

**Professionalising site managers and team leaders in the specific management**

**of** **building renovation sites in Europe**

Contract Nb. 2020-1-FR01-KA202-080105 (2020-2023)



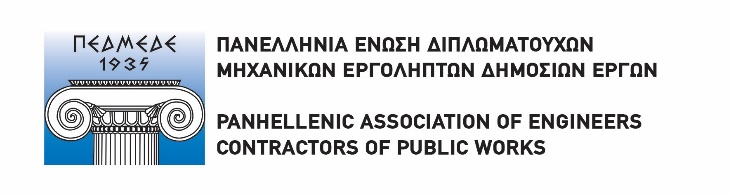
**IO1: Transnational model for the positioning, support and professionalisation of site managers and team leaders for building renovation sites**

**IO1-A1. In-depth analysis of the technical, organisational and normative specificities of building renovation sites which affect the evolution of the functions of site managers and team leaders on these sites in the partner countries.**

**IO1-A2. Identification, in each partner country, of the specific skills expected of site managers and team leaders by companies specialising in building renovation.**

**Desk Research Findings - Greece**

Drafted by



Athens, 17 February 2021

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# **Project Overview**

RenovUp results from an observation made by professionals in the construction industry: the current training facilities for site managers and team leaders do not take sufficiently account the specificities related to the renovation of buildings and its various constraints. There is a real need, confirmed by companies and professional federations in the partner countries, to reorient them in terms of objectives, content, and methods of learning, in order to enable the targeted learners to strengthen their capacity to better understand the renovation as a whole, to foresee and plan the related specific interventions, to better communicate and convince in complex situations on these sites.

A systemic approach, based on cooperation with associated actors (national, regional, and local) involved in the fields of guidance, vocational training, and recognition of learning outcomes (formal and informal), will be implemented.

This cooperation will enable the following projects to be carried out for site managers and team leaders of building renovation projects:

1. A transnational model for positioning, coaching and professionalization, mainly based on training in working situations in the company, supplemented by training modules in training centres, as well as by e-learning.
2. Transnational schemes for:

* The evaluation and recognition of learning outcomes with Open Badges
* The training of teachers, trainers and masters/tutors preparing for the accompaniment and training of the targeted audiences.

1. Implementation of a transnational strategy for the positioning, support and professionalization of targeted audiences. This three-year project includes conceptualization, implementation, in situ experimentation and evaluation of results. Ongoing and final productions will be supervised by National Expert Groups (NAG) and subject to an ongoing evaluation.

RenovUp will allow the evolution of the design of professional development of targeted audiences, more individualized and more based on the formative exploitation of the real work situations of the learners.

# **Synthesis of the desk research findings - Greece**

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| **Executive Summary**  The desk research made optimum use of the most recent electronic resources available on the websites of the Hellenic Government and the European Commission as well as of national educational & research centres. It proceeded into an analysis of the latest and currently operating legislative resources, reports on the relevant occupations as well as issues raised within the sector, necessities, and omissions, and finally it resulted into an analysis of the currently offered training programmes.  Following the research, it is evident that currently **the main focus of the country in regard to renovation is closely linked to the energy efficiency of the buildings** while issues such as Construction Demolition Waste or even Health and Safety on the site are less put in the epicentre.  Such issues are heavily affected by the **shortage of skilled labour in the broad construction sector**. This is a high concern for Greece which during the latest years, has presented one of the lowest rates of dedicated investment in education, skills and employability in the EU.  Even though the government has committed to create a direct link between vocational education, training and lifelong learning and the labour market, with the ultimate scope to create skilled workers and craftsmen in the construction sector, it seems that the **VET system is not yet fit for addressing the current training needs**. The training offer is currently being updated but there is still a long way to cover, despite some fragmentary programs that answer some of the current needs.  On the other hand, higher education curricula seem to be continuously updated but it is still to determine whether they sufficiently correspond to the expectations of the companies.  Specifically, for team leaders and site managers as the main target group of RenovUP, the main training recommendations are presented as such:  • Integration of the latest environmental standards linked to renovation projects  • Energy renovation and energy saving  • Application of circular economy rules  • Knowledge of construction materials and how they can be recycled  • Application of health & safety management  • Global and systemic approach to buildings to be renovated:  • Project – Financial and Time Management  • Communication skills with all relevant stakeholders |

