

BUILD UP Skills – Romania

ROADMAP FOR NATIONAL QUALIFICATION OF BUILDING WORKFORCE



April, 2013



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Additional information

More details on BUILD UP Skills Romania can be accessed on www.iee-robust.ro

More details on BUILD UP Skills projects can be accessed on www.buildupskills.eu

More details on the IEE Programme may be accessed on <http://ec.europa.eu/intelligentenergy>

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FOREWORD

“The Ministry of Regional Development and Public Administration, as main beneficiary of the Build-Up Skills Romania Project, appreciates it to be of utmost importance, coming in support of the implementation of the Directive 2010/31/EU regarding the increase of energy performance and the realization of nearly zero energy buildings, which leads to a greater use of energy from renewable sources. Consequently, we positively appreciate the activities carried out and the results reached in this first phase of the action and we consider that the Build-Up Skills Romania project can cover, in its next phase, the types of necessary training in specific activities, such as using and implementing the systems and equipment for using renewable sources and for the increasing energy performance.”

Cristian Stamatiaide

General Director – Ministry of Regional Development and Public Administration

“Concerning this project, I should begin by mentioning it was well structured, and from the point of view of the National Authority for Qualifications, it was a consistent focus on some key aspects in need of a solution on the market, namely a national strategy regarding qualifications, the issue of quality in qualifications, aiming for an equivalence between professional and occupational standards, and the involvement of the Sector Skills Committees. This is the reason why I consider this roadmap to entirely address the aforementioned issues, since it aims to resolve part of them while at the same time looks to support the realization of the rest.

We can help by setting these qualifications, models and the competencies that are to follow in as much as, in the sector skills committees, we create the required qualifications on the market. On a long term, with these new qualifications we aim to resolve issues of strategy and professional standards.

Crucial, however, is the certification of quality, an issue also emphasized several times during meetings. In this regard, I consider professional associations, through sector skills committees, should have an increased role, since we cannot restrict providers of vocational training, we can only amend or agree to their decisions. With their support, these qualifications can be implemented nationwide.

A subsequent verification of quality rests on the organizations and professionals present on the market. I hope that with the program to be implemented and the continuation of this roadmap, we perfect the cycle that stands for competencies, qualifications, training and quality check, which also stands for total quality cycle in the construction sector.”

Nicolae Postăvaru

Deputy General Director – National Authority for Qualification

“From the perspective of the Romanian construction sector, it is a fact the years of austerity and the context of the consequent crisis could not generate an economic launch and, in this context, we need to pay special attention to the strategy the European Commission is setting for 2014-2020.

We are paying a close watch to the directions of development the Commission is setting for infrastructure and renovation of old building stock. These elements are crucial for maintaining the necessary financial fluxes and for creating jobs.

The construction sector in Romania, by the social partners view, is interested in getting involved in the BUILD UP Skills Romania (ROBUST) project since it tackles the core of preparation and creation of an interface for the Romanian market and European development, while it is still adapted both to the community and national needs, for which we need to find favourable solutions in the upcoming years.

The roadmap proposed by the BUILD UP Skills Romania (ROBUST) project, in this phase of analysis, for the internal market and to its public partner, the Romanian state, represents a necessary trajectory which can permit the anchoring and the convergence of interests, on a national and local level, between beneficiaries of works, either public or private, and service providers, namely construction companies.”

Laurențiu Plosceanu

President – Romanian Association of Construction Entrepreneurs

1. EXECUTIVE SUMMARY

The roadmap wants to set the guidelines and the priority measures necessary to substantiate a coherent national strategy, in line with the policies and strategies defined at the European level and which take into account the specific conditions at the regional/national level for the qualification of the workforce in constructions in order to reach the targets on energy efficiency and use of renewable energy sources in buildings, objectives that Romania has undertaken for 2020.

Based on the analysis of the current status carried out within the project and presented in the ANSQ report (Analysis of National Status Quo) [1], the actions stipulated in this roadmap plan to eliminate the multiple barriers identified and the gaps quantified in every sub-sector/profession/occupation pertinent to the target area. The roadmap for the qualification of workforce in construction was elaborated starting from the following main objectives:

- Identification and planning of measures to be adopted / undertake by the decision makers in order to overcome the problems and the gaps regarding the workforce in construction in order to reach the objectives set for 2020;
- Implementation of coherent and feasible schemes for training the workforce in the area of energy efficient solutions both in initial vocational training (via the technical vocation education and training) and in continuous vocational training (by drafting/updating/adapting the curriculum to the demands of the labour market).
- Adopting the necessary measures for the recognition of the added value provided by a better qualified workforce, for the financial support of the companies or the mandatory use of qualified workers.

The roadmap is structured as follows:

- **Objectives for 2020:** the energy savings and use of RES in construction in order to reach the national objectives for 2020.
- **Need for qualification and gaps in constructions.** This part is based on the analysis of the status quo with respect to the identification of gaps between the current situation on the necessary occupations in construction and the skills necessary to define these occupations at the level of 2010. This section includes:
 - the necessary skills to be acquired in order to carry out occupations that benefit energy efficiency and the use of renewable energy sources respectively;
 - the qualification need in constructions;
 - the barriers in reaching the objectives for 2020.
- **The general strategy** to cover the necessary training for reaching the 2020 objectives.
- **The identification** – as per the needs in various sectors – **of the priority measures** (qualification schemes) **for every relevant profession** in order to meet the set objectives. With respect to the measures set for the new or updated qualification schemes, the roadmap approaches the following:
 - The purpose, the content and the results of the qualification schemes proposed,
 - The costs and benefits,
 - The internships for the trainees,
 - Multidisciplinary skills and knowledge,
 - Accession requirements, qualification levels and certification of graduates,
 - Selection and accreditation of training courses organizers and quality control,
 - Certification regulations and requirements for the companies in constructions and installations,

- Subsidies and incentives, such as support schemes and certification requirements,
 - National registries / databases for an inventory of certificates,
 - Financing and management,
 - Institutionalization of qualification schemes proposed, responsibilities.
- Defining an **action plan** for the implementation of identified measures, covering the following aspects:
 - planning until 2020;
 - required resources for implementation (e.g., stakeholders and estimated budget);
 - the certification and accreditation procedure of individuals and legal entities;
 - necessary auxiliary measures (communication, subsidising measures etc.);
 - structural measures to monitor the development of skill requirements necessary to perform occupations in constructions, potential warning system on the risk of occurrence of tensions for new professions etc.
 - **Monitoring** the evolution of proposed measures.

The current number (2011) of skilled workers in the construction sector in Romania is about 207,000 workers in total approx. 331,480 employed in construction sector.

In accordance with the National Reform Program (2011 - 2013), Romania proposed as targets for 2020 a reduction of primary energy consumption by 20%, a reduction of greenhouse gas emissions by 19% compared to the base year 1990, respectively accounting for 24% of energy from renewable sources in gross final energy consumption. Reported to these values assumed at national level, the contribution of the building sector is 10-25% of the estimated total reduction of energy consumption, 8-20% of the assumed reduction of emissions of greenhouse gases, respectively 1 -3% of the energy production from renewable sources, depending on the considered scenario.

Following the analysis performed based on the developed scenarios, the net number of workers needed to be trained in the construction sector to ensure that the 2020 targets taking into account the reserve estimate obtained from other occupations for which the necessary result is zero (negative need for these occupations) is of 9,107 workers under the pessimistic scenario, and 151,982 workers under the optimistic scenario respectively, while the actual number of non-qualified workers (not accounted for) is 67,964 workers.

The occupations with the highest relevance for EE and RES (requiring substantial completion of existing competencies or skills or even to define new skills, by developing new occupational standards or by completing existing ones) are:

- Building and related electrician
- Installers (plumbers and pipe fitters, heating, ventilation, air conditioning)
- Insulation worker
- Window assembler / Glazier
- Solar thermal systems installer
- Solar photovoltaic systems installer
- Biomass boiler installer
- Ground source exchangers installer
- Heat pump systems installer,
- RES operator.

For these occupations development of qualification schemes is necessary, and the number of courses and trainers are estimated in the report based on the currently available data. In addition, it is necessary to complete other relevant occupations considered in the analysis (e.g.,

carpenters, concrete workers, bricklayer, plasterer, roofer, plasterboard specialised installer etc.) with specific skills in EE and use of RES systems in buildings.

- **Number of building workers to be trained in each sub-sector/profession to each skill level to achieve the 2020 energy targets:**

No.	Occupation	Qualification needs (optimistic scenario)
1	Window assembler / Glazier	4.722
2	Building and related electrician	6.675
3	Installers (plumbers and pipe fitters, heating, ventilation, air conditioning)	23.218
4	Biomass boiler installer	361
5	Solar photovoltaic systems installer	516
6	Ground source exchangers installer	413
7	Solar thermal systems installer	1.316
8	Heat pump systems installer	295
9	Insulation worker	49.797
10	Renewable energy systems operator	19

87.333

- **Qualification needs:**

No.	Occupation	Courses	Training providers
1	Window assembler / Glazier	169	34
2	Building and related electrician	239	48
3	Installers (plumbers and pipe fitters, heating, ventilation, air conditioning)	830	166
4	Biomass boiler installer	13	3
5	Solar photovoltaic systems installer	19	4
6	Ground source exchangers installer	15	3
7	Solar thermal systems installer	48	10
8	Heat pump systems installer	11	3
9	Insulation worker	1.779	356
10	Renewable energy systems operator	1	1

3.124

628

Taking into account the Status Quo Analysis [1] and the output of the consultation process with main stakeholders within the National Qualification Platform, the general strategy for the qualification of the workforce in constructions and the actions to set up the roadmap for 2020 can be defined starting from eight general objectives:

- Changing / updating / completing the legal framework (education, EE and RES),
- Developing proper schemes for education, vocational training and qualification by means of a coherent elaboration of occupational / vocational training standards,
- Increasing the administrative capacity (central/local authorities and Sector Skills Committees),
- Information for increasing the awareness / understanding level for stimulating the demand of EE and RES solutions (consumers / investors and employers),
- Implementing and maintaining a quality assurance framework that is at the basis of a proper accreditation / authorization system of CVT,
- Identifying/ increasing funding sources so as to reach the 20-20-20 objectives (including for vocational training),
- Integrating the “green” policies by promoting behavioural and cultural changes,
- Diminishing/stopping the migration of the workforce in constructions and reducing the unregistered workforce.

In order to implement the general strategy for the qualification of workforce in constructions and in order to ensure the achievement of the 20-20-20 objectives, an action plan was defined for achieving the eight general objectives identified. The action plan aims to detail the necessary activities for defining and implementing roadmaps until 2020, covering aspects on stakeholders that should appear as main responsibilities, either having a role in influencing the manner in which the objectives are met, the planning in time, the resources requested for the implementation (where they can be defined at the present moment), the intended certification and accreditation, the necessary auxiliary measures (communication, stimulation measures etc.). Furthermore, structural measures are proposed to monitor the development of skill requirements for constructions, potential warning system on the risk of occurrence of tensions for new professions etc.

In order to ensure the effective implementation of priority measures identified and the defined action plan, the drafting of a memorandum was initiated upon signing by the relevant authorities/ Ministries (Regional Development, Education, Economy, Environment, and Labour). The roadmap has also full support from the Construction sector and business environment representatives (Romanian Association of Construction Entrepreneurs, the Ownership of Romanian Contractors, Chamber of Commerce and Industry of Romania) – members of the National Consultation Committee.

The active consultations within the National Qualification Platform and National Consultation Committee are to be considered as a success story of the BUILD UP Skills Romania project and the need to ensure continuity of open and effective consultation process is widely acknowledged. Thus, a proposal for institutionalisation of National Consultation Committee was made and is under definition within the Ministry of Regional Development and Public Administration.

2. INTRODUCTION

The overall aim of the Romanian Energy Strategy for the period 2007-2020 is to meet the energy needs both in the present and in the medium and long term, at the lowest possible price, suitable to a modern market economy and a decent standard of living, in terms of quality and food safety, while respecting the principles of sustainable development.

According to the provisions of the National Reform Programme (2011 – 2013), **Romania set as targets for 2020** to reduce the consumption of primary energy by **20%** compared to the PRIMES 2007 forecasts (estimated at circa 10 Mtoe), a decrease in the greenhouse gas emissions by **19%** compared to the reference year 1990, respectively a weight of **24%** of the energy from renewable sources in the gross final energy consumption. As absolute values, the targets that Romania undertook for 2020 at the level of the entire national economy are presented in the following table:

Table 1 – The 20-20-20 objectives undertaken by Romania

Crt.No.	2020 objective	Value undertaken at the national level
1	Decrease of energy consumption [thousand toe]	10.000
2	Decrease of CO2 emissions [thousands of CO2 tons]	28.289
3	Energy production from RES [thousand toe]	7.267

The legal framework that supports the reach of these objectives in constructions relies on the implementation of the provisions of Directives 2009/28/EC, 2010/31/EU and 2012/27/EU.

