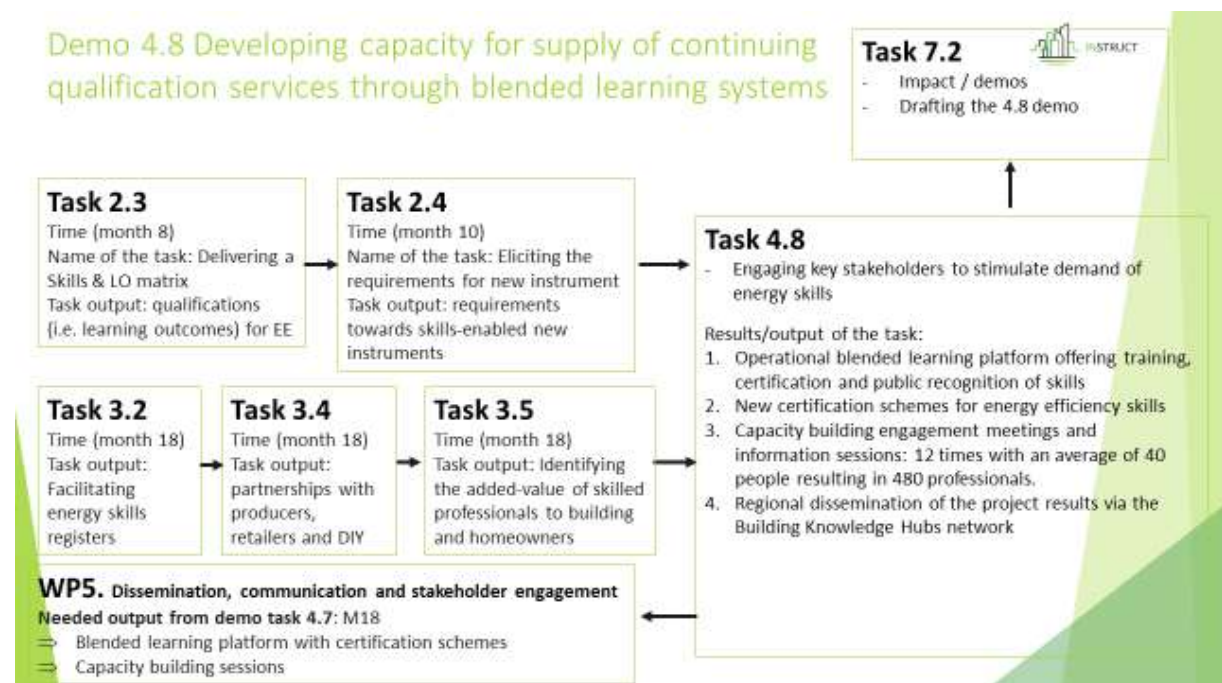


Figure 1 Relation of the Demonstration project to other tasks in the INSTRUCT project

### 3. Methodologies used

The methodology for implementing Demonstration Initiative 8 is closely linked to the implementation of the previous Initiative 7, which involved creating a wide network of relationships with a range of stakeholders. Each stakeholder is one way, or another associated to the process of a continuing professional education system in Bulgaria and the use of innovative blended learning methods. The work of this demonstration project builds on the same stakeholder analysis described in the report of project 4.7 mentioned above. There are eleven main groups of stakeholders, which were analysed in terms of their interest in participating or providing information and support to the continuing education and training system.

The next step of the project work was developed with the support of the BUS League project. A common framework for the continuing education and training system was worked out (BUS League, 2023), including both general information on the social and economic basis of zero energy buildings and on shared knowledge for interdisciplinary work between the different professions and specialties encountered on the construction site.

In-depth sets of learning outcomes were developed to enable further professional qualification in energy efficiency for the different professions and specialties within the Bulgarian qualification system. This framework was disseminated and explained through several interfaces. The vast majority of these interfaces coincide with those already listed in Demonstration Package 4.7. Among all these interactions, the one with the National Council on nZEB stands out, for which EnEffect based its recommendations on the framework itself. Along with this, the practical application of the framework and its further development were advocated for in several formal positions that EnEffect adopted and presented in relation to the various national strategic and planning documents. These arguments were specifically worked out during the development of the National Long-term Strategy for Building Renovations (Ministry of Energy, 2021).

The framework naturally served as the basis for the certified EnEffect training related to the basic principles of nZEB. The training targeted in individual formats different professions and specialties in the fields of construction and architecture, as well as electrical and energy engineering. It was also adapted to reflect the different levels of the National Qualifications Framework. This certified training has been used for numerous courses, already described in Demonstration Package 4.7. Along with this, it was presented in almost 20 events in Bulgaria, and more than 1,600 stakeholders were reached.

The media interest on the topic of vocational qualification of the construction sector workers in the field of energy efficiency that arouse because of all those events further helped to increase the interest in the certified scheme and had an impact in the overall vocational education and training system.

It should be noted here that the INSTRUCT trainings and events were also accompanied by parallel initiatives supported by EnEffect's other ongoing energy efficiency projects: nZEB Roadshow<sup>6</sup>, BUS League, CraftEdu, BUS- GoCircular<sup>7</sup> and nZEB Ready<sup>8</sup>.

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<sup>6</sup> <https://www.nzebroadshow.eu/>

<sup>7</sup> <https://busgocircular.eu/>

<sup>8</sup> <https://nzebready.eu/>



## 4. Process/Tasks/Events

Work on the implementation of Demonstration Project 4.8 started with intensive communication and meetings with representatives of the Ministry of Education and Science. This resulted in a specialised training with teachers, implemented in the framework of the CraftEdu project, which gave the opportunity to present the INSTRUCT project concept and to receive feedback on the necessity and practical dimensions of the application of this idea. The feedback was extremely positive given both from the representatives of the institutions and from the trainers, for whom it was obvious that there is a need to consistently structure the existing trainings, and to use the available training material. Following the trainings for teachers, manuals for the new discipline that has entered the curricula of the vocational schools of civil engineering and architecture of ecological and energy-efficient construction, have been compiled within the framework of projects funded by the Ministry of Education. Consequently, work began immediately on the development of a qualification framework for a system of continuing education and training aimed at further specialisation in the field of energy efficiency and renewables for all professions in the construction sector that are related to the application of these solutions.

