BUILD UP Skills – REbooting the GReek national platform and UPdating the national roadmap

BUS-REGRoUP

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BUILD UP Skills – REbooting the GReek national platform and UPdating the national roadmap – BUS-REGRoUP

BUS-REGRoUP aims to support the revitalisation of the Greek **National Qualification Platform (NQP)** created in the first phase of the **BUILD UP Skills** initiative (project **BUS-GR**), further expanding its scope by involving new stakeholders.

Then the **Status Quo Analysis** and the **National Roadmap** will be updated to reflect the new realities of the building sector in Greece, addressing the skills development activities related to digital technologies, smart buildings, resource efficiency, circularity, integration of renewable energy technologies, industrialised deep renovation, LCCAs, etc. As the focus is on all relevant skills needed to enable the EU Renovation Wave, the mainstreaming of NZEBs, and the inclusion of resource efficiency considerations, the Status Quo Analysis and the National Roadmap will be updated for 'blue-collar' professionals and upgraded with new content in order to map the skills needs of 'white-collar' professions (i.e., architects, designers, engineers, building managers, etc.), thus reflecting the needs of the entire building value chain.

The **Status Quo Analysis** will compile all the necessary information on the current situation of the national building sector regarding continuing VET, energy performance and contribution to the 2030 targets, as well as existing barriers and gaps, as a basis for an informed discussion among the stakeholders. The **National Roadmap** will provide a set of priority measures for the various professions to meet the defined targets, an action plan for these measures until 2030, an identification of actors and resources needed to drive the implementation, and measures to monitor the progress of the proposed activities.

BUS-REGRoUP Consortium

Centre for Renewable Energy Sources and Saving (CRES) *Project Coordinator*	KAПE CRES
Decision Support Systems Laboratory, School of Electrical & Computer Engineering, National Technical University of Athens (EPU-NTUA)	EPU N·T·U·A
Small Enterprises Institute of the Hellenic Confederation of Professionals, Craftsmen & Merchants (IME GSEVEE)	IME GSEVEE Small Enterprises Institute of GSEVEE
Labour Institute of the Greek General Confederation of Labour (INE-GSEE)	INE Labour of Institute of the Greek General Confederation of Labour
Technical Chamber of Greece (TCG)	TEE TECHNICAL CHAMBER OF GREECE

Co-funded by the European Union

Further information

More details on BUILD UP Skills can be found at www.build-up.ec.europa.eu

More details on the LIFE CET programme can be found at https://cinea.ec.europa.eu/programmes/life_en

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1. Introduction

The methodology followed for the elaboration of the National Roadmap is based on a synthetic procedure where all the deliverables/elaborated products and results deriving from the previous phases of the project, and most importantly the Status Quo Analysis and the results of the National Qualification Platform (NQP) Consultation Meetings held in the frame of the project, will be carefully considered. The elaboration of the National Roadmap is based on the preparation of the Strategic Action Plan, in five basic steps (Figure 1):

1. Formulation of the Strategic Planning Committee (SPC).
2. Selection of the priority professions in the building sector to be included in the Roadmap.
3. Determination of the process to be used in the Roadmap's development.
4. Assessment of priority measures' alternative scenarios.
5. Monitoring of the implementation of the various activities of the SPC and provision of the recommended guidelines.
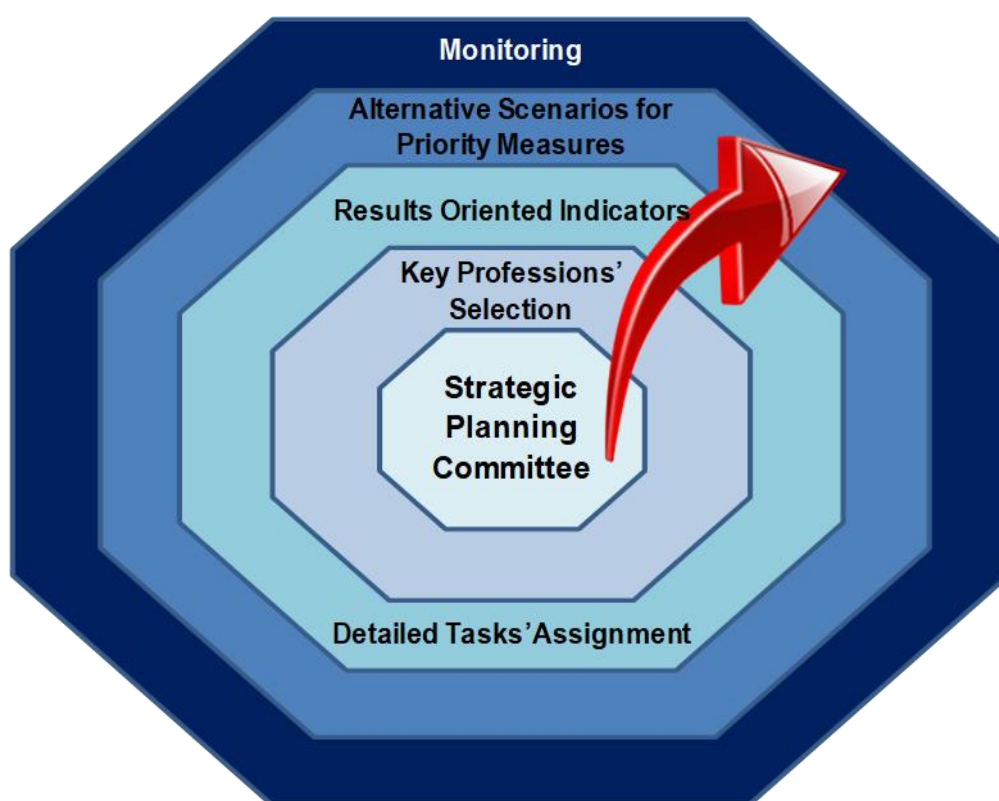
Figure 1: Elaboration procedure of the Strategic Action Plan