Directive 2010/31/EU on the energy performance of buildings (EPBD) promotes the improvement of the energy performance of buildings within the European Union taking into account the outside climate conditions and the local conditions, the requirements on the indoor climate and the cost-benefit ratio, by regulating the necessary energy to heat up living spaces and hot water, for cooling, ventilation and lighting. An important provision for insuring the technical evolution and switching to an economy with low carbon emissions refers to "nearly zero-energy buildings" (nZEB, art. 9) in which, as a result of a very high energy performance level, the total annual consumption of primary energy is equal or lower than the energy production from renewable sources (inside or near the building). The directive is under transposition in the national legislation by the amendment of Law 372/2005 on the building energy performance (transposing Directive 2002/91/EC).

Directive 2009/28/EC on the promotion of the use of energy from renewable sources (and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC) sets a common framework for the promotion of energy from renewable sources. The directive sets the mandatory national objectives for the global weight of the energy from renewable sources within the gross energy end consumption and the weight of energy from renewable sources used in transportation. Directive 2009/28/EC foresees the encouragement of measures at the national and regional level in a broader community context, promoting at the same time the use of more profitable applications of energy from renewable sources in the regulations and codes in constructions. Furthermore, it promotes the elimination of information and professional training gaps, especially those affecting the heating and cooling sectors, in order to encourage the use of energy from renewable sources. To this end, Directive 2009/28/EC foresees the mandatory nature of ensuring at the national level of certification systems (or of equivalent qualification systems, based on well-defined criteria) for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps.

The directive was transposed into the national legislation by Law 139 dated July 7th 2010 and by subsequent decisions of the Government.

Directive 2012/27/EU on energy efficiency (amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC) follows the global objective to reduce by 20% the primary energy consumption of the Union until 2010 and the subsequent improvement of energy efficiency after 2020. To this end, Directive 2012/27/EU sets a common framework for the promotion of energy efficiency within the Union, as well as specific actions for implementing some of the proposals included in the 2011 Plan for energy efficiency as well as for meeting the unachieved significant potential identified on energy savings. A very important aspect consists in determining the annual 3% ratio of renovations for buildings owned and occupied by the central administration on the territory of a Member State in view of improving their energy performance so as to meet at least the minimum requirements set at the national level. Moreover, the directive stipulates the need of availability of certification and/or accreditation systems and/or equivalent qualification systems for the installers of building components with impact on energy performance.

The national documents detailing the actual measures taken into account and the implementation mechanisms for energy policies in Romania are the National Energy Efficiency Action Plan (PNAEE) [1] and the National Action Plan for valorising Renewable Energy Sources (PNAER) [2]. They have action guidelines and measures including for buildings, but without presenting a quantification of the stipulated measures so as to allow an assessment of the contribution of buildings in reaching the objectives on energy efficiency and use of renewable energy sources.

Consequently, in order to evaluate the gaps between the workforce in constructions, necessary to carry out the actions stipulated for reaching the targets of the 20-20-20 agenda, implementation scenarios were designed for actual actions to be taken in the area of existing buildings and new constructions. Thus, eight objectives were taken into account on the implementation of measures undertaken in buildings' sector as per the action plans on energy efficiency (PNAEE) and on the use of energy from renewable sources (PNAER), the first four aiming at energy efficiency in buildings and the last four aiming at the use of energy from renewable sources in buildings. Table 2 presents a summary of the estimated contribution by implementing these objectives in the building area upon reaching the targets undertaken by Romania for 2020.

The constructions sector may be considered one of the most dynamic sectors of National economy in the period 2003 – 2008, maybe the most dynamic - due to the highest degree of private share (already over 99.7% of the companies with majority private capital in 2010). In addition, it is one of the main engines that "pushes" the other areas of activity both from the point of view of stimulating the production of construction materials and from the point of view of stimulating other industrial, commercial activities, but also by creating new objectives, of a non-residential nature, civil constructions and, last but not least, residential buildings, thus directly influencing the other areas of activity.

In 2010, the constructions sector was represented by a global value of investments of circa EUR 16.6 billion, representing circa 10% of the GDP for 2010 (with an annual average increase of circa 14% in the past 6 years), with almost 53,000 companies active on the market and circa 319,000 employees (8% of the level of the national economy).

The buildings' fund in Romania is dominated by the residential sector, with over 5.1 million buildings amounting to circa 8.5 million households. The energy efficiency potential of existing building is significant, but it depends on each building given that the overwhelming majority of the buildings are private properties and the investment effort requires either massive subsidies from the State (by means of multi-annual national programmes), or stimulation by increasing the level of knowledge on the benefits and feasibility of the application of energy efficiency solutions and of use of renewable energy sources.

Table 2 - Contribution of buildings in reaching the 2020 targets

Target of reducing energy consumption (20%)	Optimistic (ambitious) scenario		Pessimistic (passive) scenario	
Objectives / scenarios	2020 Bldgs. [thou. toe]	Contrib. to Target	2020 Bldgs. [thou. toe]	Contrib. to Target
O1 – Increasing energy efficiency of multi-family buildings	400.0	4.0%	194	1.9%
O2 – Increasing energy efficiency of single-family buildings	1,269.3	12.7%	507.7	5.1%
O3 – New, high EE residential buildings	400.6	4.0%	193.7	1.9%
O4 – New, high EE non-resid. buildings	250.7	2.5%	95.8	1.0%
O5 – Solar thermal systems(DHW)	-	-	-	-
O6 – Photovoltaic systems	-	-	-	-
O7 – High efficiency biomass systems	169.7	1.7%	50.9	0.5%
O8 – Heat pump systems	-	-	-	-
TOTAL objectives	2,491	24.9%	1,042	10.4%

Emission target CO₂ (19%)	Optimistic (ambitious) scenario		Pessimistic (passive) scenario	
Objectives / scenarios	2020 Bldgs. [thou. tCO₂]	Contrib. to Target	2020 Bldgs. [thou. tCO₂]	Contrib. to Target
O1 – Increasing energy efficiency of multi-family buildings	1,117.0	4.0%	541	1.9%
O2 – Increasing energy efficiency of single-family buildings	2,583.3	9.1%	1,033.3	3.7%
O3 – New, high EE residential buildings	931.8	3.3%	450.5	1.6%
O4 – New, high EE non-resid. buildings	583.2	2.1%	222.9	0.8%
O5 – Solar thermal systems(DHW)	59.8	0.2%	22.8	0.1%
O6 – Photovoltaic systems	120.0	0.4%	24.0	0.1%
O7 – High efficiency biomass systems	71.0	0.3%	21.3	0.1%
O8 – Heat pump systems	116.3	0.4%	21.7	0.1%
TOTAL objectives	5,583	19.7%	2,338	8.3%

Energy production target RES (24%)	Optimistic (ambitious) scenario		Pessimistic (passive) scenario	
Objectives / scenarios	2020 Bldgs. [thou. toe]	Contrib. to Target	2020 Bldgs. [thou. toe]	Contrib. to Target
O1 – Increasing energy efficiency of multi-family buildings	-	-	-	-
O2 – Increasing energy efficiency of single-family buildings	-	-	-	-
O3 – New, high EE residential buildings	-	-	-	-
O4 – New, high EE non-resid. buildings	-	-	-	-
O5 – Solar thermal systems(DHW)	25.7	0.3%	9.8	0.1%
O6 – Photovoltaic systems	41.3	0.4%	27.4	0.3%
O7 – High efficiency biomass systems	169.7	1.7%	50.9	0.5%
O8 – Heat pump systems	50.0	0.5%	9.3	0.1%
TOTAL objectives	287	2.9%	97	1.0%

*) One did not take into account the consumptions of building equipped with traditional stoves, but only the estimated proportion of buildings where stoves are replaced by efficient biomass systems.

The solutions for energy efficiency buildings, as well as for buildings using energy from renewable sources are most of the times requested from the technical point of view, while the lack of proper training of architects, engineers, auditors, site foremen, technicians and plumbers is a generally accepted aspect, highlighted in the case of those involved in renovating or modernizing the buildings. On the other hand, the transition to „nearly zero-energy buildings” shall be very difficult and expensive without taking certain measures to improve the skills of the workforce in constructions.

The analysis of the national system of continuous vocational training showed that Romania has yet to finalize the process of developing the national strategy on lifelong learning. Nevertheless, the interest of decision-makers and experts for the drafting of a coherent strategy increased significantly in the recent years, while the principles of lifelong learning have been included as priorities in public policy documents regarding education, continuous vocational training, and employment. It is imperative to continue the inter-institutional debates and consultations in view of finalizing the national strategy continue in a structure that ensures participation, alongside the representatives of the ministries / other central institutions, and of social partners, with representatives for the various sectors of activity in the national economy, especially in the construction sector.

The main characteristic resulting from the analysis of current training programmes is that the specific training programmes in "key" professions in the area of energy efficiency and use of renewable energy sources in buildings, necessary for the set purpose are missing altogether. This aspect is determined mainly by the lack of occupation standards / professional training standards for these vocational occupations / classifications.

There is no uniform coverage at the level of areas of activity, the training market being a reactive market, answering to short term needs, depending on the demand of the workforce present on the internal and external market.

The lack of concern for a continuous vocational training for a significant percentage of construction companies leads to a low level of expenditures allocated both from public sources and from company sources for these activities. Part of the managers of construction companies claims the time restriction and the migration of the trained workforce to other companies as main reasons for the lack of continuity in their vocational training programmes. There are also arguments such as: the recruited personnel is already qualified, the employed personnel already has the proper knowledge, the costs are too high, the personnel is too busy and other reasons such as difficult assessment of continuous vocational training needs (CVT) and not finding a proper offer of CVT.

With regard to the occupational standards (OS), as referential for the content of training programmes and for assessing the vocational skills acquired in informal and non-formal contexts, one finds that the lack thereof in most EE or RES occupations in the Romanian Classification of Occupations (COR) as well as the incomplete or improper content for the existing ones, if the lack of financial resources for drafting the said and the lack of forecasts for the necessary occupations / qualifications demanded on the labour market are building up into significant barriers to the establishment of a functional qualification framework of the workforce in the construction sector.

Another necessary condition in the sense of building a coherent qualification framework is to eliminate the incongruities between COR and the Catalogue of Qualifications, starting on the one side from the current reality of the labour market in constructions and of the request to implement necessary measures for reaching the 2020 targets and, on the other side, from the hypothesis of a professional market of integrated skills, that take into account the “green” skill requirements.

These matters are to be solved by defining and implementing the National Qualifications Framework, which has to ensure the integration and coordination of national sub-systems of qualifications, improve transparency, facilitate access for everybody to lifelong learning, assure progress and the quality of qualifications compared to the labour market and to the civil society. To this end, the National Qualifications Framework shall represent a support for the insertion on the labour market and for social integration, a dialogue platform, a tool meant for understanding end-purposes from the point of view of learning different education and training programmes.

The National Qualifications Framework shall have to assure the coherence of qualifications and certified titles and to allow assessment, correlation and recognition of all learning results acquired in different learning contexts. As the same time, the National Qualifications Framework shall ensure comparability with the European Qualifications Framework by means of a transparent correlation of own qualification levels with the ones established at European level.

Furthermore, it is necessary to clarify authority and responsibility relations between the key stakeholders involved in the process of authorizing the providers of continuous vocational training and of creating the necessary structure to update vocational certification in general and in the field of green skills in particular. In this respect, it is necessary to have a quality assurance system at the level of the CVT provider and to solve the financial issues at the CVT level in general and with respect to the authorization system in particular.

The consultations within the National Qualification Platform with the stakeholders have shown on the one hand the position of the constructions sector to revise existing occupational standards and not to define new occupations or qualifications in constructions and, on the other side, the need to add the new occupations to the current qualification system, to raise awareness on the concepts such as "sustainable building" or "green building" by adding the necessary skills for installing, operating and maintaining modern systems for energy saving. In the current approach of drafting occupational standards, they address an entire occupational area and do not tackle only one occupation. Within the respective occupational area there must be specific skills for every occupation included in the area, thus ensuring a harmonized strategy on the elements obtained from every occupation.

Therefore, the additional skills which must be defined for the existing occupations shall rely on a coherent and flexible framework of occupations/qualifications. Thus, they require a full analysis of the current system of occupations and qualifications in constructions in order to compile a list as detailed as possible on necessary skills, list structured on a matrix model. This should allow for the identification of common skills for several occupations within one occupational area and to determine a "brick" type system for ensuring the relevant occupations/qualifications for energy efficiency (EE) and the use of renewable energy sources (RES) in buildings.

A thorough analysis detailing these skills, by means of the necessary competences and technical knowledge, must be carried out for every occupational area relevant during the implementation of the national qualifications framework.

Although this does not fall under the define purpose of the BUILD UP Skills Romania project, the qualification of the higher education personnel in constructions involved in the design, performance, operation, maintenance, inspection, control and monitoring activities of the buildings is an essential aspect in the context of implementing energy efficient buildings and systems of using renewable energy sources in buildings. Moreover, enriching the level of knowledge and qualification of the personnel with higher education involved in the inspection or control process of constructions works is a major necessity, focusing both on the inspectors in central or local public authority bodies and on the site managers and technical people in charge of execution. Consequently, the actions defined in the roadmap must also address this category of staff involved in the site activity, in order to assure the quality of the performed works.