In the course of the work on this system, the programme of the EnEffect certification course "Basic principles of nZEB" was further developed and established as the leading system for the pilot trainings within the INSTRUCT project. Just as the continuing professional development system itself is logically structured, the EnEffect certification course in question also builds on a foundation of shared knowledge that is crucial for achieving cross-craft understanding on the construction site. It is based on the formulations of leading international certification training institutes, identifying the basic principles of near energy-zero buildings. In more detail, this course includes 10 modules that focus on an initial understanding of the basic principles of passive and near-zero energy building from a building physics perspective, enabled by design for optimal solar gains, with a focus on:

- the location of the building
- the orientation and shape
- thermal insulation
- windows and shading
- air density
- thermal bridges
- ventilation with heat recovery
- heating and cooling
- integration of renewable energy installations
- renovation of existing buildings and economic viability.

In each of these modules, depending on the professional field of the trainees, it is possible to go into depth and receive additional information, which is in fact the basis of the continuing professional education system developed by EnEffect.





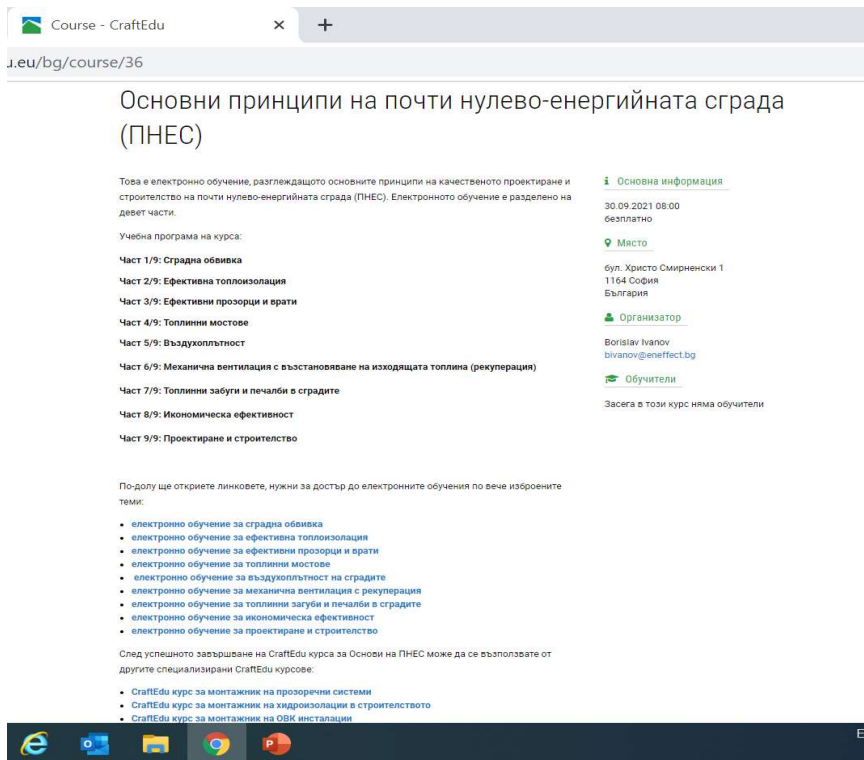


Figure 2 The online platform hosting the courses on nZEB principles

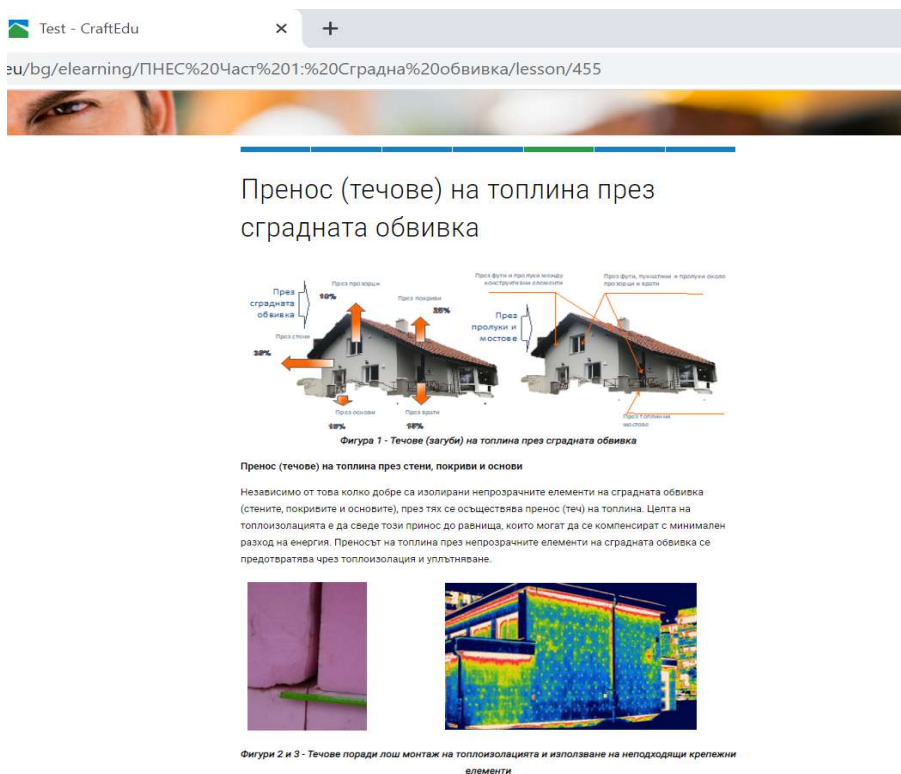
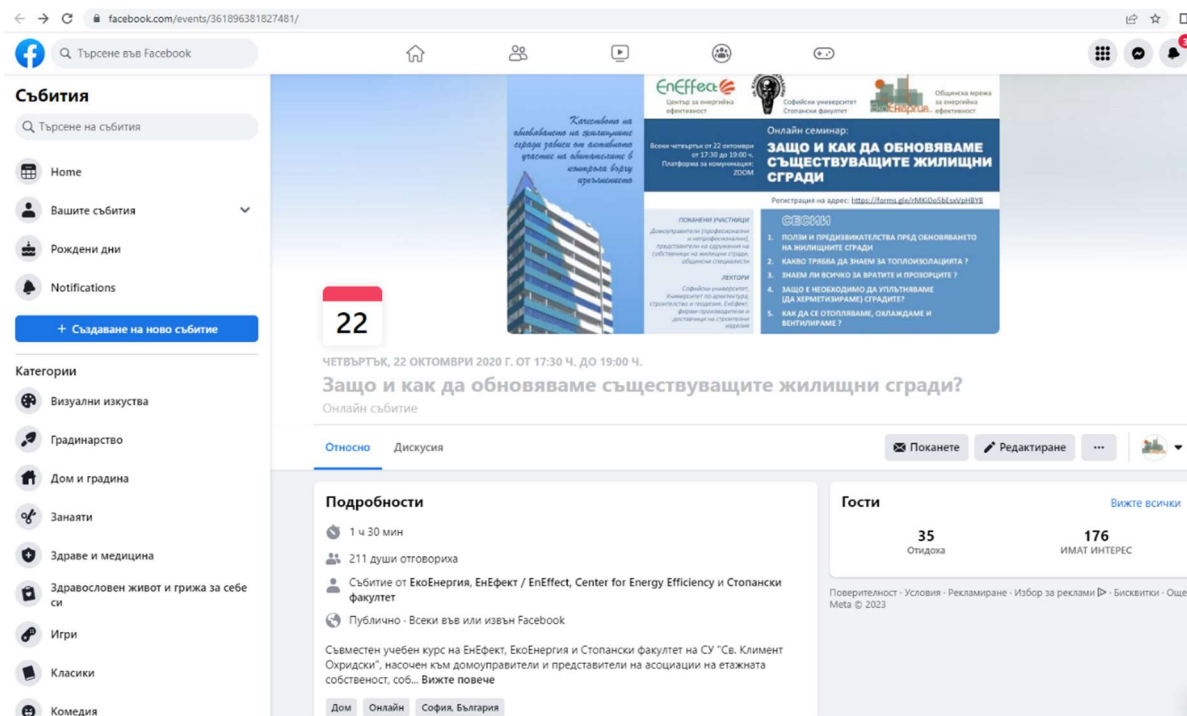