| **Key areas of investigation** | **Synthesis of the Desk Research findings**  **(descriptive part)** |
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| 1. **Definition of ‘building renovation sites’ in each national context** | * With the National Law: Ν. 4685/2020, "Radical renovation of a building or building unit" (large-scale renovation) is considered: the renovation in which the total cost of the renovation of the building or building unit, or their technical systems, exceeds twenty-five percent (25%) of the value of the building or the building unit, excluding the value of the land on which the building is constructed.   Τhe value of the building or building unit constitutes the key aspect for the characterization of a renovation as radical (large-scale) or small-scale.   * National Law: N.4495/2017 adequately includes all small-scale renovation works’ categories.   Both laws, as referred above, are based on the central National Building Regulation Law: N. 4067/2012 which indicate all general details about the renovation and reconstruction of buildings. In this law, particular attention is drawn to listed buildings.  Further details in regard to "Determining the way of calculating the value of the building or the building unit for the characterization of a renovation as radical is included in the Ministerial Decision: YPEN / DEPEA / 6949/72 / 28.01.2019). |
| 1. **National Legislative framework and policies related to Renovation of Buildings.** | Efficient funding projects to enhance the energy quality of residential buildings have been set to begin throughout the current programming cycle (2021-2027, and their operational structure will be duly updated by streamlining incentives to optimize energy gains, while at the same time helping disadvantaged households in terms of financing and energy.  The redrafting of the funding formula for energy upgrading actions has been completed in the case of public buildings, while in the case of other buildings in the tertiary sector, the emphasis will be on implementing emerging smart technology and attempts will be made to reach an optimum cost-benefit ratio to ensure fair access for all stakeholders.  More specifically about the Renovation policies in the country, three different phases have been identified in accordance with the latest National Energy and Climate Plan.   1. The first one, covered the year 2020, where all regulatory aspects necessary for the required mechanisms and structures were developed. 2. The second – acceleration phase (period 2020- 2040), encompasses a further development of technological innovation of products and techniques, which are set to a gradual cost reduction of energy efficiency measures and a proper understanding of the additional gains of a total renovation. 3. Finally, during the third phase, or “stability” phase (period 2040- 2050), the energy market of building renovation is anticipated to become mature enough to include mobilization of investments from the private sector as well (e.g., through Public Private Partnerships).   Further to the above, within the framework of the European “Renovation Wave”, Greece, via the Recovery Fund, has launched the program "Save ΙΙ" (continuation of the Save I program). The new program will not only have the dimension of energy saving, but also that of energy autonomy, through the production and storage of energy and the management of energy with "smart" systems". The program is set to cover 60,000 buildings per year. Along with the “Electra” program and the “Save at Home”, they will improve energy efficiency for households and public buildings (law 4643/2019 which introduced amendments on the program ELEKTRA allows energy service companies to participate in the development and financing of energy upgrading projects).  Furthermore, with the “Long-Term Strategy for the Renovation of the Building Stock”, in the context of the implementation of the European Directive on the Energy Efficiency of Buildings (OEAK - 2010/31 / EU) and the implementation of the European Energy Efficiency Directive (2012/27 / EU), special emphasis is given / the importance of the energy sector of the building upgrade from residential and commercial buildings, public and private, with the aim of converting them into a high-energy and carbon-free building stock by 2050, facilitating the cost-effective conversion of existing buildings into buildings with almost zero energy consumption.  In regard to the new buildings or building units, the Ministry of Environment and Energy in Greece has indicated in its National Plan that they should meet minimum energy performance requirements set out in the “Regulation on the Energy Performance of Buildings” as referred above. Combined with the obligation set in Law 4122/2013 and Law 4342/2015 that describe the requirements about the Energy Efficiency of Buildings, these regulations ensure that every new building of the public sector, from 1 January 2019 should be Nearly Zero-Energy Buildings (NZEBs). This obligation is also applied also for all new buildings constructed after 1 January 2021. To this end, since 1 February 2021, the Electronic Building Identity has been launched by the Ministry in the Government Gazette FΕΚ 287 Β/2021, as obligatory for all old and new buildings. This identity constitutes the complete electronic file of a building that includes all its information such as: its building permit, floor plans, millimeter table, construction control certificate, energy efficiency certificate, declarations of subordination to arbitrary laws, etc. In case the owner does not have any of the necessary supporting documents then (s)he must obtain them in order to be included in the database.  Within the same spirit and linked to the buildings’ identity, in order to increase the number of buildings that not only meet the existing minimum requirements for energy efficiency but are also characterized by higher energy efficiency, national plans are currently being drawn up to increase the number of Nearly Zero Energy Buildings (nZEB).  Complementarily to the above national framework, on 8th February 2021 (Κ.Υ.Α. 14900/2021), the Action Plan for Green Public Procurement was approved and published which also includes guidelines for the procurement of large-scale renovation projects. |