The number of qualified workers in constructions in Romania (2011) is of circa 207,000 workers, out of the total of circa 331,480 employees in constructions. Taking into account the available

number of qualified workers in constructions, per relevant occupations and the necessary number estimated starting from the national implementation scenarios of the eight objectives necessary for implementing the measures undertaken for the buildings' sector as per the action plan in the field of energy efficiency (PNAEE) and of using energy from renewable sources (PNAER), one can easily understand the estimated gaps presented in Figure 1. The "net" necessary workforce estimated taking into account the reserve obtained from other occupations for which the current necessity is null (negative need per occupations) is of circa 9,000 workers for the pessimistic scenario and circa 152,000 workers for the optimistic (ambitious) scenario respectively, given that the current number of unqualified workers (that were not taken into account) is circa 68,000 workers.

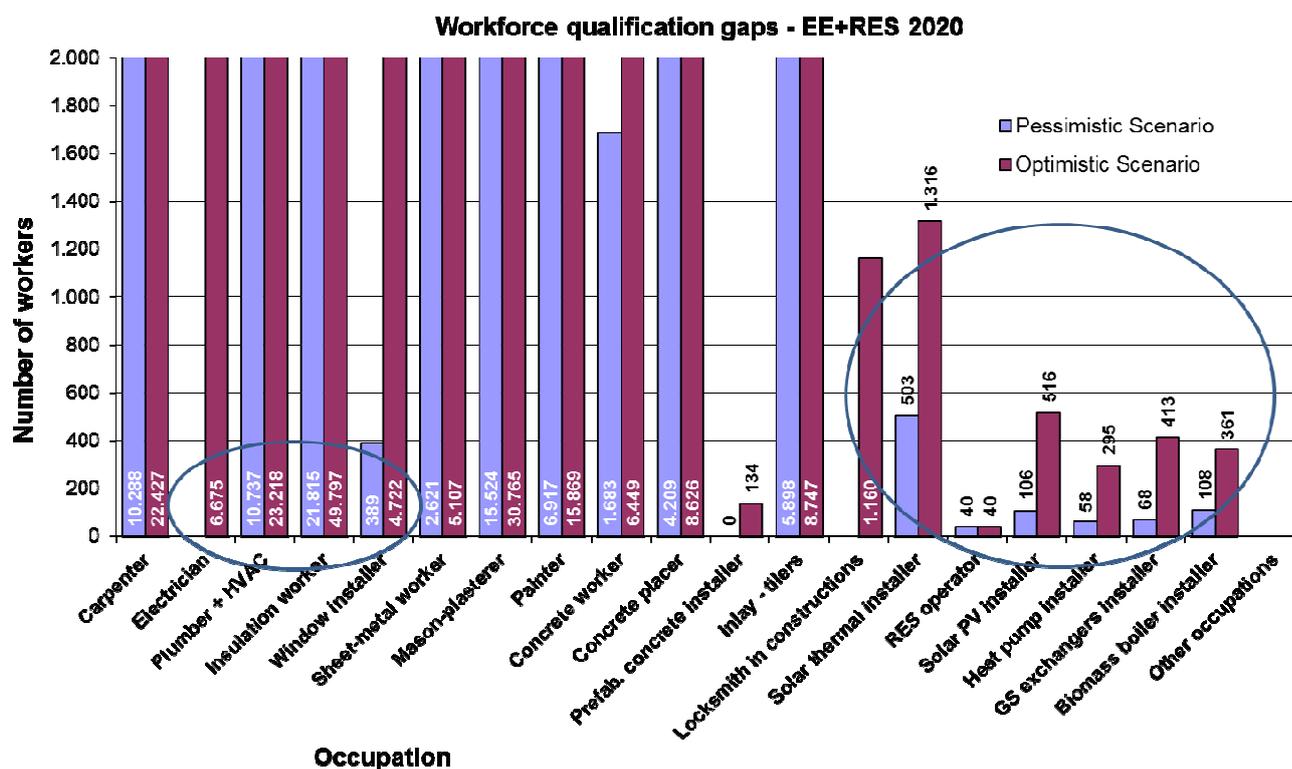


Figure 1 – Estimated gaps on workforce for EE and RES in buildings

The forecasts on the qualification needs are limited by the historical context of the evolution of the national energy sector and constructions sector, the current economic and social context, the specificity of the Romanian market (informal economy and mobility of workers in the field of constructions and in adjacent areas) and, last but not least, the productivity levels below the European average.

The occupations of great relevance for energy efficiency and use of renewable energy sources in buildings, requiring a significant addition to the existing skills or defining new skills or even new occupations/qualifications (for which qualification schemes must be developed) are as follows:

- Construction electrician,
- Construction plumber,
- Insulator / Insulation worker,
- Window system assembler and installer (fitter),
- Thermal solar system installer,
- Photovoltaic solar system installer,
- Ground source exchanger installer,
- Biomass thermal boiler installer,
- Heat pump installer,
- RES operator.

For the other occupations in constructions (e.g., carpenter, concreter, mason-plasterer, specialist fitter of plaster-cardboard etc.), it is necessary to add skills on the use of materials and technologies of thermal insulation, efficient use of energy and applying and integrating RES use systems in buildings.

Starting from the need of qualified workers per occupations, resulting from the estimate carried out based on the implementation scenarios of works for increasing the energy performance of buildings and of using RES, an estimated assessment of the number of necessary courses and qualification schemes was carried out, including the quantification of the necessary number of trainers and defining the training and accreditation structures for programme implementation, taking into account the following hypotheses:

- The duration of a training course is between 360 and 720 hours, depending on the skills previously acquired by the participants (students),
- The implementation period of a training course is about 20 weeks, and a short course is about 10 weeks.
- The number of students in a training session is max. 14 persons (for applications and practical classes) and max. 28 persons (theoretical classes).
- The estimated annual number of courses for vocational training provider is between 2.5 and 5 courses/year.

Table 3 presents the estimated number of qualification courses necessary and of vocational training providers for the occupations of maximum relevance for the analysed field.

Table 3 – Estimated needs for qualification schemes / training courses

Nr crt	Job title	Code COR	Qualification need (workers)		No. of courses		No. of trainers (FPPC)	
			Pessim. scenario	Optimistic scenario	Pessim. scenario	Optimistic scenario	Pessim. scenario	Optimistic scenario
1	Window system assembler and installer (Plastic finisher, Carpenter)	752201, 712407, 712410, 712411	389	4.722	14	169	3	34
2	Construction electrician	741101, 741102	0	6.675	0	239	0	48
3	Plumber (Gas and central heating installer, sanitary and thermic installer, ventilation and air conditioning installer, Plumber)	712612, 712609, 712602, 712604, 712608, 712606	10.737	23.218	384	830	77	166
4	Biomass thermal boiler installer	pending	108	361	4	13	1	3
5	Photovoltaic solar systems installer	741103	106	516	4	19	1	4
6	Geothermal systems installer	712615	68	413	3	15	1	3
7	Thermal solar systems installer	741104	503	1.316	18	48	4	10
8	Heat pump installer	712614	58	295	3	11	1	3
9	Insulator(thermal insulation, rainproof insulation)	712403, 712405	21.815	49.797	780	1.779	156	356
10	Renewable energy operator	313113	4	19	1	1	1	1
			33.789	87.333	1.211	3.124	245	628

The qualification schemes to be defined and implemented must allow the gradual learning and use of skills acquired previously during subsequent courses. To this end, one shall have to identify the competences specific to the EE and RES area necessary to complete the existing training specific for the other relevant occupations for the constructions sector.

The obstacles regarding skills and the workforce structure in constructions, which could affect reaching the objectives for 2020 in the EE and RES areas, were identified within the ANSQ report [1]. Among these, the most important are:

A. Poor orientation of the initial education system to the needs of the labour market with respect to EE and use of RES (undergoing completion)

- The education system is not correlated with the needs of a dynamic labour market with respect to EE and use of RES, but it is undergoing a completion process,
- The lack of clear equivalence between pre-university vocational training / university training and the criteria (formal and based on competences) on the labour market,
- The absence of systematic studies and analysis on the correlation between pre-university and university training offers and employment market requirements, both quantitatively (the tuition figure evaluation is not substantiated on a detailed analysis of the evolution of the workforce demand) as well as structural (on fields and skill levels),
- The use of narrow educational packages (over 270 specialities) has led to numerous overlaps, a less than optimal use of financial resources, difficulty in properly defining teaching norms and a more difficult proper insertion of graduates on the labour market,
- Inconsistencies in developing a strategy for strengthening the partnership with the economic and social environment,
- Lack of early information and education of children according to a valid strategy at the national level leads to the creation of interest poles for EE and RES only in certain areas of the country and only where the personal concerns of some teachers can bring into focus the importance of energy savings and minimum pollution of the environment. The children's and youth orientation toward professions related to EE and RES shall be less apparent in certain areas of the country, generating subsequent problems regarding the number and structure of the workforce,

B. Lack of a medium and long term strategy with respect to training the “blue collars”

- The lack of a coherent vision for using advanced monitoring/warning tools at a local/regional/national level or of tools for correlating the data gathered at the local/regional level, consolidated at a national level, the solutions on the lack of budgetary funds allocated for in-depth analyses on the dynamic of the workforce in general, mostly from constructions, the solutions on the communication between the responsible authorities and the specialized institutions are ways in which analysis, quantification, monitoring, forecasting, warning services etc. should be outsourced.

C. Quality Assurance for the continuous vocational training system (CVT) - undergoing completion in Romania

- By comparing the manner in which the authorization process is carried out and the requirements of the best model of quality assurance, i.e. the European Quality Assurance Reference Framework (proposed by the Technical Work Group for Quality Assurance in Vocational Education and Training of the European Commission), one can find that, beyond the provisions of the legal framework, the process of authorizing CVT providers continues to be isolated from the employment policies and strategies.
- The approved CVT programmes have rather a generic social and training value than value following the priorities defined in the local and regional development plans,

- There are certain conflicts of interests between providers and some members of the authorization committees,
- Examiners are paid by the CVT provider, which constitutes a potential source of conflict in the examiners' decision with respect to trainee graduation,
- The quality of the personnel assessing training programmes for authorization is not always according to standards. The specialists – assessors were not trained to carry out this activity,
- There are no quality assurance procedures at the level of county authorization committees.

At the level of standardizing the authorization process of CVT providers, the quality assurance elements are observed only by standardizing entries (conditions for organizing the CVT) and by standardizing the monitoring process

- The standardization of outputs is partially neglected (except for the graduation ratio which is set at minimum 70% and for the drop-out ratio respectively which should not be higher than 50%, as per the Authorization Methodology), while the vocational training result standardization is neglected entirely, not followed-up either with the direct beneficiary of the training (trainees), or with the indirect beneficiary (employers),
- With respect to occupational standards (OS), as reference for the content of training programmes and for the assessment of acquired skills, the main identified barriers concern:
 - the lack of OS for most occupations in the COR,
 - the lack of financial resources for drafting the OS,
 - the lack of forecasts for the need of occupations/ qualifications demanded on the labour market
 - the drafting of the OS by the providers and the absence of insufficiently trained sector-skills specialists to carry out the checking and validation of OS

D. Restricted access to specialisation, training and qualification for all categories of workers

- In Romania, there is no inventory of all CVT providers, but only of those authorized based on the GO no. 129/2000, starting with January 1st 2004. An analysis of the geographical allocation of authorized CVT providers and programmes highlights significant differences between counties and a high level concentration in cities,
- Also, there is no uniform coverage in the construction sector, the training market being a reactive market, answering to short term needs, depending on the demand of the workforce present on the internal and external market,
- The lack of interest for a continuous vocational training for a significant percentage of construction companies (of circa 62.5% in 2005) leads to a low level of expenditures allocated both from political sources and from company sources for these activities,
- Part of the managers of construction companies invoke the lack of time as reason for lack of continuity in the vocational training programmes apart from reasons such as: the recruited personnel is already qualified, the employed personnel already has the proper knowledge, the costs are too high, the personnel is too busy and other reasons such as difficult assessment of CVT needs and not finding a proper offer of CVT,

E. Lack of qualifications as per the requirements of the EU Directives (undergoing resolution) and of occupational standards pertaining to occupations

- There is no clear correlation between the vocational qualifications pertaining to constructions acquired through the technical vocation education and training and the COR.

F. Small number of assessment centres

- The small number of assessment and certification centres for skills acquired through other ways than formal, especially for occupations in the RES area

G. The number and structure of qualified workers compared to the EE or RES skills

- The small number of qualified workers or poorly trained workers in using new technologies designed for the EE and RES areas is generated by the erroneous thinking at the level of company management that the recruited personnel is already qualified or that the existing personnel already has the proper know-how.
- There is also the practice through which a great deal of the attributions of the workers is taken over by the engineers, the latter allocating too little time to check the EE works and/or to correct the faults found in general upon mounting and exploiting RES equipment.