Figure 3 One of the courses on nZEB teaching in detail the topic about thermal bridges

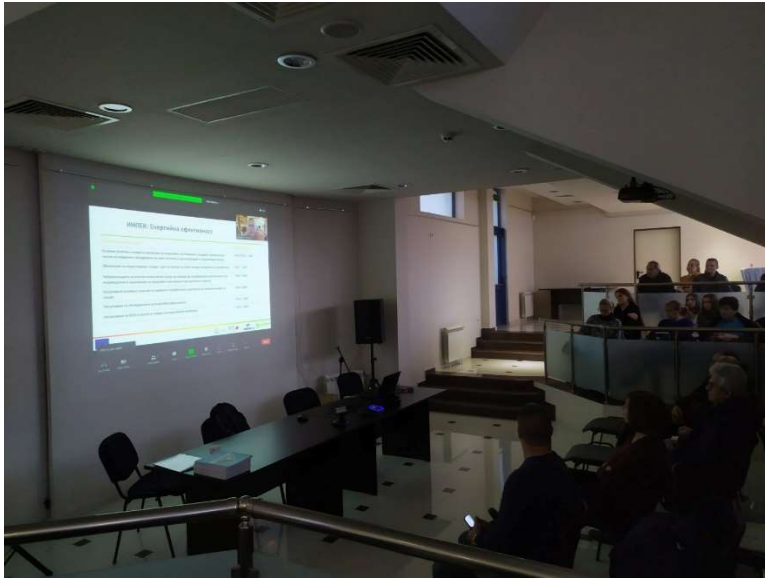
After the completion of these two necessary tools, the common qualification framework and the certification scheme, pilot courses for implementation were initiated. Initially, an online course was conducted with the company Wienerberger, which was met with great interest by the designers who

were engaged. Subsequently, a joint project was organised with University of Sofia “St. Kliment Ohridski” and Sofia Municipality, a rather ambitious seven- week online course in which more than 140 registered specialists and building professionals received information on energy efficiency with trainings that lasted two hours per week. At this point, the Covid-19 pandemic had already started, so the trainings could only be done online. However, the initial results of these trainings were not satisfactory. Ongoing research showed that it was difficult to rely solely on online training to achieve the desired results, which was a valuable lesson to consider.



*A snapshot of the facebook announcement for online training course for energy advisors to homeowners, organized with university lecturers and product manufacturers*

Therefore, when loosening the measures in Bulgaria, we returned to the original idea of developing blended learning schemes that combine online and other methods. This meant on one hand providing the course participant with materials to learn from whenever they chose, and on the other organizing online and face-to-face meetings concentrating on demonstration training methods and practical sessions. Numerous outreach events were used to enforce this training model (specific trainings implemented using this method are described in Demonstration Initiative 4.7). The events that were held, or in which EnEffect took part with a presentation or participation in panel discussions, are 19.



*Training organized for construction specialists with EnEffect and the Bulgarian Construction Chamber*

Some of the most important of these events are the training courses, organized for and with the BCC, as well as the participation in the Renovate day in Bulgaria, (as part of the Renovate Europe initiative), together with the Renovate Bulgaria association<sup>9</sup>, and the cooperation with numerous international projects. Those projects are predominantly Horizon 2020, however the BEE-VET<sup>10</sup> project is an Erasmus initiative, managed by the professional high school in Sofia and gathered over 100 participants to the aforementioned events. There was an opportunity to participate in the largest conference held in Bulgaria in the field of vocational education - "The teacher in Action"<sup>11</sup>, in cooperation with the organization RAABE Bulgaria, part of the Association for Teacher Education in Europe. Furthermore, EnEffect took part in forums of the Bulgarian Energy Agencies, as well as the Forum Real (Forum Real, 2021), which is the largest national forum with the participation of companies from the real estate sector and from the construction companies. A number of events were organised in partnership with the Municipal Energy Efficiency Network EcoEnergy<sup>12</sup> in Bulgaria. Here, it is important to point out the role of municipalities as a contracting entity, which introduces qualification or training requirements for public procurement.