In the next Section (i.e. *the Strategic Plan for the development process of the National Qualification Platform*) further information on the formation and operation of the SPC is provided, while the elaboration procedure of the National Roadmap is more thoroughly analyzed. It is briefly mentioned here that the synthesis of the National Roadmap will be materialized following four distinctive and sequential steps:

1. In the first step, a first (draft) version of the Roadmap will be prepared. This version will mainly be based on the already completed deliverables of the project, such as the Analysis of the National Status Quo, the needs and barriers analysis to 2030, the energy training and qualification priorities, and the recommended action plan.

2. The draft version of the roadmap will be set under discussion and commenting from all the stakeholders participating in the National Qualification Platform (NQP).

3. In a further step, a more refined version of the Roadmap, imposed to a public consultation process, will be developed.

4. Finally, and taking into consideration all the comments and interventions that will be made from the participants to the consultation procedure, as well as the relevant discussions and opinions during the 3th Consultation Meeting of the NQP, the final version of the National Qualification Roadmap will be published.

It has been planned, since the beginning of BUS-REGRoUP, to actively involve all the interested authorities/decision-makers and stakeholders, such as the competent ministries, national authorities responsible for energy, employment, vocational training and certification of qualifications, federations of blue and white collar building construction professionals, associations of constructors and equipment providers, unions of the training providers, the workforce certification bodies, etc. in the Roadmap's development procedure. All interested parties' opinions will be considered and discussed during the NQP's consultation meetings. Therefore, the endorsement of the National Roadmap will emerge as a logical continuation of the adopted actions and consultation mechanisms.

2. Strategic Plan for the development process of the National Qualification Platform

The development process of the National Qualification Roadmap, as followed by the BUS-REGRoUP consortium, has been designed to ensure the broad consensus among stakeholders, while, at the same time, the whole process aims at preserving its strong consultative character with interested building construction professionals (Blue and White Collar). The responsibility for the scientific development of the Roadmap lies with the consortium of BUS-REGRoUP, while the strategic directions are provided by the Strategic Planning Committee (SPC) assigned for this role.

Figure 2: Development process of the National Qualification Roadmap

The steps of the development process of the National Qualification Roadmap are described in detail in the following 5 consecutive steps.

2.1 Step 1: Composition of the Strategic Planning Committee (SPC)

The Strategic Planning Committee (SPC) has an advisory role and supports the overall decision-making process for the development of the National Qualification Roadmap. The Committee will consist of at least 9 experts and representatives coming from the consortium partners, relevant national authorities and stakeholders, outside the BUS-REGRoUP BUS-GR consortium.

In particular, the BUS-REGRoUP partners participating in the SPC are:
1. Centre for Renewable Energy Sources and Saving (CRES),
2. National Technical University of Athens (NTUA),
3. Hellenic Confederation of Professionals, Craftsmen and Merchants (IME-GSEVEE),
4. Greek General Confederation of Labour (INE GSEE).
5. Technical Chamber of Greece (TCG)

Stakeholders outside the BUS-REGRoUP consortium proposed to participate in the SPC are the following:
1. Ministry of Environment, Energy and Climate Change (MEECC),
2. Ministry of Education & Religious Affairs (MERA)
3. Greek Public Employment Service (DYPA) [ex Manpower Employment Organization – OAED].
4. National Organization for the Certification of Qualifications and Vocational Guidance (EOPPEP)

5.   Panhellenic Association of Engineers Contractors of Public Works (PEDMEDE)
6.   Association of Greek Contracting Companies (SATE)
7.   Greek Solar Industry Association (EBHE)

The ultimate role of the SPC is the definition of strategic national priorities, the technical support for the identification of high-priority occupations, the evaluation of the alternate future scenarios and the synthesis of the proposed measures and actions. Furthermore, this specific committee is responsible for the finalization processes of the Roadmap, after the completion of the consultation procedures.

Since the role of the committee is not only focused on the identification of technical proposals, but also on the coordination of works and the verification of the results derived through the NQP's meetings, the decision process of the Committee will be defined and clarified. It is proposed that each stakeholder participating in the SPC should be entitled to one vote in the decision-making process, and that at least 75% of the votes should be required to ratify a decision. In any case, the SPC's objective is to achieve consensus among the stakeholders through extensive discussion and consultation on their strategic decisions. For the better coordination of the SP Committee's tasks and for monitoring the progress of work related to the Roadmap, committee meetings are going to be scheduled every 2-3 months.

2.2 Step 2: Selection of the building sector professions to be prioritized for inclusion in the National Roadmap

The selection of the professions to be included in the Roadmap has been planned to be a procedure integrating both statistical stats, which have already been analyzed in the Status Quo Analysis, and the personal opinions of stakeholders and experts in the field, stemming mainly from the qualitative needs of the workforce. Consideration will also be given to the possibilities of integrating women into building construction professions in order to increase their participation.