| 1. **Definition of the specific role and profile of site managers and team leaders in building renovation projects in each national context (today and in the future).** | Team Leader: (S)he ensures the timely completion of the project, within the budget framework, and the achievement of its objectives. They supervise the project, manage the team, ensure the use of the most efficient resources and ensure that all stakeholders are satisfied. In more analysis, (s)he is responsible for the planning of the activities, the scheduling, and the control of a construction project. The Team Leader is responsible to know what work needs to be done, when it needs to be done, by whom it needs to be done, in how much time, at what cost and at what quality level. (S)he is the one to calculate the impact on the implementation of the project of various factors, such as bad weather, machine failures, staff strikes, etc. and holds the responsibility to make those corrective actions that will allow the project to complete within the available timeframes, at the estimated cost and at the desired quality level.  According to ESCO, the necessary skills of the team leader include:   * monitoring the safety of workers * construction site supervision * implementation of security management measures * providing safety improvement advice * accident prevention at work * writing work reports * compliance with health and safety procedures in construction work * use of protective equipment in construction work * human security-related factors * recording of incidents and accidents * construction methods * environmental legislation * Delegation of tasks, * Management of Stakeholders * Risk Management: issue tracking * Work Performance Reports * Progress Reports * Change Management * Quality Management   Site Manager: The Site Manager is usually under the guidance of the Team Leader and responsible to supervise the rest of the engineering team in the construction project (mechanical, installation, application). (S)he is usually a civil engineer.   * Such people are usually called to coordinate, supervise and schedule the activities of workers engaged in the construction and repair of buildings and structures.   Some indicative tasks include:  (a) reading specifications to determine construction requirements and planning procedures;  (b) organizing and coordinating the material and human resources required to complete jobs;  (c) examining and inspecting work progress;   * examining equipment and construction sites to ensure that health and safety requirements are met; * supervising construction sites and coordinating work with other construction projects; * supervising the activities of building trades workers, labourers, and other construction workers |
| 1. **Identification of technical challenges and barriers faced for site managers and team leaders related to building renovation sites, including skills needs related to energy saving and circular economy (today and in the future).** | The national energy targets concerning the building stock of the country are summarized qualitatively in the following:   1. Energy saving from the building infrastructure of the country. 2. Penetration of RES and new energy saving technologies in the building stock of the country. 3. Increase in the number of skilled and unskilled workers that will be introduced and absorbed in the construction industry. 4. Need for skills upgrading and continuous training of the construction workforce of the country on RES.   Greek buildings lag significantly behind in terms of their energy behaviour. The introduction of **thermal insulation** is the most effective way to improve this situation, despite the difficulties encountered by the regulation in its implementation.  To this end, renovation, and reconstruction of the existing building stock, calls for an update in the current skills set of the staff.  Despite this necessity, the incomplete regulatory framework and the absence of an implementation monitoring mechanism are the main problems relating to the **promotion of RES**, while the need to obtain education/training and to adapt to the technical requirements remains critical.  For example, in the case of geothermal energy, despite the existence of certain areas with a significant exploitable geothermal potential in Greece, the lack of information and the technical difficulties in implementing and developing the relevant district heating networks pose the major challenges.  Furthermore, another technical skills gap surrounds the **use of BIM** (Building Information Modelling). According to Greek legislation, while BIM can be implemented in public construction project plans, there are no further requirements or guidance in place that ensure its application in practice.  In addition, another challenge concerns the **CDW management** in the country. It is identified that Greece (and the respective Greek construction industry) lacks the necessary readiness to respond to the skills needs resulted from the transition to a circular economy. Currently, it seems that the VET system is not yet fit for addressing such training needs.  Finally, another challenge includes the emergence of new materials and techniques.  In general view, Greece has lagged in terms of qualification certification in the update of skills of its construction workers, thus degrading its workforce in Europe. |