<sup>9</sup> <https://www.renovate-europe.eu/national-initiatives/bulgaria/>

<sup>10</sup> <https://beevet.eu/>

<sup>11</sup> <https://ud-conf.pedagozi.bg/>

<sup>12</sup> <http://www.ecoenergy-bg.net/en>



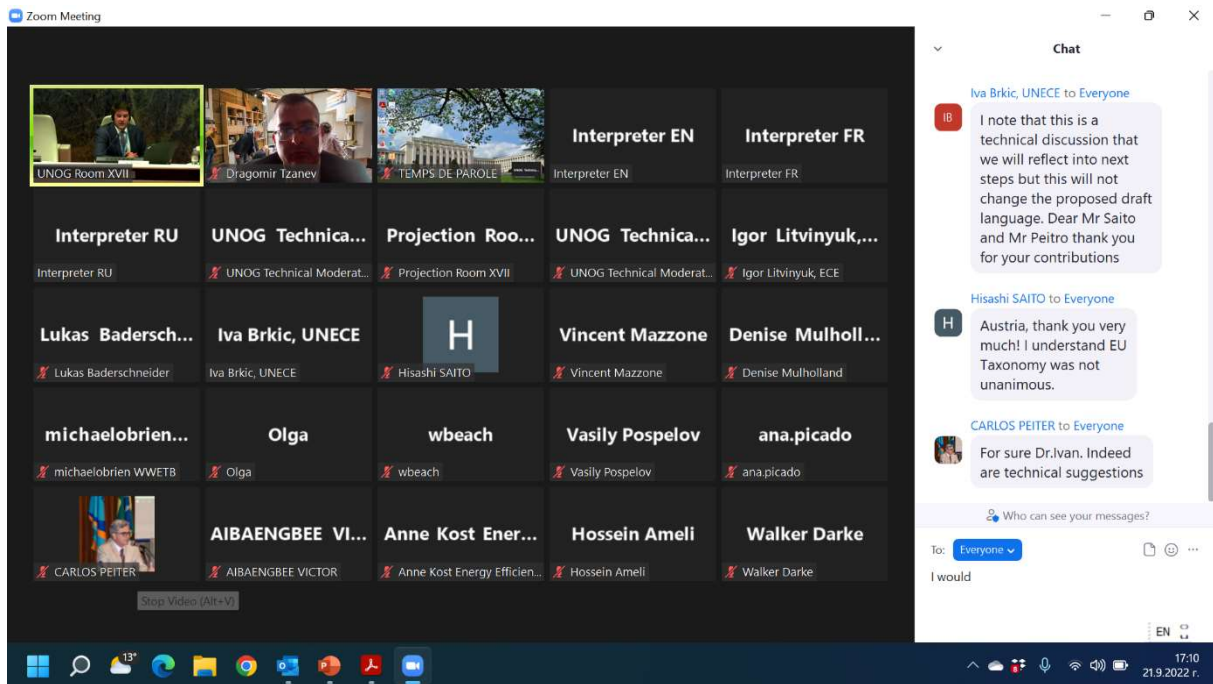
Snapshot of the announcement of BEE- VET for the event on transforming the construction education

In fact, activities to promote the scheme and certification course happened not only in Bulgaria. Taking the regional and cross-border impact in consideration, EnEffect took part in 13 internationally organized events, with more than 500 participants. A few high-profile initiatives should be mentioned here, for example the announcement of the UNECE Centres of Excellence for High Energy Buildings, the inauguration of which took place at COP26 in Glasgow in 2021. EnEffect had the honour of being one of the first 8 such centres, being the first outside the English-speaking world. Also, in collaboration with the United Nations, and more specifically the Economic Commission for Europe, resulted in participation in a discussion panel with experts on energy efficiency held in Geneva and online in 2022. In terms of cooperation with European institutions, it is worth mentioning the participation in an event of the EPBD Concerted Actions project in May 2021.

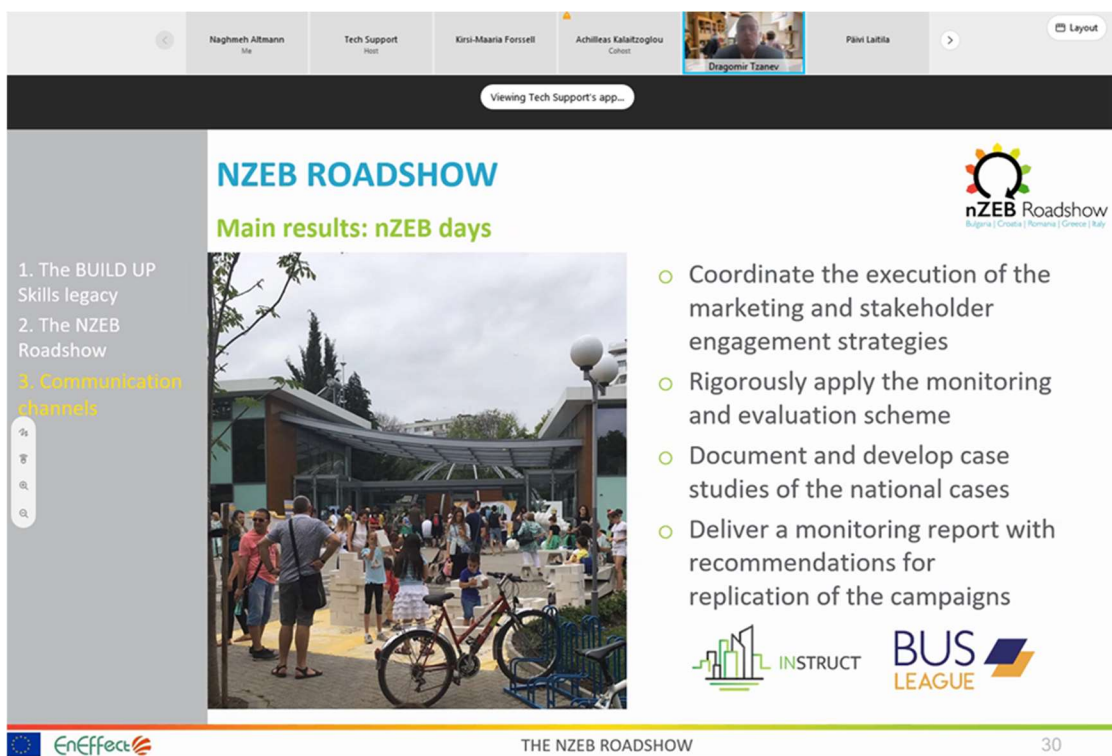


Dragomir Tzanev, executive director of Eneffect, at COP 26 for the award of the Building Knowledge Hub in Bulgaria





Online meeting of the UNECE in September 2022



Presentation on nZEB by EnEffect during the EPDB concerted actions project

Special emphasis was given to participation in local forums, among which the C4E Forum, focusing entirely on European South-eastern countries, to which joint nZEB Roadshow and nZEB Ready projects' workshop held in Croatia also counts in. The conference of the Romanian edition of Energynomics Regional Approach was held in Sofia. And the final event of the CraftEdu project held in Prague and online.