It has been made clear since the elaboration of the Status Quo Analysis that the entire Greek construction sector contains employees that are not related to the objective of the BUS-REGRoUP initiative, such as, office workers, business managers, drivers transport, etc. The professions associated with tasks related to energy efficiency in buildings and the construction of energy autonomous buildings, which will be prioritized through consultation, consist of the following Blue Collar profession categories.

❖ Installations
➢ **Electrical technicians - Electrical installations** (solar panels, photovoltaic systems, sustainable lighting, power quality, electrical monitoring of buildings).
➢ **Mechanical installations** (heating systems, air conditioning systems, heat pumps, energy production (biomass - sun), ventilation, thermal monitoring of buildings).

❖ Constructions
➢ **Masons - Builders - Plasterers** (thermal insulation, protection from moisture).
➢ **Carpenters** (joinery energy efficient of floors, walls, roofs, windows, doors).
➢ **Technicians of roofing** (roofing insulation).
➢ **Glaziers** (installing glazing windows, doors and frames)
Note: this category includes also aluminum frame installers.

❖ White Collar Professions
➢ Engineers

Specifically, the Blue-collar jobs of interest concern the professional classes 4120, 4321, 4332, 4329, 4331, 4332, 4333, 4334, 4339, 4391, 4399, 2511, 2512, 2312, 1623 by NACE, as detailed in Table 1, together with the absolute numbers of employees who currently make up these groups. These data were obtained from ELSTAT and refer to the year 2020.

It should be noted that for the category Construction of residential and non-residential buildings (4120), it is not practically possible to further distinguish them, which led to the estimation that only a part (30%) of them are actively involved in projects/actions related to EE and RES in buildings. This is because these occupations do not require any kind of education or qualification from the workers and thus the same worker can perform more than one of them, if there is a need in construction. An additional element that hinders the above is the increased absorption of unskilled workers, among which unregistered migrants, due to the significant growth of the Greek construction sector and the shortage of workers due to the drastic reduction of workers in the construction sector in the decade 2010-2020.

Table 1: Absolute number of Blue-collar workers involved in energy saving and RES systems installation in buildings and annual inflow

Professions' classification according to NACE Code	Description	Absolute number of technicians	Average Annual inflow of new professionals (2017-2020)
4120	Construction of residential and non-residential buildings	13,659	1,072
4321	Electrical installations	17,574	274
4332	Hydraulic air-conditioning installations for heating and cooling	8,022	16
4329	Other construction installations	5,908	76
4331	Mortar coatings	1,651	36
4332	Carpentry work	8,022	142
4333	Floor and wall coverings	3,981	48
4334	Painting and glazing	4,839	56
4339	Other construction completion work	931	12
4391	Roofing activities	462	4
4399	Other specialised activities	13,054	222
2512	Manufacture of metal doors and windows	8,908	101
2312	Moulding and processing of flat glass	900	10
1623	Manufacture of other builders' carpentry and joinery	3,118	32
Total		**91,029**	**2,101**

Finally, based on the statistics per NACE code for the years 2017-2020, the average annual inflow of workers was estimated at 2,101 workers cumulatively.

Similar to the Blue-collar workers, the number of White-collar workers involved in the installation of energy-saving technologies and renewable energy systems in buildings is displayed in table 2. According to data obtained from the Technical Chamber of Greece and the Professional and Scientific Association for Technological Education of Engineers for their registered members in specialties related to the building sector, this number was estimated at 142,451 people. From this total, the total number of White-collar workers involved in the EE and installation of RES in buildings was estimated at 28,940 workers (i.e 20% of the total).

Table 2: Estimation of the total number of White-collar workers involved in energy saving and installation of RES in buildings

White collar workers	Estimated number
Engineers registered at TCG (specialties related to the building sector: architects, civil engineers, electrical engineers, mechanical engineers, environmental engineers, surveyors)	92,451
Registered members at EETEM (Professional and scientific association for technological education of engineers)	50,000
Registered members of White-Collar workers who may be employed in the building sector (new buildings)	142,451
Estimated number of White-Collar workers in Energy Saving and Renewable Energy related activities in the building sector (new buildings)	28,490

In addition, the number of employees in the construction sector related to the construction of energy self-sufficient buildings and the installation of RES systems in them, currently amounts to 90,521 and constitutes 75.74% of all employees in the building sector. Thus, with a similar percentage mapping (75%) to the construction sector figures projected for 2030, the total number of technicians and workers in activities related to EE and RES in buildings at the end of the decade is obtained. The additional number of them required to meet Greece's energy targets is also calculated, compared to the existing number. This number stems from the simulation of three possible future scenarios of the building activity in Greece: an optimistic, a pessimistic and a neutral one. The results, as calculated in the Status Quo Analysis, are summarized in table 3.

Table 3: Aggregated employment related to the construction of new buildings by 2030

Reference Year 2030	Blue- and White-collar workers in EE and RES in buildings	Required new Blue- and White-collar workers in EE and RES in buildings
Optimistic Scenario	146,197	**55,676**
Neutral Scenario	132,402	**41,881**
Pessimistic Scenario	98,400	**7,879**

Then, the existence of available training of artisans and laborers for the learning of each skill was studied. The training can be provided either by the National Vocational Training System (EPAL, IEK etc.) or various professional programs - seminars that may pertain to the life-long theoretical and practical training of professionals (CVET). Finally, it was recorded if the general skills related to each task of energy saving are certified by a certification process by the governmental agency EOPPEP.