| 1. **Identification of legal and normative challenges and barriers faced for site managers and team leaders related to building renovation sites** | As already stated, the building sector is of the utmost importance for energy savings. Therefore, according to the Greek government, renovations of existing buildings will be essential in reaching the energy efficiency targets. Unfortunately, the legislation is quite complex and the need to assimilate all legislative changes is evident.  The current institutional framework provides for energy-efficient buildings through compulsory partial use of solar heating systems in new buildings; renovation of public buildings with new heating and cooling systems and mandatory (although gradually implemented) provision of new technology services and material and green procurement.  Furthermore, solid waste management still remains a serious as the country relies on traditional techniques of landfilling and mechanical-biological treatment for waste disposal instead of modern techniques.  As a response, the government approved the National Waste management Plans in September 2020. Together with the National Strategic Waste Prevention Programme, they form the overall Construction and Demolition Waste (CDW) policy framework. Such programs were also supported by EU funds such as LIFE and the European Regional Development Fund that included legal tools but without special recognition from the public.  Complementarily, the government also made progress through legal and institutional measures for increasing waste recycling in the country.  It is evident that despite the initiatives and the progress that is being made, as these initiatives are relatively new, construction workers are still to obtain such knowledge in order to keep up the progress made and be able to use it in their works. Therefore, the need for specialized training is immediate.  Skills such as:   * ensuring compliance with environmental legislation – national & European * checking the compliance of the renovation project with the existing legislation * ensuring compliance with all legal requirements * contract management   are considered among the most crucial. |
| 1. **Identification of managerial/ organizational challenges and barriers faced for site managers and team leaders related to building renovation sites, including digital skills today and in the future.** | The challenges identified in a managerial/organizational level are not considered as new but rather as a list that should be continuously updated based on the technological and sectoral advances throughout the years. Therefore, such skills include:   * identifying customer needs * communication with renovation staff * preparation of documents for renovation projects * budgeting * cost management * check of building permits * renovation document file management * communication with stakeholders * public procurement * timely response to unexpected events * staff supervision * contract management   Further to the above, digital skills constitute a separate point of consideration, for Greece.  More specifically, the country experiences a **scarcity of basic digital skills**, which is partially explained by the emigration of the young workforce during the last decade of recession. This has resulted in an additional increase of a skills shortage in the economy calling for specialized training of both basic but also specific to the renovation sector digital skills to the existing workforce. |
| 1. **Identification of skills needs of site managers and team leaders in building renovation sites related to health and safety rules on worksite (today and in the future).** | In the construction sector, workplace accidents are often much more serious and even fatal, even if they are less usual in accordance with the Hellenic Institute for Occupational Health and Safety. A key contributing factor to this is the fact that construction workers are often unskilled or lack the appropriate training to respond to changes that may occur at any time in the workplace.  According to the Greek statistical service, in 2017 most accidents were caused by material factors, such as buildings, constructions, surfaces - ground floor (1,523 accidents).  Following the Institute’s guidelines, in every construction project (covering also renovation works), every team leader must be fully aware of all the instructions, which will be included in the Safety Measures Diary of the project and which will be passed to each employee.  If there are employees who do not understand and do not speak Greek, the team leader should take special care to inform them of potential risks and safety measures, as well as compliance with their obligations.  The first concern is the protection from electrical networks, water supply, sewerage, telephone cables, natural gas, etc. Long before the start of the works, the contractor submits an application and requests relocation of the pipelines or additional security measures in consultation with the competent Service and the Site Manager of the project.  In a national context, the P.D. 305/96, which is the harmonization of our National Law with the Directive 92/57 / EEC, the drafting of the Safety and Health Plan (SAY) and the Safety and Health File (FAY) were introduced.  Nevertheless, the Health and Safety Plan, which includes among others, the risk assessment in the construction projects, was treated and it is **still being treated in a faulty way, as a simple bureaucratic procedure and not as a tool,** on which the prevention of workplace accidents could be based.  Therefore, in the skills needs focused for health & safety, it should first of all be included the **wide understanding of the importance of health & safety rules** and how they can practically be applied in a renovation project.  Following this crucial step, other focuses should be drawn to the development of skills in:   * **Electrical hazards**: Many facilities in Greece are temporary, usually outdoor and there is not appropriate training on how to deal with them safely * **Confined spaces**: usually when the facility includes tanks, containers, wells, etc. Such incidents (suffocation, inhalation of dangerous toxic gases, drowning) are not common but should they appear, there is lack of knowledge and proper training on how to deal with them. |