These promotion events were also supported by an active media campaign that involved the most popular Bulgarian media, including Bulgarian national TV<sup>13</sup> and radio<sup>14</sup> and BTV and Nova TV, together with the leading online Dir.bg website<sup>15</sup> with more than one million individual hits per day and its dedicated channel 3E News<sup>16</sup>, which published both text materials and video presentations from the various events. The event held in Zagreb between the nZEB Roadshow and nZEB Ready projects, in which EnEffect representatives told the audience about the innovative training tools developed by the Croatian team<sup>17</sup>, was also covered by these media.

The implementation of this methodology with the numerous activities leading to an improved reputation and increased interest in vocational education and training in the construction sector have given their final result to date in the organization of the BUILD UP SKILLS BG2030 project consortium. In addition to EnEffect, the two public institutions most closely involved in the process - National Agency for Vocational Education and Training (NAVET) and Sustainable Energy Development Agency (SEDA) - are also involved. The Bulgarian Construction Chamber (BCC), which has adopted the mission of developing the system for training the employees of construction companies, and Bulgarian Association for Insulation in Construction, which has more than 40 member companies specialising in various thermal and hydro insulation materials. BAIC also conducts training courses and is keen to be integrated into the continuing professional development system. Altogether, the continuing professional development scheme developed by EnEffect was integrated into the project proposal itself. This gives reason to believe that this scheme would be actually implemented and adopted by most if not all stakeholders, but most importantly by government institutions, educational institutions and industry organisations representing the construction sector and will, accordingly, find its implementation in Bulgaria.

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<sup>13</sup> <https://bnt.bg/news/kolko-shte-ni-izleze-otoplenieto-prez-predstoyashtiya-zimen-sezon-311653news.html?v=331546>

<sup>14</sup> <https://bnr.bg/burgas/post/101765555/prez-fevruari-trabva-da-startira-procedurata-za-paneli-za-bitu>

<sup>15</sup> <https://business.dir.bg/imoti/pasivni-kashti-kray-moreto-vazmozhno-e-i-na-tsena-za-standarten-moderen-dom-video>

<sup>16</sup> <https://3e-news.net/bg/a/view/41563/zashto-njamame-znaniya-i-umeniya-za-nulevoenergijni-sgradi-i-vyobnovjaema-energija-kakvo-mojem-da-napravim>

<https://3e-news.net/bg/a/view/33238/nedostigyt-ot-obucheni-kadri-v-bylgarija-za-energijna-efektivnost-v-stroitelstvoto-stava-vse-po-silen>

<sup>17</sup> <https://3e-news.net/bg/a/view/34921/opityt-na-hrvatija-lipsata-na-kadri-i-materiali-v-stroitelstvoto-zatrudnjava-pazara-na-nulevoenergijnite-sgradi>



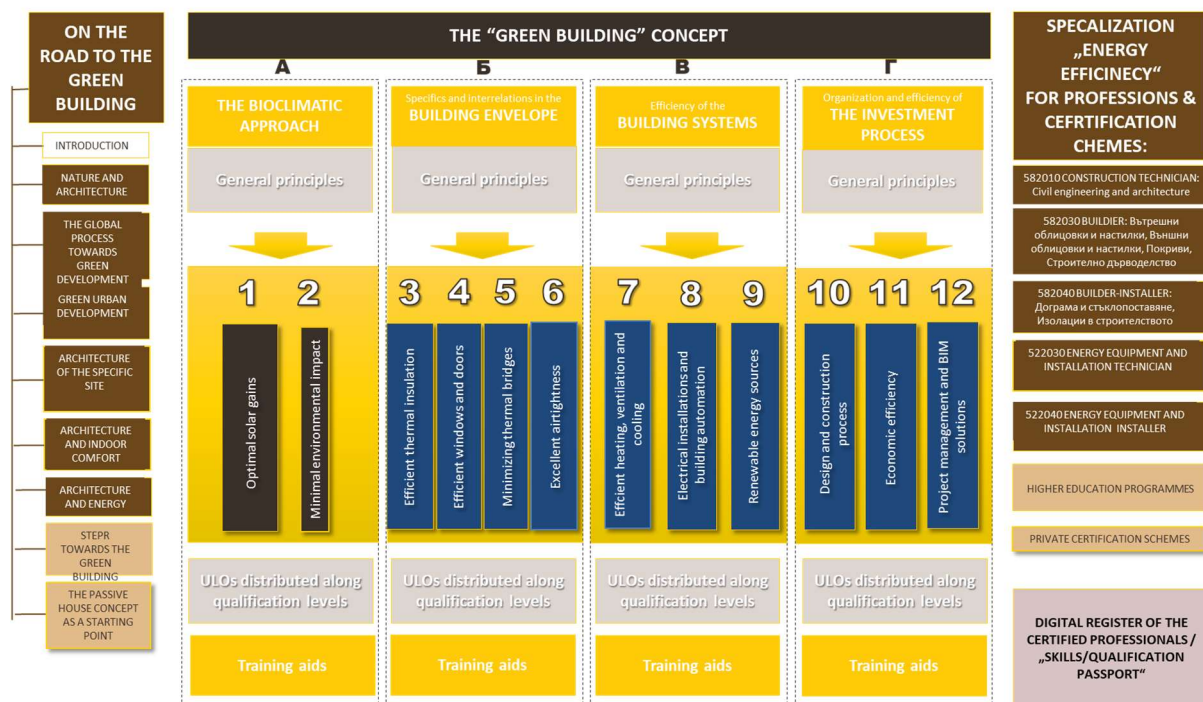


Figure 4 A visual description of the Continuing Professional Development scheme

## 5. Results from the demo

Below the most relevant outcomes of the demonstration activities are listed. Each of them contributes to a synergy of solutions that have the potential to propagate the idea of continuing professional development to a successful realization in future.