H. Poorly trained, non-active (not interested) personnel with higher education

- There are a small number of specialists (engineers) with basic training on EE or RES who also have managerial knowledge for planning works and quality assurance for the said. They are usually trained via programmes of the manufacturing companies, without a check of the initial technical level of the future designer/ supplier / installer and without a subsequent check of the quality of the services / works from a design, performance, and operation point of view.

I. Migration of the workforce to other countries, especially of the EU

- On the one side, the number of emigrants exceeds the number of immigrants and, on the other side, the level of qualification of foreign workers reaching Romania is far lower than the level of qualification of workers leaving Romania. There is a visible phenomenon of “exporting” qualification, explained by:
 - 1 – the difference between the salary levels, the working and living conditions in general (insurance, sanitary system, infrastructure, banking system etc.) between the country of origin (Romania) and the country of destination (Spain, Italy, Germany etc.);
 - 2 – policies and strategies of certain Member States or non-Member States to attract the workforce.

J. Migration of the workforce between the main sectors of the national economy

- The construction companies lose their employees because they leave, attracted by higher salaries, for other economic sectors that provide a higher income (e.g. from constructions into industry or from constructions into agriculture, especially during the years with rich crops),
- The construction companies' attracting employees from other sectors of the economy must be accompanied by efforts with respect to the workers' vocational training; a lack of training of workers now taking up constructions shall attract great issues on the quality of the performed works;

K. Macro-economic phenomena

- Decreasing weight in the GDP of the constructions sector,
- Decreasing net investments in constructions,
- Extension or return of the economic-financial crisis

L. Poor absorption of European funds (mainly the structural funds)

- The poor absorption of the European funds and the low and fragmented impact of implementing funded projects.

M. Informal occupation and occupation in the informal sector. Tax evasion

- According to the calculations of the Tax Council based on the NIS data, tax evasion is quite significant in Romania. If Romania collected the taxes and taxations it has, it would have budgetary incomes as percentage from the GDP very close to the European average,
- Lack of a culture for constant learning,
- In the Romanian economy, there is too little concern from the employers to invest in Human Resources Development (HDR). The legal requirements regarding the periodicity of personnel training are not efficiently implemented.

Taking as starting point the gaps and barriers identified within the analysis of the status quo [1], the approach focuses on the measures stipulated in the National Action Plans [2], [3], mainly for the correct implementation of the rehabilitation of the existing building stock, of the requirements of the RESD Directive [5] for information and training as well as of those concerning nearly zero-energy buildings stipulated in the new directive EPBD [4]. The roadmap has three main objectives:

- Identification of the measures to overcome the barriers and the gaps within various professions so as to reach the targets undertaken by Romania for 2020 in correlation with the requirements of the national and European legislation on energy efficiency (EE), on the use of renewable energy sources (RES) as well as on vocational education and training;
- Including in the initial vocational training the training on the use of energy efficient solutions by adapting the main education curriculum, including for stimulating practical activities and creating mechanisms to support the participation to a continuous lifelong vocational training and to increase the quality of the continuous vocational training, as per the evolution of the market demands;
- Adopting the necessary measures to ensure the recognition of the added value provided by a better qualified workforce, for the financial support or the mandatory use of qualified workers.

The methodology for drafting the roadmap relied on a wide consultation process of all factors involved at the level of the central and local authorities, representatives of the business environment and of the social partners. This process was carried out during September 2012 – February 2013 by means of:

- direct interviews with the stakeholders based on questionnaires drafted by the project team,
- bilateral meetings with representative social dialogue institutions for constructions,
- consultation events organized at a local level in Cluj-Napoca, Iasi, Timisoara and Bucharest.

The roadmap must envisage the integration of the issues on sustainable development and environmental protection within the existing occupations/qualifications and the inclusion of new vocational occupations/qualifications demanded by the labour market, aiming at energy efficiency.

3. GENERAL STRATEGY FOR THE QUALIFICATION OF WORKFORCE IN CONSTRUCTIONS

The general strategy for covering the training needs so as to reach the objectives on energy efficiency and use of renewable energy sources falls under the general strategies and the policies of the European Union on lifelong learning and on developing the constructions sector.

To this end, the roadmap elaborated during the BUILD UP Skills Romania project (ROBUST) is based on two strategic pillars:

- Strategic pillar 1: EU policies for promoting lifelong learning (LLL),
- Strategic pillar 2: The strategy for sustainable competitiveness of the construction sector and its enterprises.

EU policies for promoting lifelong learning (LLL) rely on:

- the European Qualifications Framework for Lifelong Learning (EQF) [8];
- the European Credit system for Vocational Education and Training (ECVET) [7];

Moreover, taking into account the recognition of lifelong learning, via the Europe 2020 strategy for a smart, sustainable and inclusive growth, and the acquiring of skills as key-elements as a response to the current economic crisis, to the aging population and to the broad economic and social strategy of the European Union, the Council of Europe has adopted the Revised European Agenda for Adult Learning [9], by means of which the Member States are invited to focus on the following priority areas, if applicable with the support of the Commission:

1. Practical implementation of lifelong learning and mobility;
2. Improving quality and efficiency of education and training;
3. Promoting equality, social cohesion and active citizenship via adult learning;
4. Improving creativity, innovation and adult learning environment;
5. Improving the basis of knowledge on adult learning and monitoring the adult learning sector.

According to the Commission's release to the European Parliament and Council [10], **the strategy for a sustainable competitiveness of the construction sector and its enterprises** focuses on the crucial role that a sustainable constructions sector has in reaching the long term objectives of the EU to reduce by 85-90% the greenhouse gas emissions. The **starting point** of the strategy focuses on the following:

1. The constructions sector is one of the sectors most affected by the financial and economic crisis (the works in building construction and infrastructure decreased by 16% on the EU-27 territory between January 2008 and November 2011).

2. There is an increased competition from operators outside Europe, not only on international markets but also on the domestic market, especially with respect to infrastructure projects.

3. The problems in the areas of energy and environment have created a new dynamic among the enterprises and have stimulated various initiatives of the public sector which have become key factors on the market competition.

The strategy wants to answer to the following **challenges**:

- Short term: the need to support the economic growth and employment in constructions as a reaction to the crisis,

- Long term: the need of a focused and coordinated approach at the European level to improve the functioning of the chain of values, mostly by volunteer partnerships between public and private sectors, as well as via a proper regulation framework, if necessary.

The **key objectives** of the strategy are to:

1. Promote favourable investment conditions,
- 2. Improve the human-capital basis of the construction sector;**
3. Improve resource efficiency, environmental performance and business opportunities;
4. Strengthen the Internal Market for construction;
5. Foster the global competitive position of EU construction enterprises.

From the point of the view of the second main objective of the strategy, to improve the basis of the human capital in constructions, the strategy acknowledges the great deficit of qualified workers for construction sites (and, to a less extent, of products for the construction industry). Furthermore, the current status quo takes into account a great variety of education and training systems in Europe with respect to the level of centralization/decentralization, the structure of training offers, the role of the social partners, the financial structures and the content of the curriculum.

One deems that it is necessary to have:

- A better anticipation of future needs for skills and qualifications,
- A sufficient number of trainees for the relevant professions in constructions,
- An increase of the necessary conditions for a better working environment and a better career management, for a greater mobility of workers in constructions and for providing more diversified cross-border services.
- A better taking into account of the impact of the aging workforce in the EU and the situation of labour health and safety specific to the sector.

The measures stipulated in the strategy for the objective of **improving the basis of the human capital in constructions** are as follows:

- Short-term measures:

The “BUILD UP Skills” initiative:

- o adapting the vocational education and training to skills and qualifications needs in terms of energy efficiency and renewable energy sources.
- o defining national qualification roadmaps to 2020 and support the setting up of large-scale training and certification schemes,
- o estimated effects: increasing the number of qualified on-site workers on the market and improve the confidence of building-owners to invest in energy improvements.

The Member States, the builders' organisations and the education institutions are invited to negotiate collective agreements to support skill development in relation to the BUILD UP Skill initiative or other similar schemes.

- Long-term measures:

- To promote, in the context of the European social dialogue, the initiatives aimed at adapting vocational education and training to the future qualifications and skills needs of the construction sector, including in relation to resource efficiency, identifying basic requirements for skills in specific branches and facilitating the mutual recognition of qualifications;
- To support the European sectoral social partners in the construction industry in creating a European Sector Skills Council in constructions;
- To encourage the development of initiatives in areas such as energy and resource efficiency in buildings, health and safety, quality standards and training, including apprenticeship for young people. These initiatives may take the form of information

campaigns and training and include, depending on the national context, joint management of funds.

- To test the feasibility of Sector Skills Alliances in sustainable construction (via the lifelong learning programme), i.e. partnerships between providers of vocational education and training (VET), businesses and other stakeholders, with the aim of delivering appropriate, updated and new curricula and courses as well as innovative ways of delivering vocational education and training.

In the long run, the strategy [10] invites the Member States, the social partners in the construction industry and the education units to establish partnerships for supporting appropriate vocational education and training schemes at national and regional levels, which respond to current and emerging needs of the construction sector, in particular to enhance management capacity and the deployment of information and communication technologies.

Starting from the main strategic guidelines already presented and taking into account the results of the consultations within the National Qualification Platform, the main actions defining the qualification strategy in construction in the two directions mentioned i.e.:

- Drafting and implementing the National Qualifications Framework (equivalent to EQF) and of a modular qualifications/skills system ("bricks") allowing for the definition of transferable credits depending on general, key and specific skills (necessary knowledge and capacities) and depending on cross-skills,
- Creating the proper legal framework for promoting partners between the construction industry / technology providers (EE and RES) and the education system.

Qualification schemes, assuring mechanisms to ensure for a compatibility between the demand and the offer of qualified workforce and monitoring (labour market and key skills) as well as developing support initiatives (information/ awareness raising campaigns, training and qualification campaigns) must be funded as much as possible from public funds. To this end, it is very important to substantiate and size the financing programmes for 2014 – 2020 by trying to bring in mostly funds for increasing the education level in general and the level of qualification of the workforce in constructions especially for energy efficiency and use of renewable energy sources. The necessary priorities consists in increasing the use of funds attracted from the EU and diminishing / eliminating excessive bureaucracy for accessing funds.

Furthermore, in order to identify action guidelines and to formulate measures within the roadmap, a series of important qualitative issues was discussed within the National Qualification Platform regarding the status quo of the CVT system and of the evolution of the construction market, as follows:

- o Revision of the current skills system in constructions and energy and correlating the classification of occupations (COR) with the nomenclature of qualifications (including with the new skills necessary for energy efficiency and RES in buildings). To this end, it is necessary to elaborate a detailed list of relevant skills, structured on a matrix model, allowing for the identification of common skills for several qualifications within one occupational area and for the establishment of a "bricks" system for assuring the relevant qualifications for EE and RES in buildings;
- o Expanding the dialogue to adapt the tuition figures and the numbers of initial vocational training with the need of the workforce market in constructions, with the involvement of the main stakeholders at local level;
- o The need to develop mechanisms that allow for an efficient vocational orientation in order to facilitate the real option of students in the pre-university education toward constructions;
- o Defining within the strategy the manner in which the trainers are trained and the need to involve as much as possible in this sense the university /research centres and professional associations;
- o Assuring a coherent system of acknowledgement of qualifications obtained in informal or non-formal conditions, including through skill assessment centres that have among their

members representatives of employer's associations and/or of professional associations and, as the same time, to assure the specific/technical skills for assessment;

- o Imposing a monitoring system via which to check periodically the implementation of the requirements and to allow the performance of corrective actions taking into account undergoing re-assessments (being necessary to set persons in charge of reporting and assessment, relevant timeframes and intervention and control tools);
- o The need to add in the future, in the tender specifications pertaining to the performance of objectives from public funds, the mandatory documents attesting the qualification of performing workers or to include in the law the mandatory nature of qualifications;
- o Adding to the current qualification system the new occupations aiming at energy efficiency and use of renewable energy sources, raising awareness on the concepts of "sustainable building" or "green building" by adding the necessary skills for mounting and exploiting modern systems of energy saving;
- o The need to fund qualification schemes for the workforce by the state, via dedicated programmes with a well-sized funding level and tools for a flexible implementation;
- o Limited relevance of the practical training of students in the vocational and technical education units stems from the lack of developing partnerships between the education and the economic environments; it is necessary to create partnerships between the companies involved in constructions and the education system, both by adding these obligations in the law and via material co-interest or tax facilities;
- o The need to define a body that periodically certifies the skills of the personnel involved in energy efficiency works and in implementing systems using renewable energy sources in buildings.