| 1. **Existing training provision in relative areas/ State-of-the-art training programmes in building renovation sites.** | The existing training relative to building renovation is considered as outdated but in the process of curricula update. It includes both initial as well as continuous.  An indicative list is found below:  **Title: Reuse of buildings and sets**  **Duration**: 24 months  **Type**: Master’s Degree  **Level**: 7  **Institution**: Department of Architectural Engineering of the Polytechnic School of the University of Thessaly  **Objective**: The aim of the program is to organize comprehensive theoretical and practical research in the field of:   * the utilization with new uses of existing abandoned and obsolete shells, complexes, and areas and * their renovation, structural and energy upgrades.   **Structure**: The structure of the program is as follows:  Modern Architecture in old buildings and historical ensembles  Impression and documentation of buildings and sets  Energy saving in existing shells  Workshop: New Architecture in Historical Environment - Recovery Strategies  Seminar: Imaging tutorial with 3d scanner  Static adequacy and reinforcement of existing shells, E / M installations in existing shells  Workshop: Reuse of buildings of anonymous traditional Architecture  Workshop 3: Industrial buildings - new uses  Workshop 4: Lectures by guests on the topic of implemented reuse projects  Seminar 2: BMS (Building Management System)  Seminar 3: BIM (Building Information Modelling)  **Validation**: University degree  **Title: Environmental Building Design (class)**  **Duration:** 6 months  **Type:** Undergraduate degree  **Level:** 6  **Institution:** Department of Civil Engineering of the Polytechnic School of the University of Patras  **Objective:**  **Structure:**  **Introduction.**   * European EPBD directive and national legislation. The NZEB building. * Regulation of Energy Performance Building and International Standards (ASHRAE, Passive House, etc.) / Introduction to Thermodynamics. Heat, Thermal Balance. * Energy Planning. Climate Parameters / Thermal comfort - Calculations, Specifications, Standards, Regulations. * Conventional, Bioclimatic Design, Renovation and Implementation Methodology. * Building Fabric. Thermal insulation. Elimination of thermal bridges. Air tightness, implementation of ISO 13829. * Frames, Glass, Specification (ISO EN 673, ISO EN 410, ISO EN 10077-2) and placement. * Heating and Cooling. Overheating during the Summer. * Ventilation and indoor air quality, Mechanical ventilation with energy recovery. * Energy balance. Software Calculations and Simulation. The use of RES in NZEB buildings. * The cost of renovation & construction. * Energy Retrofits in existing buildings: Regulations and Practices. * Technical specifications for buildings energy efficiency measurements, Thermography, Air Tightness Test. Building certification. Application examples.   **Validation:** University degree  **Title:** Training and Certification of Employees in the Construction and Materials Industry"  **Duration:** 20 months  **Type:** VET program  **Level: 5**  **Institution:** Funded by the European Social Fund (ESF) in the framework of the Operational Programme “Competitiveness, Entrepreneurship and Innovation 2014-2020” (EPAnEK) and managed by Panhellenic Association of Engineers Contractors of Public Works (PEDMEDE)  **Objective:** The program aims atdeveloping professional capacity of 1.200 employees of the construction sector, through providing training and certification in the areas of BIM and Electronic Procurement for Public procurement.  **Structure:**  A. "SMART" Project and Construction Management - BIM   * Importance of BIM for the study and construction of technical projects * Models of the technical design and construction industry * Areas of work that can affect BIM * BIM as a tool for contractors * Process of developing a BIM model by a contractor * Detection and reduction of design errors * Estimation of quantities and costs for submission of tenders * Construction analysis and design * Integration of cost control, schedule and other functions * BIM as a lever for market change * Steps of adoption of BIM in the process of production of components * Software compliant * Software environment * Design steps * 3d illustration   B. "SMART" Planning and Management of Buildings Through Application Networks   * The evolution and progressive development of "smart" energy devices and applications. * Basic energy management concepts and requirements related to energy planning. * Cost effective appliances and energy management standards. * Communication network technologies. * Local area networks - Internet of "smart" devices. * Ways and procedures of controlling the installations of "smart" systems * Building management system - BMS. * Analysis of intelligent building project management (BMS) functions. * Energy consumption and measurements.   **Validation:** Professional Certification |