1. Operational blended learning platform offering training, non-formal certification and public recognition of skills available with the support of CraftEdu project. The platform is currently used for design of blended training courses with the Bulgarian Construction Chamber. The digital register of the Bulgarian Association for Insulation and Construction is currently upgraded and will be integrated in a national CPD system within the starting BUILD UP Skills Bulgaria 2030
2. Certification scheme on “Basic principles of nearly zero-energy buildings”, developed by EnEffect and endorsed by the Bulgarian Construction Chamber, University of Architecture, Civil Engineering and Geodesy (UACG), and Bulgarian Association for Insulation in Construction via common training courses. The certification scheme is fully applicable to the Bulgarian National Qualification Framework and can be adapted to the national educational standards for the professions in the vocational field of "Construction". It also reflects and can be adapted to the most popular international standards for certification of building professionals in the field of energy efficiency, such as the international standard "Certificate Passive House Tradesperson".
3. 19 national capacity building events are organized and/or attended with presentation or speech promoting the importance of the continuous professional qualification, reaching more than 1600 participants. In addition, dedicated 7 materials are published in leading Bulgarian

media channels, with total potential outreach measured in millions of readers/viewers. These events involved all the stakeholders mentioned, and without exception, representatives from all of them took part. These were representatives of all national institutions working in the field of energy efficiency, numerous local authorities, professional associations, suppliers of building products and materials, educational institutions including universities and vocational schools as well as vocational education and training centres, and a number of NGOs and energy agencies.

4. 13 international events reaching more than 500 participants are organized and/or attended with presentation or speech promoting the results of INSTRUCT and the other Construction Skills projects executed by EnEffect. Highlights of international events include: participation in The United Nations Economic Commission for Europe (UNECE) fora - one of them held in the framework of COP26 in Glasgow (Scotland), and the Energy Performance of Buildings Directive Concerted Actions project.
5. A mobile demo unit is constructed under the NZEB Roadshow project and practical training equipment is used in training and promotion events, entering the central news emission and the morning programme of the biggest Bulgarian TV channels. Existing equipment and methods for its use in the learning process are linked to various learning outcomes included in the framework for continuing professional development developed with the support of the BUS League project. These were then further detailed with focus to integrate them into the Bulgarian National Qualifications Framework.
6. Specialized one-stop-shops are established in the cities of Gabrovo and Burgas with the support of Re-MODULEES<sup>18</sup> and ComAct<sup>19</sup> projects, evidencing extremely high interest of the local stakeholders. Multiple training and information activities are organized using outputs of Construction Skills projects. In the last days of the INSTRUCT project a similar centre was opened in Sofia, although without the direct involvement of EnEffect. It is this model, developed with the assistance of a number of international projects supporting the education and training of various professionals involved in building renovation processes, that serves as the basis for one of the leading reforms in the National Plan for Recovery and Resilience. It is expected to establish a total of between 6 to 28 such one-stop shop locations. These centres are expected to create training opportunities for local professional communities in which the results in the INSTRUCT project could be used practically.
7. Regional dissemination of the project results via the Building Knowledge Hubs network is delivered on multiple occasions, most notably via nZEB Roadshow and nZEB Ready networks, as well as within the BUILD UP Skills EU Exchange meetings. A major highlight of the work from the SEE region was the joint event held in Zagreb in May 2022, which also received direct media coverage. As well as the participation in the C4E Forum focusing on energy efficiency issues in Eastern Europe. In addition, it can be said that the results of the INSTRUCT project will be further disseminated in the region with the nZEB Ready pilots starting. The next initiatives within the nZEB Roadshow project will be carried out not only in Bulgaria but also in neighbouring countries such as Greece, Romania and Croatia. Together with this, these projects will also be presented at the next edition of the traditional C4E Forum in Bratislava, Slovakia.

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<sup>18</sup> <https://re-modulees.eu/>

<sup>19</sup> <https://comact-project.eu/>



**интериорни решения**

## ЕнЕфект организира обучение за нулево-емисионни сгради

Според последните изменения на Директивата за енергийните характеристики на сградите, приети от Европейския парламент, от 2028г. всички нови сгради трябва да са нулево-емисионни. Сградите обхващат трябва да бъдат почти нулево-емисионни година по-рано. Нашата национална стратегия очаква реализиране на 80% спестявания на крайна енергия, което теоретично няма как да стане, ако следваме настоящата практика на обновяване до клас С. Изискванията към новото строителство, които отговарят на старата директива от 2010г., у нас влизат в сила едва през 2024г.

Енергийната ефективност отдавна се е доказала като най-устойчивото решение за защита и преодоляване на енергийните кризи, а съвременните технологии позволяват подобни резултати на спестявания, при това по разходно-ефективен начин. Не на

последно място, ефективните сгради са по-комфортни и здравословни, имат нужда от по-малко поддръжка и запазват висока цена във времето, а информираниите клиенти търсят именно това на умопътния пазар.

Десетки хиляди пасивни сгради по света са доказали, че постигането на тези стандарти е възможно в рамките на себестойността на стандартното строителство, стига да имаме подходящите знания и умения. По време на Архитектурно-строителната седмица в София може да се научи повече за това по време на конференцията, организирана от ИСБ на 29-и март, както и от специализираното обучение на Център за енергийна ефективност ЕнЕфект на 31-и. Качеството на знанията е доказано



от рецензирания институт „Пасивна къща“ – Германия, и от десетките европейски университети, проектантите и строителите, участващи в европейските проекти nZEB Roadshow, nZEB Ready, INSTRUCT, BUS League, BUSGoCircular, ReMODULEES и OutPHit, с които ЕнЕфект разработва своите учебни програми и помагала.

Днес вече строим нулево-енергийни сгради!  
Искате ли да знаете как?

**INSTRUCT: СПЕЦИАЛИЗИРАНИ ОБУЧЕНИЯ  
ЗА ЕНЕРГИЙНА ЕФЕКТИВНОСТ, ВЕИ И  
BIM ТЕХНОЛОГИИ**

Центърът за енергийна ефективност ЕнЕфект в партньорство с ИСБ и УАСГ предлага обучения на тема енергийна ефективност и нулево-енергийни сгради за различни групи професионалисти – проектантите, строителни работници, консултанти, инвеститори и клиенти.

Курсовете се провеждат присъствено в Учебно-демонстрационния център в УАСГ (София), в дистанционен или смесен формат, като учебните материали са разработени в пряко сътрудничество с Институт Пасивна къща – Дармшат, Германия.

В рамките на общата тема за проектирането и строителството на нулево-енергийни сгради се засягат редица ключови аспекти като оптимална топлоизолация, врати и прозорци, елиминиране на топлинните мостове, постигане на максимална въздухоплътност, системи за механична вентилация и ВЕИ, сградна автоматизация, икономическа ефективност, управление на строителния процес, ресурсна ефективност и кръгова икономика.

За повече информации, посетете нашата пасивна карavana на Архитектурно-строителната седмица на 29-31 март в София, или ни потърсете на тел. 02 973 17 14 и имейл [eneffect@eneffect.bg](mailto:eneffect@eneffect.bg).

