



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 785005



Project fact sheet – EU PROJECT: “TRAINEE”	
Project title	TowaRd market-based skills for sustAINable Energy Efficient construction
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Project budget:	877.000 euro
Coordinator	ECM Economic Chamber of Macedonia
Consortium partners	ECM, Kreacija, UKIM, EIM, AEC, BIM Academy
Website	www.TRAINEE-MK.eu

The project “TowaRd market-based skills for sustAINable Energy Efficient construction” is EU funded project under HORIZON 2020 programme, topic: Construction skills, Type of action: CSA Coordination and support action. Overall objective is to increase the number of skilled building professionals according to recommendations from National qualification roadmap: http://buildupskills.mk/images/Publikaci/Roadmap/EN_Roadmap_BUS-MK.pdf), concerning two priorities, training of 4.500 building professionals and blue collar workers and overcoming barriers for implementation of EE measures in operation and maintenance.

Three specific objectives are set up as:

1. Upgrading two qualification schemes for technicians, building managers and engineers and development of large scale of training schemes for 5 blue collar qualifications and two RES occupations (designers and installers) by establishing the Knowledge Centre for support in development of sustainable EE market-based construction skills with annual capacity to replicate it to 10 training providers and 600 qualified construction workers (200 through training and 400 through recognition of previous learning); and
2. Increasing awareness of building professionals for use of Building Information Modelling (BIM) tools, in order to achieve the desired multidisciplinary approach in construction that should result with reduction in the gap between designed and actual energy performance through improved quality of construction in specific projects and to achieve measurable energy savings and improved quality of indoor environment;
3. Improved market recognition of skills in the building sector and enhancing collaboration across different professional groups and introducing methodology for mutual recognition of skills with three EU countries (Greece, Slovenia and Croatia).

The project will produce five categories of deliverables (products): (a) Publications (study, survey, report); (b) RPL Methodology; (c) Training programs and materials; (d) BIM software; (e) Assessment procedures.

The TRAINEE consortium consists of 6 partners, 5 from Macedonia: ECM-Economic Chamber of Macedonia; ZBK Kreacija-Association of business and consultancy; UKIM Ss Cyril and Methodius University, with the Faculty of Electrical Engineering and Information Technologies; EIM-Engineering institution of Macedonia; AEC-Adult Education Centre; and 1 partner from Spain: BIM Academy-WITS Institute from Barcelona.



Current status of construction sector and sustainability

The construction sector is strategically important for Europe, providing building and infrastructure on which all sectors of the economy depend. The construction sector is one of the European Union's key industries in terms of output and employment, with more than 16.4 million persons employed. Moreover, there is a significant and complex relationship between construction activities and the built environment on one hand, and sustainable development on the other. Construction uses more raw materials than any other sector, and the creation and operation of the built environment accounts for an important consumption of natural resources. There is also a pressing need to address the regeneration of many urban areas in Europe, in particular in the newly acceded countries, and the realisation of major trans-European infrastructure work. 40% of the EU energy consumption stems from the construction sector and the existing building stock. Furthermore, 25% of transported material is linked to sector activities. Construction sector is thus highly influential regarding environmental developments in the EU.

A sustainable and competitive European construction industry brings many benefits to society and the EU economy. The sector is affected by several other policies, such as environmental protection, energy efficiency, work safety, taxation, and public procurement. The objective of the European Commission is to promote a favourable framework to boost competitiveness and support sustainable growth in the sector.

Innovations and adaptations toward more competitive construction industry aimed at:

- producing buildings and infrastructure adapted to changing social and economic needs;
- meeting global challenges such as energy security and climate change;
- providing an attractive sector to work in, complete with excellent opportunities for career development, good pay, and improved health and safety.

Cedefop's 2016 skills forecast suggests that employment in construction will grow during 2015-2025 and Member States will need to replace an ageing workforce. Around 1 million new workers will be needed by 2025. The declining trends in employment over the period 2011 – 2016 is predicted to moderate for most of the broad sectors of economic activity and become positive for the *construction* sector- Figure 1. Especially, the latter will face a slight rise after 2020.