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| **Topics** | **Key conclusions reached**  **(analytical part)** |
| 1. **Potential impact of the national legislative framework, technical & normative, as well as managerial and organisational challenges and barriers on the role and functions of worksite managers and team leaders in building renovation in the partner country concerned.** | Moving towards the next Multiannual Financial framework (2021-2027), Greece puts great emphasis on the Renovation Wave with strong focus on the renovation of the existing building stock.  What should be noted though is that the **primary focus seems to be the energy consumption**.  More specifically, according to the National Energy and Climate Plan (NECP), buildings in Greece are presently responsible for around 40.0% of energy consumption. Therefore, the need is mainly focused on the improvement of the energy efficiency of buildings.  Such target is seen to be able to be **satisfied via renovation and modernization**, as well as by adoption of corresponding measures for renewing the stock of end-of-lifecycle buildings.  Within the same spirit, **energy efficient and low-emission heating systems** are given great focus. The renovation or construction of smarter buildings, with improved insulation materials, inter alia, fully compliant with the principles of circular economy are seen as one of the main targets nationally. |
| 1. **Recommendations for the training paths to be developed in line with the work situations of site managers and team leaders concerned, as well as with the skills needs identified further to the desk research.** | Having shaped the national context in regard to renovation and following the research of current studies and official documents, it is evident that once the renovation of a building is approved, people with the right skills are required to complete it.  The shortage of skilled labour in the broad construction sector continues to be a major concern for Greece which during the latest years, has presented one of the **lowest rates of dedicated investment in education, skills and employability in the EU.**  As a response, the Greek government has planned to make a **direct link between vocational education, training and lifelong learning and the labour market**, by committing to invest more in creating skilled workers and craftsmen in the construction sector via also involving the social partners of the sector.  Within the above framework, recommendations for the necessary training paths to be followed for team leaders and site managers are the following:   * Integration of the latest environmental standards linked to renovation projects * Energy renovation and energy saving * Application of circular economy rules * Knowledge of construction materials and how they can be recycled * Application of health & safety management * Global and systemic approach to buildings to be renovated: * Project – Financial and Time Management * Communication skills with all relevant stakeholders |