All findings of the above methodology are presented in detail in the following generalized tables.

Table 4: Blue-collar workers - Classification of new technologies and skills, inventory of existing training and certification

Type of construction activity	Classification of activities according to NACE	Most Important Required Skills	Available Education	Certification of qualifications
Building construction	F41.2.0 -Construction of residential and non-residential buildings	D2, D8, D1	NO	NO
Plastering, coating and insulation	F43.3.1 - Plastering F43.3.3 - Floor and wall covering works	D8, D2, D5	NO	NO
Electrical installations	F43.2.1 - Electrical installations	D7, D1, D6	NO	NO
Mechanical installations	F43.2.2 - Water, gas, heating, air conditioning installation	D1, D4, D7	NO	NO
Painting, glazing	F43.3.4 - Painting, glazing	D1, D8	NO	NO
Roof construction	F43.9.1 - Roof construction	D5, ΔD8	NO	NO
Joinery installation	F43.3.2 - Joinery installation	D2, D8	NO	NO
Manufacture of metal building components	C25.1.2 - Manufacture of metal building components	D1, D8	NO	NO

- **D1. Skills for implementing measures to improve energy efficiency and incorporate renewable energy sources in buildings.**
- **D2. Skills for the deep renovation of buildings, including joint and industrial solutions.**
- **D3. Skills for new and existing nearly zero-energy buildings (nZEBs) and bridging the gap to zero-emission buildings (ZEBs).**
- **D4. Skills for integrating renewable energy sources and efficient heating and cooling technologies, including the increased use of heat pumps - skills for installers to provide heating and cooling upgrades in renovation projects.**
- **D5. Skills related to the carbon footprint during the life cycle of a material/system (through assessing potential planetary overheating), circular construction, and efficient resource use.**
- **D6. Digital skills supporting the increased energy efficiency of buildings, especially through enhanced use of Building Information Modeling (BIM).**
- **D7. Skills for upgrading the smart functionality of buildings for greater energy efficiency (based on the smart readiness indicator), focusing particularly on sensors, building controls, and building management systems.**
- **D8. Skills for the energy upgrading of historic and heritage buildings.**

Table 5: White-collar workers - Classification of new technologies and skills, inventory of existing training and certification

Engineering Specialty	ISCO CODE	Most important required skills	Training available	Certification of qualifications
Civil engineers	2142	D1, D2, D5	NO	NO
Building architects	2161	D1, D3, D5	NO	NO
Mechanical engineers	2144	D1, D4,D5	NO	NO
Electrical engineers	2151	D1, D4, D7	NO	NO
Cartographers and surveyors	2165	D1, D5, D2	NO	NO
Chemical engineers	2145	D1, D5,D4	NO	NO
Mining, metallurgical and related engineers	2146	D1, D4, D6	NO	NO
Urban and mobility planners	2164	D1, D5, D4	NO	NO
Environmental engineers	2143	D5,D1,D3	NO	NO
Professional engineers not elsewhere classified	2149	D1,D5,D4	NO	NO

− **D1. Skills for implementing measures to improve energy efficiency and incorporate renewable energy sources in buildings.**
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− **D8. Skills for the energy upgrading of historic and heritage buildings.**

From the findings of the above paragraph, it is evident that in Greece there is a great need to educate the workforce in the construction industry. Admittedly, as was already mentioned, the ability of workers to cope effectively with the tasks in the Energy Savings domain and install renewable energy systems should be reviewed through monitoring mechanisms, continuing education and certification of individual qualifications.

However, the distinction of the workforce between people who need further training and people who are already trained, according to the educational needs proposed by the EU, is a hard work. This distinction is more related to the impact of the activity performed by each different professional group,

i.e. the extent to which each will contribute to the energy goals of 2030 (see Section 7.3 of the status quo analysis).

For the effective implementation of education, barriers such as participation costs, lack of time, absence of suitable educational programs, insufficient institutional framework, inadequate market oversight, and the creation of added value should be addressed first, as they hinder the access of professionals in the building construction sector. The state should develop suitable educational programs combined with financial support programs for training so that every professional can access them. At the same time, a series of incentives should be developed to acquire the necessary new skills by creating added value for both blue and white-collar professionals, ensuring their interest in participating in the educational programs.

## 2.3 Step 3: Determination of the development process of the National Roadmap

An analytical allocation of tasks will be applied in order to better coordinate the inputs required by the members of the NQP and the partners of BUS-REGRoUP. The SPC will monitor and control the timetables of the activities, as well as relevant objectively verifiable indicators to monitor the normal progress of the project. In addition, to ensure the closer and more effective involvement of the NQP members, different sets of questionnaires will be developed and distributed to the platform's members, investigating and recording their views and priorities. The results of this research will then be discussed extensively in relevant meetings of the NQP in order to clarify any possible concerns and conclude the main priorities of the Roadmap.