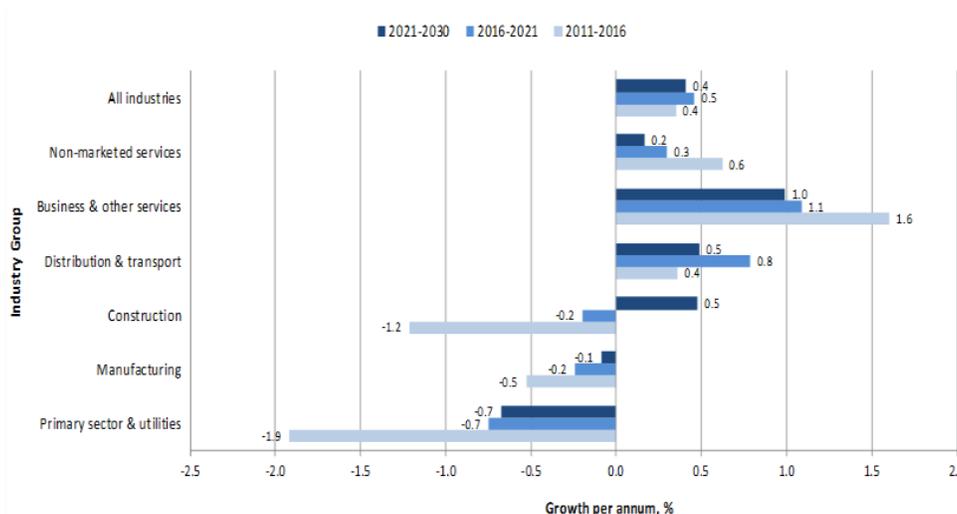


Figure 1 Employment growth by sectors of economic activity in EU in 2016, according to CEDEFOP



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The economic crisis had a profound impact on employment and an exodus of millions of workers from the sector in recent years is dampening recovery. Entrepreneurs report skills shortages and mismatches across the EU. In addition, the sector has an image problem. Improving skills will be essential in supporting blue-collar and white-collar employees to meet new challenges facing construction industries.

Skills requirements are likely to change to meet the demand for EE in buildings and green construction. According to an evaluation of the Build Up Skills (BUS) initiative, 3-4 million workers will require training on energy efficiency alone. Plus, a digital transformation will be essential in delivering more efficient buildings and construction processes.

ENERGY EFFICIENCY CALL 2016-2017, a part of European flagship initiative Horizon 2020 aimed at securing Europe's global competitiveness

The Energy Challenge is designed to support the transition to a reliable, sustainable and competitive energy system. Horizon 2020 as the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) supports actions for increased energy security, solidarity and trust, a fully integrated European energy market, improved energy efficiency contributing to the moderation of demand, a decarbonisation of the economy as well as increased efforts as regards research, innovation and competitiveness. With more than EUR 1 billion dedicated to supporting energy-related research and innovation activities in 2016-2017, this Work Programme is as a key instrument to progress towards an European Energy Union which provides EU consumers – households and businesses – with SECURE, SUSTAINABLE, COMPETITIVE AND AFFORDABLE ENERGY. Achieving this goal will require a fundamental transformation of Europe's energy system. Important milestones for this transformation are the EU's energy and climate targets for 2030 which also underpin Europe's leading role in the fight against climate change: at least 40% domestic reduction in greenhouse gas emissions compared to 1990, at least 27% for the share of renewable energy consumed in the EU, at least 27% improvement of energy efficiency and an electricity interconnection target of 10%.

The Energy Efficiency area of this Work Programme has been designed for 2016/2017 with a stronger focus on consumer-related issues under the sub-area 'Engaging consumers towards energy efficiency'. In addition, a strong consumer-oriented approach characterizes many of the topics in the sub-areas of 'Heating and cooling', 'Buildings', 'Industry, products and services', and 'Innovative financing for energy efficiency'.