Taking into account the abovementioned aspects, the general strategy for the qualification of the workforce in constructions and the actions to set up the roadmap for 2020 can be defined starting from eight general objectives:

- Changing / updating / completing the legal framework (education, EE and RES),
- Developing proper schemes for education, vocational training and qualification by means of a coherent elaboration of occupational / vocational training standards,
- Increasing the administrative capacity (central/local authorities and Sector Skills Committees),
- Information for increasing the awareness / understanding level for stimulating the demand of EE and RES solutions (consumers / investors and employers),
- Implementing and maintaining a quality assurance framework that is at the basis of a proper accreditation / authorization system of CVT,
- Identifying/ increasing funding sources so as to reach the 20-20-20 objectives (including for vocational training),
- Integrating the "green" policies by promoting behavioural and cultural changes,
- Diminishing/stopping the migration of the workforce in constructions and reducing the unregistered workforce.

The main stakeholders involved in implementing the actions included in the roadmap are presented below.

- **Central authorities:** The General Secretariat of the Government, ministries (Ministry of Regional Development and Public Administration, Ministry of Economy, Ministry of National Education, Ministry of Environment and Climate Change, Ministry of Labour, Family, Social Protection and Elderly People), specialized institutions and bodies subordinated to, under the authority of or coordinated by the central public administration (The National Authority for Qualification, the National Centre for Technical Vocational Education and Training Development, the Environment Fund Administration,

the Romanian Energy Regulating Authority, the National Employment Agency, the State Inspectorate in Constructions etc.);

- **Local authorities:** the authorities of the local (or regional) public administration, the regional development agencies, the existing mechanisms and cooperation networks (the Mayors' Convention, the Energy Cities Association in Romania, the Association of Romanian Towns and the Mayors' Club initiative);
- **Sector Skills Committees:** through the *Sector Skills Committee in Constructions* and by establishing and the functioning of an inter-sectoral work group in cooperation with the *Sector Skills Committee for Electricity, Thermal Power, Oil and Gas* and with the *Sector Skills Committee for Vocational Training in the field of Environmental Protection*;
- **Entrepreneurs / construction companies;** ARACO (Romanian Association of Construction Entrepreneurs), PSC (Ownership of Construction Contractors), builders' associations or construction company associations;
- **Material / technology suppliers:** associations of producers and suppliers of construction materials and of EE and RES technologies, business owners;
- **CVT suppliers (trainers):** Companies or associations providing continuous vocational training in constructions;
- **Support organizations:** Nongovernmental / non-profit organizations, media and advertising companies;
- **Relevant professional associations:** AIIR (Romanian Association of Building Services Engineers), SUNE (Association of New and Renewable Energy Sources), SRG (GEOEXCHANGE Romanian Society), APMCR (Romanian Association of Construction Materials Producers) etc.;
- **Trade Union Federations:** FGS Familia (General Federation of Trade Unions), BNS (The National Trade Union Block) etc.

The general strategy for the qualification of the workforce in constructions necessary to make sure that the 20-20-20 objectives are met is synthesized in table 5, by presenting the 8 main objectives depending on the recommended timeframe so that the targets for EE and RES in buildings are reached by the year 2020. The main objectives are detailed further on in the roadmap. The scheme in table 5 highlights the stakeholders that should either undertake the main responsibilities or the role in influencing the manner in which objectives are reached.

Table 5 – General strategy and main objectives (synthesis)

● = main responsibility

○ = may influence

Stakeholders	Central authorities	Local authorities	Sector Skills Committees	Construction entrepreneurs / companies	Material / technology suppliers	CVT Providers	Support organizations (NGO, media etc.)	Professional associations	Trade Union Federations	Short timeframe		Medium timeframe			Long timeframe				
										2013	2014	2015	2016	2017	2018	2019	2020		
Main objectives	●	○	●	○	○	○		○	○	Updating / completing the legal framework (education, EE and RES)		---	---	---	---	---	---	→	
	●		○	●	○	●		●	○	Developing proper CVT schemes – elaborating coherent OS/ SPP		---	---	---	---	---	---	→	
	●	●	●	○				○	○	Increasing the administrative capacity (authorities and sector skills committees)		---	---	---	---	---	---	→	
	●	○	○	○	○	○	●	●	○	Information – raising awareness/ understanding for stimulating the demand of EE and RES solutions		---	---	---	---	---	---	→	
	●	○	●	○	○	○		○	○	Implementing and maintaining a quality assurance framework → adequate accreditation / authorization system for CVT		---	---	---	---	---	---	→	
	●	●	●	●	●	●	●	○	○	Identifying/ increasing funding sources so as to reach the 20-20-20 objectives (including for vocational training)									→
	●	●	●	○	○	○	○	○	○	Integrating the “green” policies by promoting behavioral and cultural changes									→
●	○		●				○	○	Diminishing the migration of the workforce and reducing the unregistered workforce									→	

4. IDENTIFICATION OF PRIORITY MEASURES TO REACH THE OBJECTIVES

So as to define the main elements that must be taken into account upon drafting the qualification schemes, a analysis was carried out of the correspondence between the occupations / qualifications for which end programmes can be organized with qualification certificates, the occupations in Romania (COR) and the skills envisaged for every occupation for which an occupation standard exists. All the relevant occupations for constructions and energy efficiency and use of renewable energy sources were selected and classified according to their relevance in relation to the purpose of the ROBUST project, as follows:

- 1 – Highly relevant (qualification scheme per occupation or occupational area; it is necessary to analyse the common skills for occupations in the area and to complete the skills),
- 2 – Partially relevant (analysis of the skills to add),
- 3 – Not relevant (low relevance)

The occupations of great relevance for energy efficiency and use of renewable energy sources in buildings, requiring a significant addition to the existing skills or defining new skills or even new qualifications (for which qualification schemes must be developed) are as follows:

- Construction electrician,
- Construction plumber,
- Insulator / Insulation worker,
- Window system assembler and installer (fitter),
- Thermal solar system installer,
- Photovoltaic solar system installer,
- Ground source exchanger installer,
- Biomass thermal boiler installer,
- Heat pump installer,
- RES operator.

For the other occupations in constructions (e.g., carpenter, concreter, mason-plasterer, specialist fitter of plaster-cardboard etc.), it is necessary to add skills on the use of materials and technologies of thermal insulation, efficient use of energy and applying and integrating RES use systems in buildings.

The analysis started during the project highlighted the need to carry out a complex analysis of the current skills system in constructions and in energy so as to establish a correspondence between the classification of occupations (COR) and the nomenclature of qualifications (including with the new necessary skills for energy efficiency and RES in buildings). To this end, it is absolutely necessary to start a priority action which, based on the national qualifications framework (undergoing elaboration) used to make a detailed list of relevance skills, structured on a matrix model, may allow for the identification of common skills for several qualifications within one occupational area and to establish a “bricks” system for insuring the relevant qualifications for EE and RES in buildings. This action must be carried out on all relevant occupational areas for constructions, with the participation of the relevant actors (National Authority for Qualifications, Sector Skills Committees in constructions and energy, specialists with relevant training in all the areas involved) and must be sized taking into account the necessary resources for implementation (a possible source of funding for this action is the European Social Fund). The main purpose of this action is to issue an occupational map in constructions so as to ensure the coherent framework for qualifications – occupations – skills.

Therefore, the proposed schemes and the occupations they target may be changed depending on the status quo (classification of occupations and lists of qualifications) and shall be developed subsequently by using the relevant funding opportunities (for example, Pillar II of the BUILD UP Skills actions – the programme Intelligent Energy Europe, the European Social Fund).

A preliminary grouping of the occupations in Romania per proposed qualifications (as per the current classification) is as follows:

- **BUILDING REPAIRS ELECTRICIAN:**

Occupations with high relevance (in the same occupational area):

741101	building repairs electrician
741102	building maintenance electrician
741106	machinery and low voltage cable fitter, builder, electrician
741107	machinery and medium and high voltage cable fitter, builder, electrician
741108	measurement and control machinery fitter, builder, electrician
741109	building electrician for trials and functional tests
741110	electrician in civil and industrial constructions
311308	building foreman electrician

Occupations existing in common skills, but which cannot be introduced completely in the same occupational area (it is necessary to analyze the skills which can be used as basis for the qualification scheme):

741201	electrical and energy equipment electrician
741206	mounting and repairs electrician for electrical protection machinery, relays, automation
741302	electrical grid exploitation electrician
741303	electrician for mounting and repairing underground electrical cables
741304	electrician for mounting and repairing aerial electrical lines
741306	electrician for protection relays, automation and electrical measurements
741307	maintenance and repairs electrician
741308	automated installations fitter electrician
742203	radio electrical mechanic
742204	cable network electrical mechanic
742207	telecommunication electronics technician

- **CONSTRUCTIONS FITTER**

712602	water, sewage plumber
712604	central heating and gas fitter
712606	ventilation and water conditioning fitter
712608	thermal heater fitter
712609	technical-sanitary and gas installations fitter
712612	thermal and sanitary grids fitter
311208	building foreman fitter

- **INSULATION WORKER**

712401	sound insulation worker
712402	refrigeration insulation worker
712403	waterproof insulation worker
712404	special works insulation worker (anti-acid and protection)
712405	thermal insulation worker

- **CARPENTRY MAKER/INSTALLER**

712407	assembler-installer of aluminium double glazed windows
712408	maker of double glazed windows
712409	maker of aluminium and plastic carpentry
712410	installer of aluminium and plastic carpentry
712411	maker- installer of aluminium and plastic carpentry with double glazed window

752201 universal carpenter

- **FITTER FOR SOLAR THERMAL SYSTEMS**

741104 fitter for solar thermal systems

741105 installer of solar installations

- **FITTER FOR SOLAR PHOTOVOLTAIC SYSTEMS**

741103 fitter for solar photovoltaic systems

- **FITTER FOR GEOTHERMAL SYSTEMS**

712615 ground source exchanger installer

- **FITTER FOR HEAT PUMPS**

712614 heat pumps installer

712603 refrigeration Ground source exchanger installer

311923 refrigeration foreman

- **BIOMASS THERMAL HEATERS FITTER**

712608 thermal heater installer

- **OPERATOR OF RENEWABLE ENERGY SOURCES**

313113 operator of renewable energy sources

- **Occupations requiring additional knowledge and/or introducing new skills**

311201 Civil, industrial and agricultural works foreman

311202 Standardizer foreman

311203 Building technician

311207 Building design technician

311208 Building foreman fitter

311209 Building installation technician

311210 Site manager

311215 Building costs and measurements technician

311216 Cost technician

311303 Energy/electrician foreman

311304 Electrical-power tool, thermal power technician

311306 Energy/electrical technician

311307 Energy/electrical design technician

311308 Building foreman electrician

311504 Locksmith foreman for metal constructions

313101 Operator of installations in electrical power plants

313102 Machine operator of installations in electrical power plants

313105 Operator at the thermal control room

313204 Machine operator for air conditioning

711205 Mason-plasterer

711401 Concrete worker

711402 Concrete steel worker

711403 Installer of reinforced steel pre-cast items

711501 Joiner (excluding restoration)

711502 Restoration joiner

711901 Hydrometer worker

711904 Asphalt worker

711909 Sewage draining worker

711912 Hydro-geologist worker

712102 Roof builder

712201 Tiler

712202 Fitter of interior and exterior boards

712203	Mosaic worker (excluding restoration)
712204	Parquet flooring fitter
712206	Linoleum floor fitter
712207	Dry-board installer
712301	Plasterer (excluding restoration)
712406	Installer of plaster board walls and ceilings
721305	Site tinsmith
721310	Roof and coverage system tinsmith
721311	Ventilation system tinsmith
712412	Installer of geo-synthetic materials
712413	Geo-membrane welder
712414	Geo-grid installer
712415	Installer of geo-textile and geo-composite materials
713101	Upholster
713102	Painter
713204	Varnisher
721312	Construction tinsmith
721421	Builder-installer of metal structures
721433	Maker- installer of metal structures for buildings
721434	Installer of outer walls and curtain walls
741215	Electro-mechanic for electrical machinery and equipment
741216	Electro-mechanic for water-sewage pumping station
752221	Building scaffolding carpenter
754301	Quality Inspector
811401	Binder material kilnman
811402	Shaper of cement-asbestos products
811403	Finisher of cement-asbestos products
811404	Binding grinder operator
811405	Asbestos-cement paste preparator
811406	Processor of asbestos-cement products
811407	Operator for impregnating hydro-insulating products
811408	Machine-operator for pre-cast elements made of concrete and steel concrete
811409	Operator for manufacturing wool and mineral wool products
821104	Installer of air conditioning devices
818906	Pump man
818907	Compressor operator

4.1. Scope, content, learning outcomes of the proposed schemes

The purpose of the qualification schemes consists in acquiring the necessary skills in order to execute, mount/install, provide maintenance and repair components of the building envelopment, building envelopment systems and heating, cooling, ventilation, artificial lighting installations, preparing and use of domestic hot water and for automating and adjusting the functioning of the building systems including strength circuits and data transmission, as well as of systems for producing and using energy from renewable sources, in energy efficient building using energy from renewable sources (nearly-zero energy buildings), depending on the specificity of the occupations that the respective schemes address.