The procedure for the determination of an Action Plan to support the National Roadmap's implementation is graphically presented in Figure 3. Initially, the major axes will be defined, over which emphasis should be given to accomplish the objectives of the National Roadmap. These axes, then, will be specialized and - under each one of them - a number of measures to overcome specific barriers, reported also by the members of the NQP, are proposed. Finally, the priority measures - that will be identified - will be decomposed and analyzed to specific actions providing a detailed action plan towards 2030, completing thus the National Qualification Roadmap.
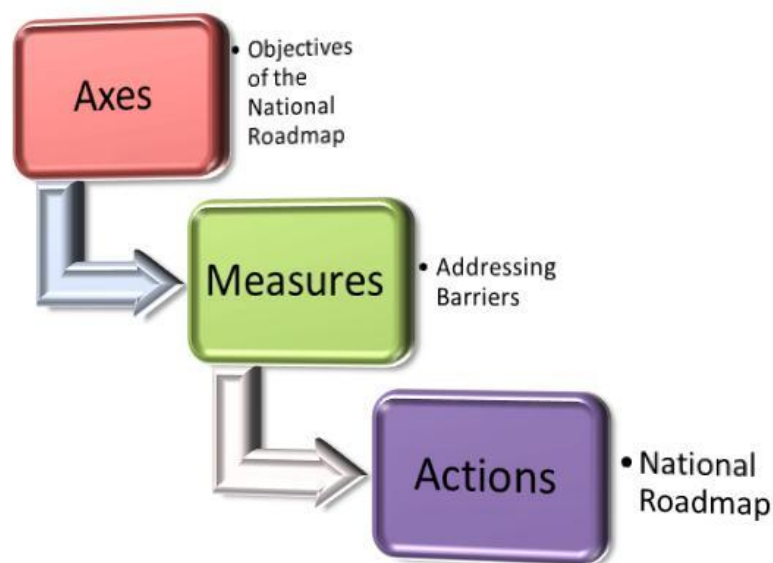
Figure 3: The three stages determining the Action Plan under the National Roadmap

Based on the above approach, a draft version of the National Qualification Roadmap will developed. In this draft outline, a summary report on the most important findings of the work done in the original work packages, such as the status quo analysis, the needs and barriers analysis up to 2030 and the priorities for the continuous vocational training (professional development) and up skilling of building construction professionals (Blue- and White-collar), will be included. It will also include the results to derive from the NQP's consultation meetings, the field research to be conducted through appropriate questionnaires and the suggestions to be received through the electronic consultation platform (Figure 4).
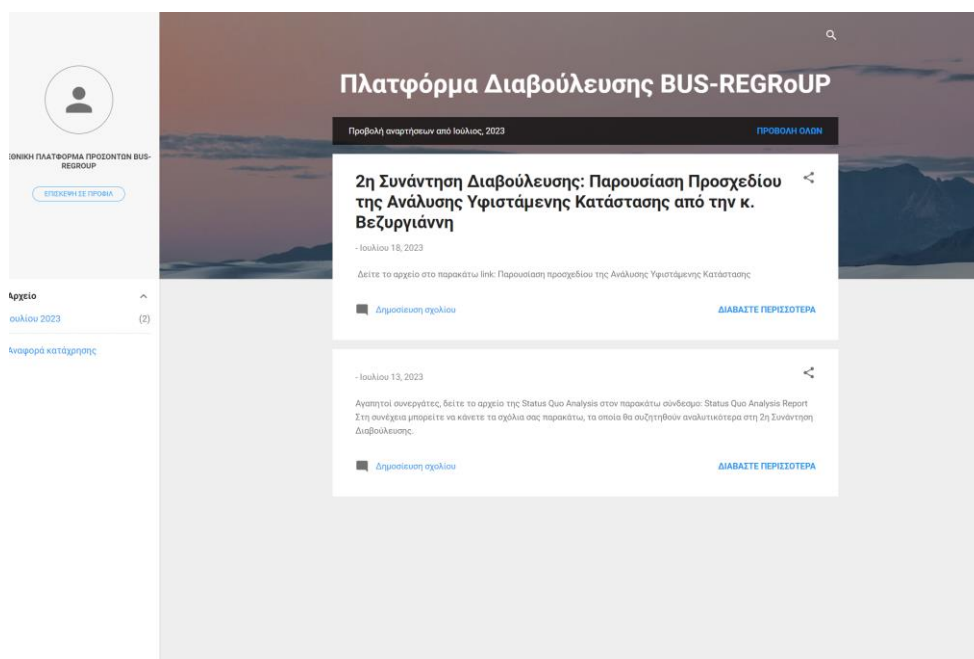
**Figure 4: Electronic consultation platform (created on the website of BUS–REGRoUP project)**

The draft version of the Roadmap will form the basis for the thorough consultation, suggesting an additional series of activities such as:

- Study of the necessary incentives to be provided to the building construction professionals (Blue and White Collar), i.e. scholarships and learning opportunities.

- Structural measures to monitor the developments in the field and the trends with regard to the qualifications of the building sector's professionals (blue- and white-collar ones).

- Determination of the involved actors and of the intensity of their participation, in accordance with their influence and level of authority to the successful implementation of the proposed measures and actions.

In the context of the dialogue among the National Qualification Platform (NQP) members expected on the 3rd consultation meeting that will be organized, taking into consideration the outcomes of the 2nd consultation meeting that has already been conducted in the frame of the BUS-REGRoUP Project, the critical parameters related to the planning and development of the National Roadmap will be extracted.