Within TRAINEE PROJECT the offer of voluntary qualification schemes will be enlarged with training schemes for middle and higher level professionals (RES installers and designers, architects, engineers, technicians). Sustainability of training schemes will be ensured through establishing Knowledge center and providing visibility of EE skills by development and implementation of BIM tools.



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The Overall concept of the TRAINEE is to design support actions for provision of qualified workforce for Building sector related to EE and RES skills and to coordinate activities for market recognition and acceptance of EE skills by key market actors.

The TRAINEE Approach is to implement bottom-up actions that will increase demand for buildings with EE performances and recognition of EE skills on small and medium level (investors, companies and professional associations) that lead to betterment of energy efficiency performances of the buildings.

The TRAINEE Assumption is that all actors are willing to participate in straightening building sector for provision of higher standards in energy efficiency of the building.

The reason is that the Construction is highly regulated industry and top-down approach, from Government policy, legislation and enforcement on market, gives limited results. Involvement of relevant market actors in market acceptance of EE skills can contribute to improvement of legislation and its enforcement into market.

What is TRAINEE methodology?

Methodology encompasses of support actions and coordinated activities. Two types of support actions will be implemented: (a) development of voluntary qualification schemes for occupations from whole value chain in building sector, "large scale" piloting of two training schemes for 10 occupations to upgrade EE and RS skills for 500 professionals/workers and assuring sustainability through Knowledge Centre and (b) spreading initiative for use of BIM by construction companies and professionals.

Coordinated activities concern involvement of national Qualification Platform and trade association in market recognition of EE skills through register of certified professionals and workers in Macedonia and following NQF recognition on EU level.

Actions to be taken

The actions to be taken for reaching energy related impact followed the proposed approach and methodology. At the project starts the deployed voluntary qualification schemes will be upgraded vertically through value chain with for technicians/engineers and architects and horizontally for additional two RES occupations (designers and installers for solar-thermal energy and photovoltaic systems. Action will be based on research of EU practice and survey among professionals, workers and companies.

The large scale piloting of two training schemes, trainings and RPL, will involve 150 technicians, 80 civil engineers, 20 RES designers and 300 blue color workers for EE and 40 for RS skills.

In parallel the introduction of BIM will be composed of survey about the level of knowledge and awareness about BIM among relevant stakeholders, identifying Macedonian practice in implementation of BIM, development of BIM software with piloting its usage and BIM trainings for professionals delivered by BIM Academy, Barcelona Spain. This action will be followed with widespread promotion campaign explaining the benefits of BIM usage.

Coordinated activities aims at market visibility and recognition of EE and RES skills as pre-conditions for improvement of EE performances of renovated and new buildings. The nine public events for 200 construction companies will be organized about visibility of training schemes for EE, RES and BIM skills. The 35 RPL sessions will be organized that involve 200 construction companies and 10 educational institutions. It will be the base for establishing two types of registers: one with 10 training providers and 240 trainers; second with 80 certified professionals and 1500 workers.

The two international roundtables and one wide conference for BIM & market acceptance of EE skill will be organized with 100 participants as the project results can be disseminated nationally and regionally. The Knowledge center will be established as joint venture of all project partners, and governed by the managerial structure defined and comprised by project consortium.



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The aim of the Knowledge center is to support in development of sustainable EE market-based construction skills that will tackle one of the main expected impacts - Plans for sustainability after the project's life.

The establishment of such Center will gather together the activities of project partners in their field of expertise and will ensure achievement of the multiple aims of the project. The mission of the Center is geared towards linking VET with labor market needs, upgrading people's occupational qualifications, reinforcing their employment perspectives and strengthening social cohesion.

BIM (Building Information Modeling) is an intelligent 3D model-based process that gives architecture, engineering, and construction professionals the insight and tools to more efficiently plan, design, construct, and manage buildings and infrastructure. Building Information Modelling (BIM) is at the centre of a digital transformation of the construction sector and the built environment. BIM is not new, but it is a global trend that is growing. Reports forecast that the wider adoption of BIM will unlock 15–25% savings to the global infrastructure market by 2025. And it is the technology-led change most likely to deliver the highest impact to the construction sector. Governments and public procurers across Europe and around the world are recognising the value of BIM as a strategic enabler for cost, quality and policy goals. Many are taking proactive steps to foster the use of BIM in their construction sectors to secure these economic, environmental and social benefits.