To sum up, the qualification schemes aim to acquire the necessary skills for knowing technologies and products, their advantages and limits by means of:

- Putting into practice the energy efficiency techniques by every profession,
- Mastering the interference with the other building components.

Content of the qualification schemes

The content of the qualification schemes must provide for:

- a detailed list of necessary skills, expressed by means of knowledge and capacities that the person must acquire in the vocational training process, depending on the specificity of the occupations that the respective schemes address,
- the training programme per relevant modules and per categories of activities (theoretical and practical training) so as to ensure the flexibility of the vocational training process depending on the basic components that the trainee has at the beginning of the vocational training courses,
- the necessary material basis for performing the practical training of the trainees,
- the tools by means of which the learning results are assessed upon concluding the courses.

Results:

Obtaining a qualification/graduation certificate after a certification process according to legal requirements in Romania (based on G.O. no.129/2000 regarding adult vocational training).

In addition, the qualification schemes must lead to:

- Facilitating the integration in the European qualifications Framework - opportunity to acquire a European certificate;
- Validation of the skills, upon practicing the profession, by an independent national institute or body – by granting a skill acknowledgment certificate;
- Improving the basis of the available skills on the workforce market (leads to economic growth and employment).
- Simplifying vocational transitions.

4.2. Costs and benefits

The Qualification Scheme entails both costs for performing the training and initial costs for preparing the qualification scheme.

Estimate costs for a training course are:

- 400-800 Euros/trainee – for qualification programmes of 720 hours,
- 150-250 Euros/trainee – for specialty/improvement programmes of 80 hours.

The benefits of the courses cover several areas, the most important regarding the training and improvement of fitters and developing specific skills in the area of installations using heat pumps. These translate into a proper performance and adjustment of the installations. Thus, there are also benefits regarding the increased efficiency of installations with direct impact on the reduction of the fuel consumption and, implicitly, of the exploitation costs.

From the point of view of every participant to the qualification process, the benefits of the qualification schemes are as follows:

- For the employer
 - Increasing the quality level of the works,
 - Increasing the appreciation and trust level of the beneficiary of the works,
 - Improving the market image and references for other works,
 - Performing the terms for registration to tenders for work procurement;
- For the beneficiary:
 - Total risk reduction (risk at the level of the household/building),
 - Major reduction of the risks for installation defaults,
 - Obtaining a high efficiency functioning installation,

- Increasing the additional profit (by recovering the investment consequent to reducing the power consumption or by selling the produced power),
- Reducing the risks of collateral damage during the mounting;
- For the trainees:
 - Easiness in obtaining employment contracts in regulated qualification,
 - Full reduction of the risk for work accidents,
 - Increasing the level of trust and appreciation of the employer and of the beneficiary;
- For the trainers / training services suppliers:
 - Increasing the workload by diversification,
 - Increasing the number of trainees,
- For the State:
 - The existence of the contributions for developing the institutional capacity of the CVT system by training, assessing, certifying and recognizing the practice of new qualifications in the EE and RES areas in constructions;
 - Long term positive effects in ensuring a quality system for developing the national qualifications framework by promoting national, sectoral and multi-regional projects in the areas of EE and RES in constructions,
 - Supporting national projects for building rehabilitation and building nearly-zero energy buildings, by developing CVT in EE and RES areas in constructions at the national level.

4.3. Internships for the trainees

The legislation stipulates a total number of 720 hours for the internship, out of which a theoretical training of 240 hours and 480 hours practical training respectively, in order to get a qualification certificate. If, by means of initial testing, one proves that the person already has half of the skills described in the operational standard, the duration of the course can be reduced to half, i.e. 360 hours (out of which 120 hours of theory and 240 hours of practice).

For specialty training programmes, the duration of the course is 80 hours (20 hours of theory, 60 hours of practical training).

The practical internships are organized in authorized or accredited laboratories or workshops (the theoretical part), while the practical training is carried out in special spaces or within the economic operators.

For the proper performance of the practical internship, one needs workshops simulating the real installing conditions and multiple endowments, updated from a technological point of view so that the learning and testing process be analogue with the situations to be met in practice.

In general, authorized trainers do not have such endowments while universities and the research centres founded in the last 2 years, which have or undergoing endowment with the necessary machinery, do not have the right to be vocational training providers for level 2 qualification.

The solution consists in cooperation between authorized training providers and the university / research environment.

The internships shall consist of modules, depending on the specific components for every occupation, the number of affected hours per every module being as per the agreed Training Manual. Testing/assessment shall be carried out separately for every module so that the result may define every set of skills.

The internship is deemed carried out along with the completion of all modules. This can be deemed an eligibility condition for the certification of the qualification.

4.4. Multidisciplinary skills and knowledge

The new technologies and materials imposed for sustainable constructions, protecting the environment, assuring the buildings' energy efficiency require, on the one hand, that every occupation/qualification already practiced in this area be reviewed from the perspective of the requirements set to check whether new skills need be introduced and, on the other hand, that new occupations/ qualifications actually be introduced. Therefore, the review of skills appropriate for occupations/ qualifications in constructions in order to reach the 2020 Objectives needs to be carried out at the constructions level through a priority action. It is recommended that until this is finalized there should not be a completion of the classification of occupations with new individual occupations.

The key competence areas defined in the European Qualifications Framework (EQF) are transferable to all sectors of activity, on the same level of autonomy and responsibility, in order to support the integration of the workforce, social inclusion and lifelong learning. These key competence areas are as follows: communication in the official language, communication in foreign languages, basic skills for mathematics, science, technology, IT, learning skill, social and civic skills, entrepreneurial skills, cultural expression skills.

Upon defining the qualification scheme for these skills one needs to mention the autonomy and responsibility level in close relation to the qualification level set for the qualification scheme.

The results of the analysis of the status quo of constructions show the need to approach the following aspects during the development or increase of the qualification level of the workforce active in the built environment:

- Understanding the heat transfer principles,
- Understanding aspects regarding the quality of the indoor environment, airtightness of construction elements and building envelope and the building ventilation requirements,
- Knowing the modern technologies of performing buildings on various components of the envelope (efficient carpentry systems, ventilated outer walls, performance systems of thermal and hydro-insulations for roofs and terraces etc.),
- Knowing the modern technologies for ensuring the adjustment in building systems (building management systems, automated command and adjustment systems, thermostat etc.)
- Knowing a broad range of measures and solutions for increasing energy efficiency in buildings and the manner in which these are appropriate for various building solutions and materials used in constructions,
- Principles for prioritizing building energy efficiency solutions in the sense of the frequency at which they must be applied so that maximum efficiency is provided,
- Understanding the role and the importance the heating / cooling solution/ source has in ensuring the building's energy efficiency,
- The capacity to evaluate the impact on the primary energy consumption of the building and on the environment, Installing the thermal and/or electrical use (PV) systems of the solar energy,
- Installing the systems with heat pumps and geothermal, air or water sources
- Installing the heat recovery systems and efficient building cooling systems,
- Installing the heating systems with biomass and the cogeneration systems,
- Installing the systems of wind power use in buildings,
- Knowing the quality assurance systems for materials, measures and procedures in the building energy efficiency.

Detailing these skills, by means of the necessary competences and technical knowledge, must be carried out for every relevant qualification (or occupational area) during the implementation of the national qualifications framework.

For every occupation, specific skills must be ensured for:

- Knowing the technology and the products, with their advantages and limitations
 - Features of the used products and the sizing principles,
 - Technical performance,
 - Environmental performance,
 - Costs and other selection criteria;
 - Standards and regulations
- Mastering the methods of implementing technologies and interferences with other building components:
 - System compatibility,
 - Identification of sensitive/critical points,
 - Identification of frequent malfunctions,
 - Limitation of associated implementation defaults,
 - Methods of self-adjustment and control,
 - Accountability for the performed work,
 - Maintenance and repair,
 - Tests upon completing the works so as to demonstrate before the client the proper functioning of the executed system,
 - Quality management issues and consumer care.

4.5. Entry requirements, qualification levels, and certification of trainees

According to the legal framework in force in Romania, in order to take up a qualification course, the individual must have first graduated the mandatory general education. In order to take up an improvement course, the individual must have graduated from the mandatory initial education and must prove to have attended prior (basic) training as per the requirements set for every qualification scheme, depending on the specificity of the relevant occupations.

The training programmes are defined for the level 2 of qualification, in general, respectively for the level 3 of qualification in the case of technicians/ foremen (according to the current National Qualification Framework).

In the technical vocational and education training, the certification assessment is carried out via an examination, upon completing a vocational training route, and depends on proving, throughout the training, to have acquired all units of competences in the Vocational Training Standard (SPP).

For the certification of levels 2 and 3 of professional qualification, the assessment of projects carried out by the candidates and of the pertaining presentation relies on an assessment sheet drafted at the national level and the assessment results in acquiring the vocational qualification certificate.

The structure of the project must include:

- (a) title page with: the identification details of the education unit, of the candidate, of the project coordinator, the year of graduation, the vocational qualification, as per the Nomenclature of vocational qualifications for which training is provided in the pre-university education in force;
- (b) table of contents;
- (c) table of contents;

- (d) actual content;
- (e) bibliography;
- (f) annexes.

The examination is carried out by mixed committees, consisting of teachers and representatives of the economic agents with whom the education units have concluded conventions for practical internship.

For the graduates of the continuous vocational training courses, the certification occurs as per the Certification Methodology approved by 501/5253/2003 Order of the Minister of labour, social solidarity and family and of the Minister of education, research and youth for approving the 501/5253/2003 [1].

4.6. Selection and accreditation of training providers and quality control

It is not mandatory for the vocational training providers to be authorized. Only the providers that want to issue certificates with national acknowledgement are subject to the authorization process.

The authorization is carried out by county authorization committees, with a threefold structure (representative of the government, of the trade union organizations and of the employers' organizations).

The authorization applies to each training programme, for a period of 4 years. Throughout the 4 years of validity of the authorization, at least 3 monitoring visits must be carried out by the specialists appointed in the authorization committee.

In order to become authorized, the vocational training providers must prove that they carry out vocational training programmes with trainers that have the teaching training specific for adult vocational training and the specialty qualification appropriate to the training curriculum.

Throughout the practical internship with the economic agents, the trainees are supervised and guided both by trainers appointed by the vocational training provider and by the specialized personnel appointed by each economic agent.

The vocational training provider must prove to have the necessary material basis for performing the vocational training programme:

- a) the vocational training provider must ensure proper spaces for the theoretical and practical training, for at least one training cycle prior to the moment when the authorization is requested.
- b) the vocational training provider must ensure for every trainee in the vocational training programme the possibility to carry out his/her practical activity and to be supervised and guided by the trainer and by the specialty personnel appointed by the economic agent.
- c) the spaces for the theoretical training must be endowed with presentation equipments such as: board, flipchart, computers, retro/video-projectors, video/TV devices etc. and with demo materials (sheets, video tapes, specialized software etc.) as per the training programme;
- d) the spaces for performing the practical training activities are endowed with the equipment, machinery, implements, tools, devices stipulated in the training programme, all functional;
- e) each trainee in the vocational training programme is provided a training place properly equipped as well as the amount of consumables necessary for performing the practical activity;

- f) the sizes, endowments and organization of the training spaces, compared to the number of trainees, as well as the performance of the training programme must observe the specific norms regarding labour protection;
- g) each trainee has individual access to the course support/trainee handbook. The course support/trainee handbook may be distributed to the trainees also per chapters, as the training curriculum is covered;
- h) the course support/trainee manual must allow for the presentation of basic knowledge as per the training curriculum;
- i) as applicable, the vocational training provider makes available to the trainees other materials such as: practical application notebook, documentary materials, bibliography etc.;
- j) one needs to stipulate whether the course support/trainee manual is not drafted by the vocational training provider.

The material basis of the vocational training providers can be owned or assigned, leased, acquired via partnership or other means throughout the duration of the vocational training programme, situation attested with documents.

If the practical training is carried out with the economic agents, the evidence for the existence of the spaces for the practical training is ensured by means of a contract concluded between the provider and the respective economic agent.

In the contract, the vocational training provider makes sure that the economic agent is authorized as per the law and makes available to the trainees the training spaces, the proper endowment for the training curriculum and the specialized personnel for the supervision and guidance of the trainees.

If the case of vocational training programmes resulting in qualification certificates, the trainer issues teaching projects for every topic included in the modules/subject matters, as applicable, presented at the request of the persons in charge of monitoring or, as applicable, of auditing the vocational training.

4.7. Certification rules and requirements for building companies and installers

Currently, in Romania there is no legal procedure for the certification of the companies in constructions or installations respectively.

ARACO, along with PSC and the relevant professional associations in constructions and installations have issued since 2009 a proposal for a unitary framework on the certification of the technical-vocational qualification of construction operators so as to acknowledge their capacity to carry out constructions compliant with the main requirements, as per the provisions of Law no. 10/1995 regarding quality in constructions, as amended, as well as the procedures regarding the monitoring of the certification activity. So far, this proposal did not lead to an actual law and ARACO is evaluating upon request the companies in constructions. After the assessment it issues certificates to confirm the existence of the experience and technical capacity of the said, as per the provisions of a regulation, the certification system being voluntary.