Following the initial discussions and the findings of the Status Quo Analysis (Status Quo – Gap Analysis), three specific major axes are standing out, and are proposed to be considered so that find solid solutions towards the attainment of the objectives of the National Roadmap. These three proposed axes are the following (Figure 5):

1. Ensure the required number of professionals (Blue- and White-collar) in the construction sector.
2. Enhance the skills of professionals (Blue- and White-collar) in the construction sector.
3. Overcome the institutional barriers and ensure the sustainability of the initiative.
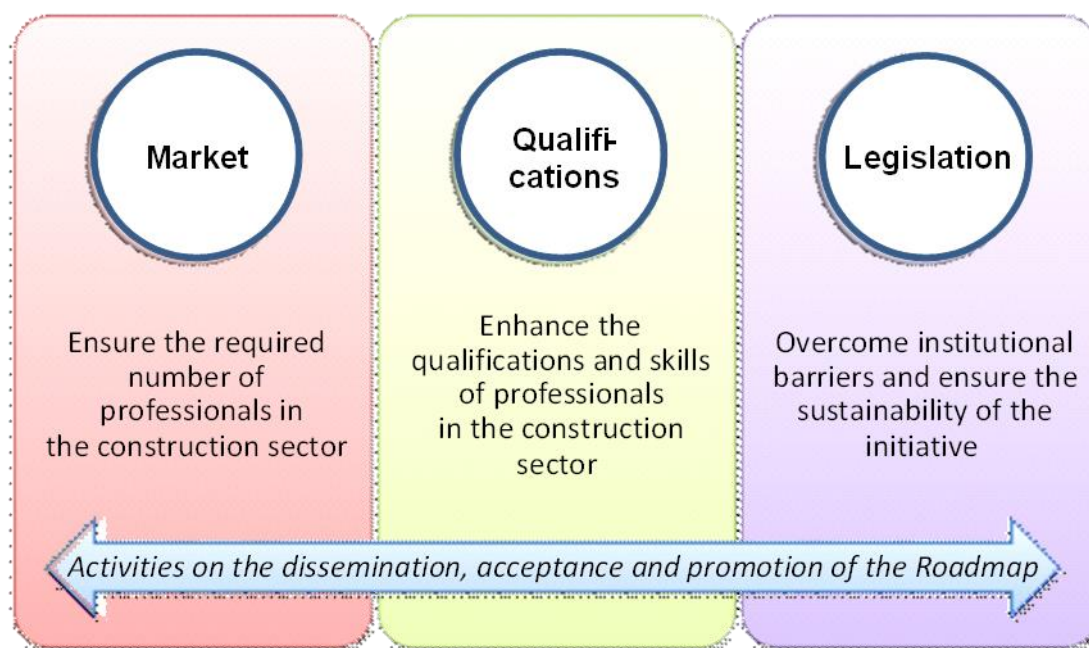

Figure 5: The three axes considered framing the attainment of the objectives of BUS-REGRoUP

The proposed sets of measures could be supported by a series of horizontal actions, concerning the information and awareness rising of:

➢ Professionals (blue and white collar) in the constructions sector on the necessity for continuous updating and enhancing of their skills and the benefits arising from the recognition of their qualifications.

➢ Citizens in order to inform them of the benefits of preferring certified professionals.

The barriers to be addressed by the Roadmap's measures have already been defined and evaluated by NQP members. During the analysis of the questionnaires that were distributed to the NQP members, at its first Workshop, several obstacles were found regarding the meeting of energy targets set for 2030.