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## Validation of outcomes reached from the Desk Research with group of experts

Experts having participated in the Interviews due to COVID-19 restriction, organised by Eleni Damianou (Project Manager – PEDMEDE), on 22 and 25 February 2021

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| Name | | Organisation | Occupation |
| 1 | Thomas Panourgias | REV-TEGoVA | Civil Engineer, M.Eng Management |
| 2 | Petros Gamvrilis | G.E.M.E.K Construction Company | Team Leader / Project Manager |
| 3 | Dimitrios Giannakis | Freelance Civil Engineer | Civil Engineer, Supervisor in renovation and construction works, quality manager |
| 4 | Kalliopi Papadaki | Hellenic Ministry of Environment and Energy | Architect – Urban Planner, Associate Secretary General of Spatial Planning and Urban Environment |
| 5 | Evangelia Sotiropoulou | Techniki Ekpedeftiki S.A. – Training Center | Technical Training Programs Responsible |

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| **Key results of the national Desk Research** | **Opinion/Validation of the findings**  **Additional ideas and proposals made by the Focus Group Experts** |
| 1. Definition of ‘building renovation sites’ in each national context | The experts agreed with the findings. |
| 1. National Legislative framework and policies related to Renovation of Buildings. | The experts agreed with the findings.  Special focus was put on preservable buildings as Greece has a great number of them.  Since Greece is a country vulnerable to earthquakes, many renovations, especially in critical public buildings as schools, include static reinforcement. Law 1577/1985 defines preconditions to characterize a building as preservable. If a building is characterised as preservable any renovation interventions need permission from competent authorities. |
| 1. Definition of the specific role and profile of site managers and team leaders in building renovation projects in each national context (today and in the future). | The experts agreed with the findings.  It could be also considered that the role and profile of team leaders is relevant to the type and the size of renovation project.  Materials used in renovation projects should be adapted to the climate of the area. Thus, team leaders must hold knowledge about the characteristics of various materials and make the proper choices.  *Suggestion: add as necessary knowledge and skills for both team leaders and site managers:*  *Special repair methodologies and techniques according to the type and the age of the building.* |
| 1. Identification of technical challenges and barriers faced for site managers and team leaders related to building renovation sites, including skills needs related to energy saving and circular economy (today and in the future). | The experts agreed with the findings and added the aspects below:  **Geothermal energy** is a very interesting field especially in Greece, but the investment cost is high for small buildings, compared to other solutions. It is preferable in case of bigger units. To promote the use of geothermal energy economic, incentives are needed in supporting investments.  Furthermore, **bioclimatic intervention** is in general a critical field. It should include not only insulation but also shades and proper choice of materials. Concerning the use of **RES**, the **aesthetic approach** should also be considered, as well as the **building life cycle**.  Finally, the expert, representative of the Ministry stressed that it should be noted that the National Energy and Climate Plan was put in public consultation in 2019 and incorporated the comments received.  Among its aspects, they are mentioned:  In relation to RES, the Plan sets a significantly higher goal 35% than the central European target is 32%.  The quantitative target is set at final energy consumption in the year 2030 to be lower than that recorded in the year 2017, fully fulfilling the relevant European index. In addition, an improvement of energy efficiency is achieved in the final energy consumption by 38%, according to specific European methodology, where the corresponding central European target is 32.5%. Achieving this ambitious will strengthen the competitiveness of the Greek economy and consumer protection.  In regard to **BIM**, the Ministry will prepare an Action Plan regarding the actions required at institutional and all other levels. The Plan will focus on all areas and target groups and will aim to prepare the public and private sectors to adopt the use of BIM, and to equip their constructions with all the necessary supplies. |
| 1. Identification of legal and normative challenges and barriers faced for site managers and team leaders related to building renovation sites | The experts agreed with the findings and added:  **Previous and upcoming use of the building** should be considered. For example, a resident building turned to an office building means that special legal regulations should be taken into account. A training building is subject to stricter fire protection and static specifications.  Another challenge is to preserve the character of the site or the building in case of **traditional buildings**. |
| 1. Identification of managerial/ organizational challenges and barriers faced for site managers and team leaders related to building renovation sites, including digital skills today and in the future. | The experts agreed with the findings and added:  Renovation process has many differences compared to a typical construction project. Very often many different technician groups must be involved in the framework of low budget.  Another problem – challenge is how to **communicate efficiently with the owners of the buildings**. They consider every wish possible without any changes in the budget. Of course, the owner of the building can contribute a lot and reveal aspects that team leader and site manager are not able to predict, but limits must be clear.  Concerning digital skills, it is important for both team leaders and site managers to know to use built capture applications that interoperate with **Building Information Modelling** technology.  Also using technologies of non-destructive tests to determine the condition of the load-bearing structure of the building and the premises is a skill needed for more efficient renovation processes. |
| 1. Identification of skills needs of site managers and team leaders in building renovation sites related to health and safety rules on worksite (today and in the future). | The experts agreed with the findings and added the skills below:   * Asbestos and hazardous material handling   The main challenge in renovation projects is **space management**. Team leaders and site managers must anticipate all potential risks arising from the movement and activities of individuals.  They have to examine carefully how to organise the works while minimizing risks. Most of times team leaders and site managers due to time pressure related with budget pressure underestimate risks. **Priority of health and safety should be clear**. |
| 1. Existing training provision in relative areas/ State-of-the-art training programmes in building renovation sites. | The experts agreed with the findings. |
| 1. Potential impact of the national legislative framework, technical & normative, as well as managerial and organisational challenges and barriers on the role and functions of worksite managers and team leaders in building renovation in the partner country concerned. | The experts agreed with the findings. |
| 1. Recommendations for the training paths to be developed in line with the work situations of site managers and team leaders concerned, as well as with the skills needs identified further to the desk research. | The experts agreed with the findings and added the aspects below:   * Renovation specific national certification concerned with BIM, energy saving, sustainable material and fabrication techniques.   As a general observance it was mentioned that the state must give incentives to engineers to participate. A big obstacle is that funds in VET are oriented only to horizontal skills for employees. Freelancers are not accepted to them. But in Greece most of team leaders and site managers are freelance engineers. A legislative reform is strongly recommended to overcome these obstacles. |