In this respect, the proposal to delegate competences / appoint a national body/ institute for the certification of the vocational qualification of operators in constructions is a starting point for assuring the certification of the workforce qualification within construction companies.

4.8. Incentives and drivers, such as support schemes and certification requirements

For the implementation of qualification schemes and for ensuring a sufficient number of qualified personnel in the area, one can use partnerships between the course organizers and the installation companies, possibly also with the ANOFM (AJOFM) – National/County Employment Agency – participation.

The European centre for vocational training development CEDEFOP grants subsidies for specialists and decision-making persons in the education and vocational training areas. The subsidies are granted to improve understanding, knowledge and implementation of lifelong learning systems – by organizing study visits. The study visits subsidized in 2013-2014 are focused on 5 topics, among which: encouraging cooperation between education environments, training and market, encouraging the acquirement of key competences in all education and training systems and designing strategies for lifelong education and training. The study visits examine these topics from 3 different perspectives: general education; vocational education and training and lifelong education and training.

The persons that can sign-up for the GRUNDTVIG programmes have a high risk of social exclusion and thus they can benefit from education in the area of environment sustainability (e.g., the workshop 2012-1-AT1-GRU13-07572 – July 2013; how to make my house more sustainable? 2012-1-CZ1-GRU13-10276 – June 2013; course on energy saving and environmental protection 2012-1-DE2-GRU13-11666 – June 2013).

Another manner of supporting the vocational training at the national level is to grant subsidies to companies that hire the unemployed or graduates. The measures aim to subsidize by at least 50% the salaries of the new employees (56 million Euros), to subsidize the vocational training of the employees (52 million Euros) as well as investments made to improve working conditions so as to reduce professional illnesses (25 million Euros). These subsidies observe the provisions of art. 54 para. (4) and (5) in the Methodological norms for implementing Law 76/2002, as amended and completed.

The subsidies and the incentives, granted at the national level for the performance of a vocational qualification scheme in constructions so as to ensure the energy efficiency and the integration of renewable energy sources in buildings, can be seen in the following scheme:

- Subsidies granted by the state to companies which provide the vocational training of the employees in the mentioned target area;
- Subsidies granted by the state to the organizations (professional associations) to ensure the local and regional work groups of specialists necessary to implement the EE and RES in constructions vocational qualification scheme;
- Subsidies granted to the local authorities to train own specialists in EE and RES in constructions – necessary in drafting, implementing and following-up on the local plans of the municipality's energy management, in drafting and assessing the tender specifications and in performing the short term tasks with respect to “model-public buildings”
- Temporary incentives granted to companies manufacturing equipments and installations to encourage the involvement via investments in branch level training programmes (organizing and endowing local/regional training centres);
- Subsidies/ incentives granted to the population to encourage working with qualified persons with certificates;
- Subsidies for dedicated campaigns to educate the population and guide it toward certified professional services, for understanding the long term investment phenomenon;

- Incentives dedicated to trainers who develop training building managers and company managers as key factors providing the implementation of the scheme on EE and RES in constructions;

4.9. National registries

The National Registry of Authorized Vocational Training Providers and the National Registry of Assessment and Certification Centres for Vocational Competences acquired in non-formal and informal contexts are available on the website of the National Qualifications Authority. The current legislation does not stipulate the functioning of a registry of graduates, but the authorization committees have tables with the certified graduates of training programmes, without these tables being centralized at the regional or national level.

In order to ensure the level of quality and transparency of the training process, one must draft and update constantly a national registry both of training providers (legal entities) and of individuals who entered or graduated the qualification examinations. These lists must be centralized by a body entitled to do so (e.g. MDRAP (Ministry of Regional Development and Public Administration) or by a body delegated to acknowledge the competences in constructions, including those regarding EE and RES in buildings).

4.10. Financing and administration

Training and assessing the results of the vocational training are currently funded from the following sources:

- fees paid by the trainees;
- own funds of the employers;
- the budget for unemployment contributions;
- vocational training programmes funded from the state budget, local budgets or European funds.

Since the opening of the funding lines for projects approved to be carried out from the European Social Fund, a great number of people participate in vocational training programmes financed by this fund.

In order to encourage the increase of the participation rate of individuals to vocational training, the training legislation stipulates the following fiscal facilities:

- **Art. 34 in the G.O. no. 129/2000** on adult vocational training - "The commercial companies, the national companies, other institutions may make expenditures for the employees' vocational training, expenditures which are then expensed as applicable from the corporate tax or from the income tax".
- **Art. 43** in the same law stipulates that "Authorized vocational training providers are exempt of VAT payment for vocational training operations".

These fiscal facilities target only the vocational training providers that authorize the programmes.

Proposals for funding schemes:

A1 Funding a general competence scheme for EE and RES with applicability in constructions, in Romania, would entail:

- funding for a National Qualifications Body in Constructions for EE and RES in buildings;
- funding for a definite period of the group for implementing the qualifications scheme (the minimum: salaries, office, and logistics)
- funding the endowment of regional centres for validating competences (if buildings are taken from the existing pool);

- funding the delegation of the Independent National Body with regional branches (for a limited period);
- funding the vocational training courses.

A2 The continuous vocational training can be funded from:

- a) budgetary sources stipulated for continuous vocational training - (it is necessary to establish a value and to integrate it in the best budgetary axis)
- b) budgetary sources from the unemployment fund – (it is necessary to establish a dialogue with the representatives of the Ministry of Labour in order to specify the value limits and the pertaining law);
- c) financial sources allocated by the economic agents (taxes) and aimed for continuous vocational training as per the provisions of the legislation in the future;
- d) own financial sources of the applicants (fees for participating to the courses, fees for validating the competences, fees for periodical re-authorization, fees for the accreditation of the trainers);
- e) sources coming from different SOP HRD projects etc. ;
- f) from the taxpayers – individuals, who can redirect the destination of up to 2% of the due taxes for the net annual income in order to sponsor non-profit entities created and functioning as per the law. If the object of these entities is to stimulate vocational training, they can use the respective amounts to fund said objective.

The continuous vocational training may be supported by companies and professional associations and by the employers' associations.

A3 Specific proposals:

Funding the implementation of the national scheme (the work team and the necessary endowment)

a) Creating a special Fund

- financing source: “The fee for training the workforce” that every applicant of a Building Permit shall have to pay when starting the process to install a PV small heater. This is similar with other fees such as 0.5% of the C+M. This entails the changing of the Law imposing the payment of the fees pertaining to obtaining the Building Permit by adding it. This fee is paid by the beneficiary.
- financing source: “The fee for training the workforce” applied to traders, taking into account that they have a great interest for the proper and swift installation of PV panels (producers - 2 or 3 in Romania - undergo the completion of the investment, the PV importers and dealers may contribute with a fee calculated depending on the number of panels sold). This fee is paid by the stores selling the equipment.

Financing the endowment of regional centres (buildings to be allocated from the national pool).

NOTE: the necessary spaces for performing the activities can be allocated or leased preferably in office buildings developed from European funds. In Bucharest, there are five office buildings with available spaces for lease or pre-lease. The development of the projects is supported via the ROP Priority Axis 4, “*Supporting the development of the regional and local business environment*”, and the owners must allocate a certain share of the office spaces for business incubators, respectively to be leased only for small and medium enterprises, including by start-ups.

- b) proposing and allocating in the Budget for 2014 of the Ministry of Development the endowment of regional vocational training centres in EE and RES in constructions;

Fund management: the proposal is that the Independent National Body to carry out the implementation of the scheme be also the Manager of these Funds via its regional branches. It is required that this Body be of “public interest”.

Financing courses via the employers

- c) Legislation for incentivizing employment: as per **law no. 76/2002 as amended** regarding the system of unemployment contributions and incentivizing employment, **art. 48, par. (1)** the employers who organize, based on an annual plan for vocational training at the unit level, vocational training courses for their own employees receive 50% of the expenditures with vocational training organized for maximum 20% of the hired personnel. One can benefit from this facility for only one vocational training programme per year. The amount stipulated under paragraph (1) is granted from the budget of unemployment contributions, under the chapter Education Expenditures, at least 15%, to the employers selected annually by the employment agency.

Via professional associations and employer's associations such courses can be organized in common and they can thus benefit from the amounts stipulated in the law.

Furthermore, for funding the implementation of a vocational qualification scheme, one can organize "Fund Raising" campaigns at national level.

B. Administration

Generating a national fund for implementing the vocational training scheme in EE and RES for buildings can be one of the tasks of the Independent National Body alongside the validation of competences, periodical accreditation, management of a sole registry of providers, management of a sole registry of certified persons, attesting trainers, monitoring results.

This body can be deemed to be of national interest as per the national development strategy, the national energy strategy, the national occupational strategy.

5. INSTITUTIONAL FRAMEWORK AND MECHANISMS FOR MONITORING THE EVOLUTION OF THE STRATEGY IMPLEMENTATION ACTIONS

Currently, if the qualification schemes proposed are authorized as per the G.O. no. 129/2000 on adult vocational training, they are deemed institutionalized.

The institutionalization of qualification schemes for occupations/ qualifications with major relevance for the tackled area can be carried out by means of the procedure of making official the existing qualification schemes (see the legislation in force). Nothing additional is required in this respect.

The following is proposed for the institutionalization of the qualification scheme:

- Delegating a **National Body for Qualification in EE and RES for buildings** – by means of the minister order initiated by the Ministry of Regional Development and Public Administration (for approving the functioning regulation) – it is necessary to elaborate a set of functioning rules;
- An Independent National Institute/ Body, delegated/ appointed by Government Ordinance, with the following tasks: to acknowledge the competences, to check/ test periodically the knowledge / competences, to manage a sole registry of providers, to manage a sole registry of attested persons, to attest trainers, to monitor the results of the qualifications;
- A law for vocational training on energy performance in buildings by means of which, alongside the technical aspects, one can legally regulate the creation of new bodies, the creation of the said by direct allocation of funds, fund management and result monitoring
- Adding to the Government Programme 2013-2016 a measure on the increase of the qualification level of the workforce in EE and RES for buildings – given that energy efficiency and stimulating investments to produce renewable energy are Strategic Objectives under the energy chapter.

The monitoring of the qualification schemes is a fundamental function of the development implementation policy for the national qualifications scheme in a new sector, of interface between energy and constructions, both being subject to the occurrence of major risks in case of poor quality works. The monitoring relies on noticing and registering at regular intervals the corresponding activities, entailing in principle gathering information from the stakeholders involved in implementing the respective schemes. Reporting the gathered data shall allow making decisions in time that shall improve / increase performances of the qualification scheme adopted at national level for EE and RES in constructions.

Consequently, this function entails the supervision of the functioning of the qualification system necessary to ensure the safe and efficient functioning of construction works for the implementation of EE and RES by monitoring the parameters assessed based on performance criteria and on various risk factors.

This purpose can be reached by using detection, identification and control procedures so as to minimize the main risks, specific risks or systemic risks that may occur - consequent to the scheme malfunctions;

- **Legal risk:** risk of an improper functioning of the scheme due to not implementing or implementing improperly the legal provisions and/or due to the improper or insufficient legal and regulatory framework.
- **Operational risk:** risk occurring consequent to human error and/or non-functioning of a component of the installation (due to lacking capacities to identify, assess or test the human factor involved in the installation and verification process). One can give the example of a risk occurring frequently in the case of installing systems that produce

photovoltaic electricity – the diminishing of the production capacity of the photovoltaic panels due to the prints that the fitters/installers generate when stepping on the panels).

- **Credit risk:** risk occurring consequent to the incapacity of the beneficiary to carry out in full the obligations undertaken upon contracting the funds necessary to implement the investment of energy efficiency or the production of energy from renewable sources.
- **Liquidity risk:** risk occurring consequent to the incapacity of the implemented solution to carry out obligations in full upon deadline (though having the capacity to carry out the obligations undertaken subsequently) and thus, payment of the pertaining instalments is postponed, thus generating additional costs by yielding new interests.
- **Main risk:** causing material damage (on goods in general of the beneficiaries of the works) or human damage (the actual fitters) due the occurrence of defects leading to fires (in case of electricity production systems) or via various types of serious labour accidents during the installation of the systems (working at heights – outer walls or roofs).
- **Systemic risk:** the risk that the non-observance of the obligations of a trainee, by participating to this system of the qualification scheme, or in the market, may lead to the non-observance of the qualitative obligations undertaken by other participants. This failure to observe the obligations may cause serious issues – sometimes it may lead to the bankruptcy of the involved companies (cases in which the financing of the works is carried out by involving European funds; they require a final validation of the quality of the works, case in which various quality shortcomings, generated by the poor qualification of the workforce, may lead to the invalidation of the pertaining payments)

The monitoring is carried out based on a legal system that shall be put in place and which is part of the objectives of the Action Plan that the project submits for analysis and debate. The efficiency shall be evaluated from the perspective of investments in education and vocational training.