According to a relevant inquiries addressed to the stakeholders as regards the "*Main obstacles for the improvement of the vocational qualifications of the technicians in the building sector*", the answers collected are graphically presented in Figures 6 and 7.
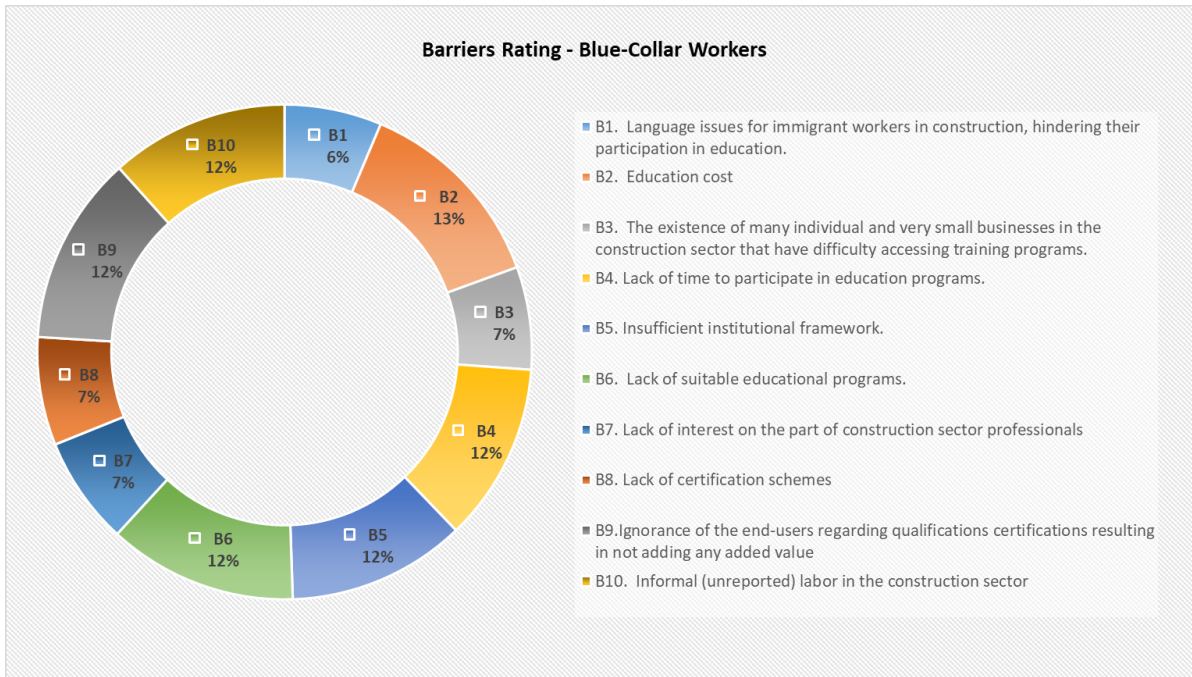
Figure 6: Barrier significance rating in the education of blue-collar workers employed in the building construction sector.
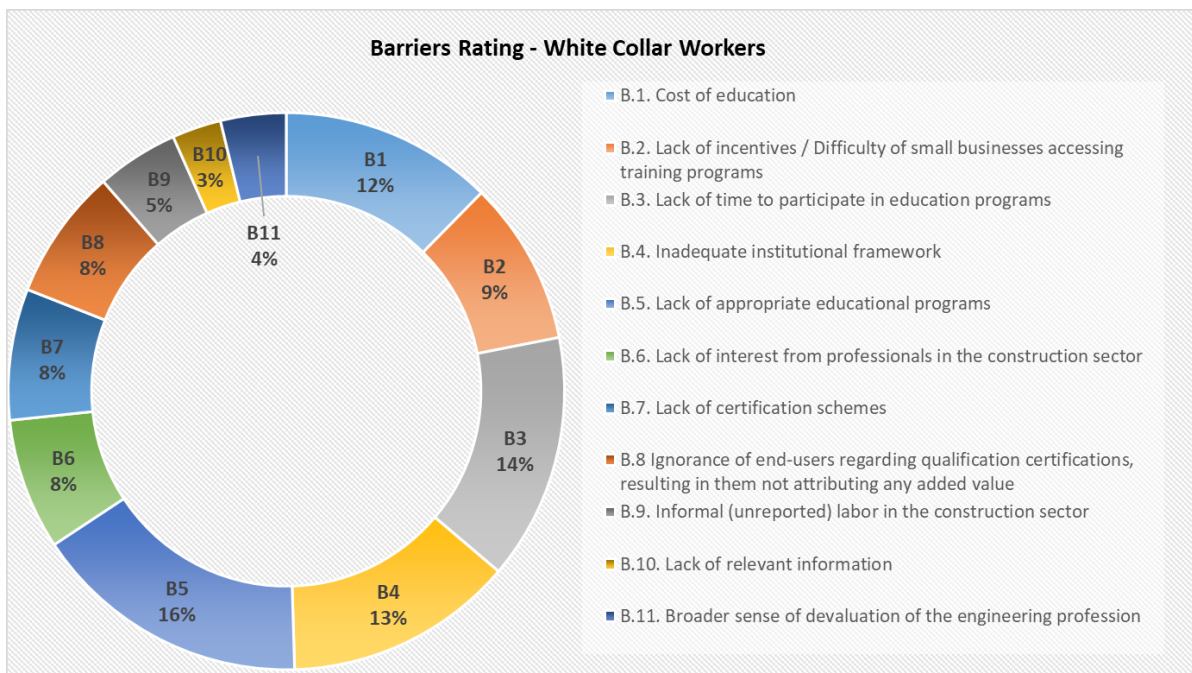
Figure 7: Evaluation of the significance of barriers in the education of engioneers employed in the building construction sector

As it is obvious from the figure above, there are several obstacles facing the blue-collar workers, whereas the lack of time and the lack of appropriate educational programs appear to be the two obstacles with the greatest impact, while the inadequate institutional framework follows. The rest of the obstacles are following an isobaric/balanced distribution.

2.4 Step 4: Evaluation of the proposed measures and prioritization

Following consultations amongst the NQP members and further discussions expected between the members of the Strategic Planning Committee, a process and evaluation methodology concluding to a global evaluation system of the proposed measures will be mutually decided. The proposed measures will be assessed over a set of evaluation criteria to determine the priorities of the Roadmap up to 2030. The evaluation system will be analysed in several dimensions that are further divided to form the distinctive evaluation criteria.

The contribution of each measure in each dimension will be evaluated in a qualitative scale and in a second phase the measures will get categorized into High Priority, Medium Priority and Low Priority, depending on the overall score they obtain. The final classification of the measures will be discussed and endorsed during discussions with stakeholders and the SPC meetings.

Specifically, the development of an integrated evaluation system of the aforementioned measures, in order to form the priorities of the Roadmap towards 2030, is proposed. Initially, the problem, (i.e. evaluation and prioritization of the measures) is defined and described to support its further analysis. Then, it is decomposed into a limited number of dimensions, from which the individual evaluation criteria emerge.

The whole fabrication process of a consistent family of criteria is executed according to the classical modeling methodology of Roy 1985[1]. This process has been recognized as essential and irreplaceable towards a substantiated and appropriate decision support in accordance with the Multicriteria Methodologies of Decision Making (MCDA-M, acronym of the Multicriteria Decision Aid and Making). This scientific field is continuously evolving and developing over the last 40 years and has achieved its wide implementation and application in both managerial and political context decision-making problems (Figueira et. al. 2005[2]).