**ЕнЕфект**  
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Announcement in the “Builders” magazine for the presentation of the nZEB mobile unit at the Architecture and Construction week in Sofia at the end of March 2023







*An exhibition by product manufacturers and distributors of energy efficient and passive house building components during a blended event with municipality representatives, training for construction specialists*

## 6. Contributions to other tasks

As already mentioned, the work on the development of the continuing professional development system and the certified course on "Basic principles of nZEB" enabled EnEffect to contribute to the further development of the reporting materials on task 2.2 *Taxonomy of current training offers for energy efficiency in the EU*, to task 2.3 *Delivering a Skills and Learning Outcomes matrix* and to task 2.4 *Eliciting the requirements for new instrument*. The main contribution of EnEffect and the developed units of learning outcomes was to task 2.3, which identified the units of learning outcomes used in the Bulgarian Qualifications Framework. They were analysed and structured against the vocational qualifications proposed in the template developed by the INSTRUCT project. Particular attention was paid to training for energy auditors, as well as training for building technicians and highly qualified architects and structural engineers.

Within work done in Work Package 3 of the project, the contribution of EnEffect was linked to INSTRUCT toolset specification and database, and definition of new legislative frameworks, parallel to delivering a report on sensitization methodology towards manufacturers and retailers and another one, reporting on the expectations of building and homeowners.

Task 3.2 *Deploy and adapt the tools for facilitating energy skills registers* helped BAIC to further develop the register for trained professionals, but there is a lot of room for development on this topic because there is still some reluctance in stakeholders to participate in maintaining such a register.

Under Task 3.3, the public procurement model was promoted, which included a clause in the tender specification documents to require qualifications of on-site workers following the selection of a



contractor. There has already been interest from other Bulgarian municipalities, and similar procurement will be carried out under a newly started project funded by the German EUKI programme. Within the framework of Task 3.4 and with the help of other, parallel ongoing EnEffect projects, in particular nZEB Roadshow, a number of joint activities with over 20 individual manufacturers were carried out and together with this a Memorandum of Cooperation with BAIC was concluded. These joint activities included both the co-organisation of exhibitions specialising in zero energy building products and the co-organisation of training for designers and construction workers and demonstrations for end users. From this point of view, the series of events held by EnEffect have had a major impact on the growth of market interest in nZEB. These events covered nation-wide, and included numerous elements aimed at this end market. From this point of view, the philosophy and logic of all EnEffect's activities in the last 3 years, that a market for the knowledge and skills of building professionals cannot exist without a demand for quality energy efficient buildings, has also been realised through the INSTRUCT project. This activity is expected to continue, and the very next event is aimed in this direction with EnEffect's participation in the Bulgarian Architecture and Construction Week and the holding of a number of demonstrations aimed for visitors to the exhibition.

In terms of work package 5 "Communication and dissemination of information", the activities carried out have also had a very significant effect. The vast majority of the 19 national information seminars were disseminated on social media as well as in some national and online media. The same is of course true for the international events, which received the necessary social media coverage and also had the opportunity to disseminate the INSTRUCT results.

From this point of view, these tools are also key for the contribution of the demonstration project 8 to the possibilities of exploitation and replication of the activities of the INSTRUCT project results. From the point of view that the continuing professional development scheme and the certification scheme for the basic principles of nZEB can, and will find a market in Bulgaria, and in the countries of Central and Eastern Europe with the support of parallel ongoing projects in this region. Furthermore, it should not be forgotten that the VET framework allows for the development of a large number and extremely diverse certification schemes that could serve to enrich the educational offer of specialised institutions. This applies to both higher education and the vocational education system in Bulgaria, including both vocational schools and vocational education and training centres.

## 7. Further development

The future development of Demo project 8 is largely linked to the work of BUILD UP SKILLS project BG2030 and the joint activities with the ongoing BUILD UP SKILLS projects in the neighbouring countries (Romania, Croatia, Greece, Slovakia, Czech Republic, etc.).

It is crucial in this process to reach an agreement among the stakeholders to put the developed framework for continuing vocational training into practical operation. This will be the main objective of the activities.

The good news in this process is that, independent of political uncertainty, this framework is now fixed as a task of the work of this project. In addition, institutional capacity should be ensured to run courses according to the content of the proposed framework. This means that there are enormous opportunities for collaborative activities and the use of INSTRUCT results by educational institutions at all levels of the



National Qualifications System. Together with this, the dissemination of the project results will continue, and the next events that can be mentioned in this respect are:

- 26th International Passive House Conference, Wiesbaden (DE) & online on 10 -11 March 2023,
- nZEB Roadshow and fair Klimahouse in Bolzano (Trentino-Alto Adige, Italy) 8-10 March
- Bulgarian Architecture and Construction Week in Sofia (end of March)
- Final international event of the nZEB Roadshow project (mid-May) in Thessaloniki
- C4E Forum in Bratislava (22-25 May)

Furthermore, a team of interrelated Construction Skills Initiative projects is also applying to present at the European Sustainable Energy Week in Brussels in June. Within these events there will continue to be numerous opportunities to integrate the results of the INSTRUCT project into practical qualification and certification schemes. Perhaps the clearest example of this is the nZEB Ready training starting in autumn 2023, which is also largely being implemented in Central and Eastern European countries. The INSTRUCT project results will be used in the trainings both in terms of learning outcomes and tools developed.

In terms of higher education, the newly launched course at UACG on the circular economy and digitalisation in design and construction should also be mentioned. There is also increased interest from other universities for joint training initiatives, such as from New Bulgarian University and College for Construction "Lyuben Karavelov", which give hope that these educational institutions will be actively involved in the process of reforming the system of professional qualification, with a view to introducing innovative requirements for sustainable energy in buildings.