Market demand for EE construction skills

Needs for boosting demand for EE performances of buildings stem from set national energy and climate changes for 2020. Buildings share 36 % from total energy consumption in Macedonia. Implementation of EE and RES measures contributed to energy savings and renewable energy production but it depends on overcoming the identified gap of qualified workforce in the value chain of Macedonian building sector.

Market supply of qualified workforce will be improved with:

- 280 Building professionals involved in RPL process, trainings for EE and RES construction skills, trainings for BIM professionals and capacity building trainings
- 150 Civil technicians
- 80 Civil engineers
- 30 Architects
- 20 designers with RES skills
- 340 Blue collar workers will be involved in RPL certifications. 300 blue collar workers (60 per following occupations: façade, roof, carpenter, HVAC installer and electricians) will be certified during capacity building of Knowledge centre. The training scheme will finish with practical implementation of RPL procedures by candidates for certified trainers.
- 100 workers involved through trade associations
- 40 blue collar workers for RES skills
- Construction companies will be involved in design of practical training, establishing training centres as training providers and market acceptance of training schemes and BIM software.
- 100 Construction companies will be included in RPL procedures
- 30 Companies will participate in education campaign about BIM tools
- 20 Companies is expected to sign memorandum for recognition of training schemes

IMPACT, REPLICATION, SUSTAINABILITY

The areas of project's Impact

The changes in legislation will be proposed (Rulebook for energy performance of buildings, draft Methodology for Recognition of prior learning and proposal for Roadmap for introducing BIM on national



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level in the manner of following EU directives). The potential users of the project results are Ministry of Economy and Ministry of education and science. The impact on indirect users will be on 100.000 owners of buildings/apartments that are subject of renting and 5.000 new building that are built per year, both will be subject of following EE standards for energy performance of the buildings.

(b) Building capacities and skills.

Technical issue concern to preparation innovative schemes and forms for obtaining voluntary qualification, as the number of qualified workforce will be increased. The potential users are 2.000 construction companies, 100 non-formal training providers, 4.000 building professionals and 9.600 blue collar workers. The project results will provide potential users with EE and RES skills that will lead to high quality in buildings and energy savings. Involvement of international partner as expert institution in the field of BIM expertise will rise the EU dimension of the impact, and particularly the regional impact, as the number of dissemination events will include international participants from the region.

Market issues concern to implementation of tools (BIM software) for measuring impact of skilled workers in the actual energy performance and savings. The impact refers to change the level of renovation and usage of EE measures. Potential users are companies for construction materials and equipment, public and private investors, professional and trade association. The innovative approach in measuring gap in energy performance and setting up baseline indicators will be introduced in Macedonian market by BIM initiative.

Organizational issue will be covered by establishing Knowledge centre as platform for large market recognition of skilled workers. The multidisciplinary approach will be introduced and interaction among different occupations initiated. Potential users are companies and building professionals across whole value chain. The benefits will be market recognition of training schemes and large market acceptance of skilled workers and building professionals, as well as raised awareness for use of BIM tools and eventually national initiative for introducing BIM.

Replication of project results

Replication across Balkan Countries and Europe. TRAINEE's activities regarding adoption of BIM will be a model-to-follow for Balkan countries and to promote this programme as leading the process in this part of EU. BIM Academy will work in setting up a mutual recognition scheme of qualifications and certifications among different Member States using EDUBIM, BAF and esFAB as platforms to ensure it. European Standardization and certification. BIM Academy will share its knowledge, experience and indicators to fix how to get a standard, how to achieve ISO 17024 about standardization of professional profiles and the process for its certification. The project sustainability is linked with Knowledge center activities. The Knowledge centre will be established as joint venture of all project partners, and governed by the managerial structure defined and comprised by project consortium.