At an **initial stage**, following a consultation phase with members of the NQP and the relevant analyses by the SPC members, the process and the evaluation methodology of the Roadmap's measures will be decided, with the use of a commonly accepted evaluation system. This system consists of some general dimensions that lead to the fabrication of the evaluation criteria, as shown in Figure 8.

The dimensions that will be selected for the integrated evaluation of the proposed series of measures are proposed to be the following:
- the measure's contribution to the national objectives of Greece
- the economic dimension, referring to both the cost of the measures and the economic benefits arising from their implementation, and
- the fulfilment of the national social needs.

Each dimension is then divided into the individual evaluation criteria that constitute it. These criteria, in order to be in accordance with the multicriteria theory, are required to be preferentially
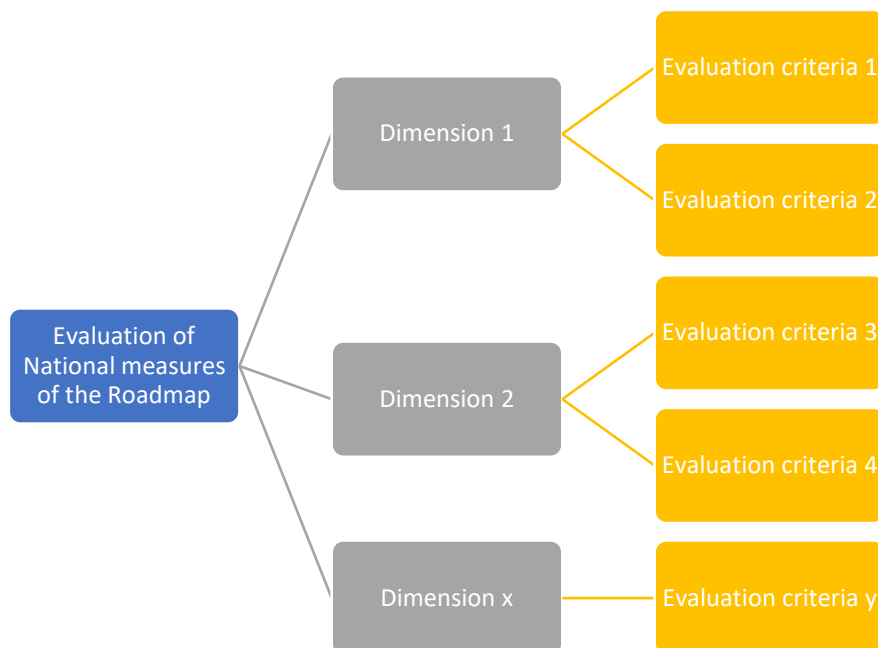
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[1] Roy, B. (1985), "Méthodologie multicritère d'aide à la décision", Economica, Paris.

[2] Figueira, J., Greco, S., Ehrgott, M., Eds. (2005), "State-of-Art of Multiple Criteria Decision Analysis", Kluwer Academic Publishers, Dortrecht

independent to the decision makers and to respect the monotonicity property (strictly increasing - decreasing).

Figure 8: Proposed structure of the decision-making dimensions and criteria for the evaluation of the Roadmap's measures

The **second stage** consists of the assignment of scores of each individual measure on the set criteria. Then, these scores-ratings are aggregated evenly to extract each suggested measure's score on the dimensions level.

The contribution of each measure over any defined criterion and dimension will be expressed qualitatively, in a three-stage distinct and ordered scale, with the aid of linguistic variables, as follows:

Table 6: Rating scale of the measures to export priorities

Rating	Contribution
+	Low
++	Medium
+++	High

The discrete and ordered scale with linguistic variables technique is widely used worldwide in a variety of classification problems due to the immediacy and clarity of the final results it provides[3,4].

The **third and final stage** of the evaluation procedure consists of the aggregation of the individual ratings for each measure provided by the members of the SPC, as extracted in the 2nd stage, to an

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[3] Doukas H., "Modelling of linguistic variables in multicriteria energy policy support", *European Journal of Operational Research*, 2013, 227 (2), pp. 227-238.

[4] Herrera, F., & Herrera-Viedma, E. (2000), "Linguistic decision analysis: steps for solving decision problems under linguistic information", Fuzzy Sets and Systems, 115, pp. 67-82.

overall one for each measure. Depending on their total scores over the three dimensions, the measures will be finally classified into **3 categories:**

(1) Measures of high priority,

(2) Measures of medium priority, and,

(3) Measures of low priority.

It must be mentioned that, the Action Plan of the National Qualification Roadmap that will be developed at the end of the procedure will be constituted of the high priority measures and actions, as these are confirmed through the above process.

2.5 Step 5: Finalization of the National Roadmap and Endorsement

The draft version of the Roadmap will initially put under consultation between the members of the NQP, in order to formulate an enhanced and updated version to be used for public consultation purposes. To achieve a more efficient and wide public consultation of the Roadmap, a web platform (Fig. 4) has already been designed and launched exclusively for this scope by the consortium. The public consultation procedure will be operational and open to the public for more than a two months period.

Upon completion of the consultation process, all comments and suggestions provided by the NQP members will be considered for integration in the manuscript of the National Roadmap. The new version will then be reviewed by the SPC, and the final version of the National Qualification Roadmap will get endorsed through voting.

All the aforementioned tools that will be implemented for the development and finalization of the National Qualification Roadmap for Greece are presented graphically (indicating also their interactions) in Figure 9.

Figure 9: Tools towards the development and finalization of the National Roadmap