*Training for students of professional high school for architecture and civil engineering organized at the Building Knowledge Hub in Sofia*

## 8. Impact

The achievements of the key performance indicators are not dependent on the results reported under Demonstration 8. The qualitative indicator included in the project's performance indicators is overachieved significantly, reaching a total on 2145 stakeholders instead of the planned 480, as demonstrated by the following tables:

*Table 1 National capacity building events and information sessions:*

Session	Visitors	Notes
28.2.2023, INSTRUCT session at the conference of EcoEnergy	85	
28.2.2023, INSTRUCT presentation at EnEffect anniversary gathering	60	
17.01.2023 BUSBG2030 opening meeting	45	
09.12.2022 BUSLeague training (online)	47	
02.12.2022 BUSLeague training in Sliven	42	
08.11.2022 Bulgarian Renovation Day	65	
07.10.2022 BEE-VET final event	100	Conservative estimation
08.09.2022 The Teacher in Action conference	80	Conservative estimation, much more registrations
07.07.2022 Gabrovo nZEB Roadshow event	75	
02.06.2022 nZEB Roadshow event in Burgas	99	
30.11.2021 ABEA conference	80	
04.11.2021 Forum REAL	150	Speech only, conservative estimation
14.10.2021 Bulgarian Renovation Day	80	
03.09.2021 NZEB Roadshow in Pazardzhik	93	
26.02.2021 OurBuildings final conference	100	Zoom meeting capacity reached
12.11.2020 EcoEnergy conference	90	
10.11.2020 Forum REAL	150	Speech only, conservative estimation
6.11.2020 Online renovation forum by Bulgarian Construction Chamber and MEP Iskra Mihaylova	100	Conservative estimation
29.10.2020 Bulgarian Renovation Day	85	

<b>TOTAL</b>	<b>1626</b>	

International capacity building events and information sessions:

Session	Attendees	Notes
17.02.2023 TANDEMS inspirational session, online	19	
20.12.2022 Visit of a Kazakh delegation in Sofia	25	
23.11.2022 FinErgoDOM meeting in Sofia	25	
21.09.2022 UNECE Group of Experts on Energy Efficiency, Geneva and online	60	Conservative estimation
15.09.2022 Regional approach conference by Energynomics, Sofia	30	
12.05.2022 nZEB Roadshow-nZEB Ready joint workshop in Zagreb	25	
19.11.2021 Europe Housing Forum, online	35	Conservative estimation, speech only
15.11.2021 EURIMA webinar	60	Conservative estimation, speech only
3.11.2021 COP26 UNECE Centers of Excellence announcement, Glasgow	45	
23.09.2021 C4E Forum, Brasov, Romania	35	More than 200 participants overall
26.05.2021 EPBD Concerted Action presentation, online	40	
18.02.2021 CraftEdu final conference, Prague and online	80	Conservative estimation
24.11.2020 iBROAD final conference, online	40	
<b>TOTAL</b>	<b>519</b>	

Additionally, as evident from the analysis above, the following qualitative targets have been achieved:

- Improved collaboration and understanding across different trades and professional groups via the qualification framework and the certification scheme
- Increased market acceptance of sustainable energy skills, especially for implementation of renovation projects, due to the high number of attended events and stakeholders from all target groups reached
- Increased opportunities for development of new certification schemes for energy efficiency skills for various professions and specialties at different qualification levels
- Improved mutual recognition of sustainable energy skills between neighbouring countries via common training schemes developed within the Building Knowledge Hubs network, most recently implemented with the support of the ongoing nZEB Ready project

## 9. Conclusion

In the course of the INSTRUCT project, in Bulgaria, a considerable number of various activities have been combined to reach a greater impact across the value chain of stakeholders involved in the construction process. The main goal of these activities was to raise awareness of the urgent need for raising quality in construction, mainly through establishing a recognized system for continuing professional development, which would lead to increased knowledge and skill capacity among construction specialists to apply energy and resource efficient solutions into new and existing buildings. Analysis and results from the INSTRUCT project have been combined with inputs from a row of other projects, dealing with increasing qualifications of the construction sector. All efforts to bring attention to the topic and create wider understanding of why quality training is important to construction have been awarded with greater recognition and support from the involved stakeholders. As a result, the outlooks for future work in this direction are promising and increasing chances of improving the performance of the building stock taking into account the social, ecological and economic aspects of construction and renovation.

However, the large-scale transparent public recognition of skills is still under question as the political crisis has slowed down the establishment of the national sectoral council which should endorse this initiative. Bulgaria is currently facing another parliamentary election scheduled for early April 2023. However, irrespective of the results of these elections, there is already an attitude among the branch organisations to constitute such a council no matter the outcomes of the election. In the final days of the INSTRUCT project, two key conversations were also held with senior figures in BCC and Chamber of Engineers, who expressed their interest in establishing a joint continuing education system. These initiatives will be implemented in the coming months, within the framework of the ongoing BUILD UP SKILLS BG2030 project.





## References

BUS League. (2023). Taken from <https://busleague.eu/outcomes/>

Forum Real. (2021). Taken from <https://forum-real.com/2021.php>

Ministry of Energy. (January 2021 r.). Taken from [https://www.me.government.bg/en:  
https://www.me.government.bg/uploads/manager/source/EE/LTRS\\_Bulgaria.pdf](https://www.me.government.bg/en:https://www.me.government.bg/uploads/manager/source/EE/LTRS_Bulgaria.pdf)

Reuters. (January 2023 r.). Taken from <https://www.reuters.com/world/europe/bulgaria-faces-snap-polls-socialists-abandon-plans-form-government-2023-01-20/>



## Glossary

<b>Acronym</b>	<b>Full name</b>
CA	Consortium Agreement
EC	European Commission
EASME	The Executive Agency for Small and Medium-sized Enterprises
GA	Grant Agreement
PC	Project Coordinator
WP	Work Package
TL	Task Leader
DoA	Description of Action
PSC	Project Steering Committee
SQM	Scientific and Quality Manager
DEC	Dissemination and Exploitation Committee
KOM	Kick-off meeting
ASM	ASM – Market Research and Analysis Centre
VTT	Technical Research Centre of Finland
LIST	Luxembourg Institute of Science and Technology
RIL	Finnish Association of Civil Engineers
CU	Cardiff University
R2M	Research to Market Solution France
DTTN	Distretto Tecnologico Trentino
ENEFFECT	Center for Energy Efficiency EnEffect
GER	General Exploitable Result
AB	Advisory Board
PM	Person month
M	Month
CPD	Continuing Professional Development
BAIC	Bulgarian Association for Insulation in Construction
nZEB	Nearly Zero Energy Buildings
BCC	Bulgarian Construction Chamber
NAVET	National Agency for Vocational Education and Training
SEDA	Sustainable Energy Development Agency
UACG	University for Architecture, Civil Engineering and Geodesy
VET	Vocational Education and Training





SKILLS  
INSTRUCT  
INSTRUMENTS  
CONSTRUCTION



Evidence-based market and policy instruments implementation across the EU to increase the demand for energy skills across construction sector value chain.



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