The central indicators for progress monitoring in the area are as follows:

- adult participation to continuous learning;
- adult competences.

The main objectives for monitoring:

- **Ensuring a broad legal system stimulating the beneficiaries, the companies, the individuals and the trainers – to ensure the connection with the operator appointed to ensure the monitoring**
- **Ensuring the efficiency of the work systems** by providing – at the level of the system operator and/or at the level of the participants to the market – **efficient and transparent principles and procedures** for the functioning of the system implementing the qualification scheme.
- **ensuring a strong, permanent channel for transmitting policies for assuring the national qualifications scheme in energy efficiency and RES in constructions**
- **Observance by the vocational training providers of the legal framework** Ensuring and observance of a well substantiated legal framework in the activity area of the relevant qualification scheme for energy efficiency and RES in constructions is a significant part of the operability of the monitoring system.
- **Maintaining the trust of the public in the certification systems, in work tools and in the European certificates acquired**
- **Maintaining the financial stability of the implementation system for the National Qualifications Scheme for EE and RES in constructions** The interested factors involved in the safe and efficient functioning and operation of the qualification scheme - terms which can be met under functionality conditions provided that the basic logistics is ensured.

The monitoring activity covers:

- The effects generated by the fiscal encouraging systems, financial tools, bonuses, exemptions of taxes and taxations meant to support or to correlate with the qualifications scheme;
- The activity of the qualified individuals;
- The activity of the companies involved in the energy efficiency and RES in buildings
- The activity of the providers of training services.

The National Monitoring Centre may be part of the National Body appointed as responsible for the Registry of Workforce Qualifications in Constructions.

In order to eliminate possible conflicts of interest, the monitoring activity and operation activity within the National Body must be separate.

Main tools used in the monitoring activity:

- data gathering;
- on-site inspections;
- cooperating with national regulatory and/or supervisory authorities;
- cooperating with Sector Skills Committees;
- assessing complaints of the consumers;
- assessing the observance of the national/European/international standards by the Training Providers and by the qualified individuals;
- adding legal changes or changes of the regulation frameworks – consequent to the cumulated comments (by means of recommendations);
- applying sanctions from a broad range starting with the publication (of the conclusions) of the monitoring report and finishing with the fundamental effects, consisting in suspending/revoking the granted rights.

Levels of monitoring:

- Locally (counties)
- Regionally (regions)
- Nationally

The role of Professional Associations in monitoring

- The professional associations must define clearly the objectives and must publish the essential roles and policies;
- The professional associations must ensure work systems based on the Fundamental Principles of every area
- The professional associations must monitor the observance of the fundamental principles by the other parties active in the monitoring procedures;
- The professional associations must cooperate with the central, local and regulatory authorities and with other national and/or foreign relevant authorities to promote the safety and the efficiency of the approved systems.

Within the monitoring activity, the Professional Associations cooperate with:

- Regulatory, central and local authorities
- Relevant Sector Skills Committees
- Other interested factors

6. ACTION PLAN FOR THE IDENTIFIED MEASURES

In order to implement the general strategy for the qualification of workforce in constructions and in order to ensure the observance of the 20-20-20 objectives, table 6 proposes an action plan for achieving the eight general objectives identified (as per the scheme in table 5). The action plan aims to detail the necessary activities for defining and implementing roadmaps until 2020, covering aspects on stakeholders that should appear as main responsibilities, either having a role in influencing the manner in which the objectives are met, the planning in time, the resources requested for the implementation (where they can be defined at the present moment), the intended certification and accreditation, the necessary auxiliary measures (communication, stimulation measures etc.). Furthermore, structural measures are proposed to monitor the development of skill requirements for constructions, potential warning system on the risk of occurrence of tensions for new professions etc.

Table 6 –Structure of the actions proposed for the roadmap (qualifying the workforce in the constructions field)

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
Objective no. 1: Changing / updating / completing the legal framework (education, EE and RES)		
<p>Develop and implementing the National Qualifications Framework:</p> <ul style="list-style-type: none"> - Classifying and describing the qualifications according to the set of criteria corresponding to the levels of vocational learning and training, - Switching from 5 levels (current) to 8 levels (EQF), - National Qualifications Registry - Setting the level descriptors (for learning results), - CNCSIS (university level) integration. 	<p>Drafting, implementing and updating the National Qualifications Framework (NQF) are under the responsibility of ANC, which manage the National Qualifications Registry.</p> <p>Also, ANC is assigned as a national point of coordination for implementing the European Qualifications Framework (EQF), ensuring referencing NQF to EQF, as well as the similarity between the national qualifications system and qualifications systems present in other countries.</p> <p>Therefore ANC has to ensure the participation of all relevant actors, including higher education and vocational training institutions, social partners, sectors and experts comparing and using the qualifications at a European level.</p>	<p>Drafting the National Qualifications Framework is a priority in the whole process regarding qualifying the workforce in constructions, most of the actions proposed for the roadmap depending on its fulfilment. Therefore, the timeframe for implementing this action is immediate. It is estimated that the legislative enactment regarding the National Qualifications Framework will be released until the middle of 2013 following the finish of consulting the relevant actors from the central public administration, professional associations, employers, social partners and sector skills committees.</p>
<p>Reviewing the current skills system in constructions and energy and achieving a correspondence with the Classification of Occupations (COR) against the list of qualifications from CVT (including new required skills for energetic efficiency and RES in buildings). Therefore it is necessary to compile a list of relevant skills, as detailed as possible, structured on a matrix model, in order to allow the identification of common skills applying to several occupations within one occupational area and to determine a “brick” type system for ensuring the relevant occupations for EE and RES in buildings</p>	<p>The detailed analysis of the current skills system is a priority action in order to review the existing occupational standards and introduce new occupations in the current qualifications system (together with introducing the skills required for fitting and exploiting modern systems for energy saving). The proposed action must be implemented using a priority project, realised with the participation of all relevant actors through employers (construction companies / entrepreneurs in constructions) and social partners, representatives of ANC, CNDIPT and MMFPSPV, involving the relevant sector skills committees. It is important to correctly</p>	<p>Short term, with stopping the introduction of new occupations for constructions in COR until the completion of the analysis and the proposition of the skills structure in conformity with the National Qualifications Framework. Monitoring the action can be achieved by the Sector Skills Committee in Constructions and using tools developed within the CALE project (occupational chart).</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	<p>determine the size of the required resources for designing and implementing the priority project and to ensure the participation of specialists in new fields (for example solar systems, heat pump systems etc.).</p> <p>The analysis must view the need for correlating the professional qualifications from technical vocational education and the occupations from COR and the List of Qualifications, ensuring modular type qualifications, evaluating and validating the qualifications based on previously acquired knowledge (at a certain moment).</p>	
<p>Amending Law 372/2005 on energy performance of buildings In order to ensure the transposing of Directive 2010/31/EU.</p>	<p>MDRAP is the responsible authority for transposing and implementing Directive 2010/31EU on the energy performance of buildings. In this respect, MDRAP has initiated the amendment for Law 372/2005, the legislative process being delayed by the changes taking place following the parliamentary elections at the end of 2012.</p>	<p>Adopting the law for amending Law 372/2005 is estimated to go through in the first semester of 2013. The methodological norms for enforcing the law must be issued within 60 days from the date the law was issued.</p>
<p>Transposing Directive 2012/27/UE on energy efficiency in legislation regarding buildings in Romania.</p>	<p>The Ministry for Economy, as an authority responsible in the energy field, must assure the transposing and implementing of Directive 2011/27/EU. For issues on energy efficiency in buildings and coordinating the current policies within the constructions sector, it is necessary to ensure an active dialogue with MDRAP as an authority responsible with buildings.</p>	<p>Short term, observing the deadlines set in the directive.</p>
<p>Completing the legal framework with introducing the feed-in tariff for producing electricity for small users (inside or near the building). Completing and adopting the Methodology for calculating the Regulated Price.</p>	<p>The regulating proposal is in process of being set up at ANRE. It is necessary to urgently finalize and adopt, after consulting with the interested parties, the set-up for supporting small producers, together with elaborating new simplified procedures in order to allow domestic</p>	<p>Short term. Monitoring will be acquired by ANRE using the energy supply operators. It is necessary to monitor the produced energy and the energy used by the new category of producers.</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	users (building level) to benefit from this set-up.	
Developing and implementing a quality assurance system for Continuous Vocational Training	<p>It is necessary to amend and complete the legislation on adult vocational training (GO no. 129/2000 on adult vocational training) by means of determining the principles for quality assurance in adult vocational training and setting the goals and standards (clear and measurable), of the bodies involved, evaluation methods, resources involved and reporting mechanisms. This action requires involving MEN, MMFPSPV and also the constructions sector skills committee and professional and business associations. These changes must take into account the current market requirements on workforce qualification.</p> <p>Also, the respective legislation must require quality assurance procedures within the authorizing county committees' level, as well as requirements for the staff developing the training programs viewing the authorization.</p>	<p>Short term. The proposal for amending and completing the OG 129/2000 is under discussion in the Parliament of Romania.</p>
Creating a legal framework (with norms and incentives) used for promoting a sustainable partnership between education / vocational training and constructions industry.	<p>It is necessary to introduce in the legislation (key actors MEN, MMFPSPV) some obligations which allow and promote the development of partnerships between the companies involved in constructions and the educational system, as well as by means of material incentives or fiscal facilities. Thus constructors will be more involved in the development of educational programmes which will result in qualifying the workforce as per with the current requirements in this field.</p> <p>To this end, the analysis of the German model</p>	Short and medium term.

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	<p>(dual educational system) is useful and also taking over the essential elements and the provision for efficient implementing mechanisms in order to develop the dual educational system and partnerships within the educational Environment – economical Environment.</p>	
<p>A system for acknowledging the professional qualifications and skills in view of better access in the constructions labour market. Determining and maintaining the functionality of a body meant to ensure the acknowledgement of the skills in constructions for qualified / specialized individuals, to ensure the record of the qualified staff (public registry) and periodical skills checks. The body must be able and have the duty to periodically check the skills of the staff involved in energy efficiency work and implementing the systems using renewable energy sources in the building. Qualifying the constructions staff / workforce can represent a part of a certification system for technical-vocational qualification of the constructions operators (which must also consider demonstrating the documents proving the staff's qualification).</p>	<p>It is necessary to determine and structure a body (MDRAP or a body authorized by MDRAP) for acknowledging qualifications in constructions (including EE and RES) in view of grating practice rights. This body will elaborate and ensure the functioning of the register for qualified staff in constructions as well as implement a mechanism meant to periodically test their knowledge (taking into account the development of advanced technologies for the construction of green and energy efficient buildings). This body should ensure checking the periodical training requirement, without organizing the respective courses (does not become a training provider). MDRAP, construction business owners, professional associations and the Sector Skills Committee in Constructions can be involved in managing the technical-vocational certification of constructions operators.</p>	<p>Short and medium term. MDRAP monitoring, involving the National Consultation Committee created within the ROBUST project in order to ensure the appeal to main actors (relevant central authorities and constructions market representatives). Promoting the normative act project on certifying the technical-vocational qualifications of the constructions operators in 2013. The certification system of the constructions workers can make as a support pillar for implementing the system for certifying the technical-vocational qualifications of the constructions operators.</p>
<p>Adding the mandatory requirement in tender specifications for buildings using public funds for documents proving the staff's qualification or legal provision for the mandatory character of the qualifications.</p>	<p>This action must be implemented gradually based on qualifications or occupations, as the existence of a sufficient number of qualified staff on the labour market is recorded (using the body acknowledging the qualifications ensuring the functioning of the register for workforce qualifications).</p>	<p>Starting 2014, provided a sufficient number of staff qualified in conformity with the Registry for staff qualified in constructions, for the respective qualifications and occupations.</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	<p>Local or central authorities involved in organizing tenders for public procurement of construction works, as well as financing bodies for energy modernization programs for buildings (for example RoSEFF, EBRD, EIB, should highlight in tender specifications the mandatory character of owning a certificate for qualified staff or granting additional points to bidders with higher qualified staff)</p>	
<p>Introducing, at least partially, distance learning in order to make attending the continuous vocational training more flexible.</p>	<p>Amending and completing the legislation on adult vocational training (GO no. 129/2000) by means of introducing distance learning, partially. Considering the specific features of the field, this can only be achieved partially, for some of the theory lessons. The distance learning part could be managed through e-learning platforms which can be accessed with a username and password, ensuring the access to both course materials and other innovative materials for learning support (teaching films showing for example the stages of fitting an insulating system, logical charts, computer simulations etc.)</p>	<p>Short term.</p>
<p>Objective 2: Developing proper schemes for education, vocational training and qualification by means of coherent elaboration of occupational / vocational training standards</p>		
<p>Structuring and detailing the NQF as regards the relevant qualifications for the constructions sector by means of occupational analysis of the area, ensuring the coherence between qualifications and occupations.</p> <p>Drafting occupational standards or reviewing the existing ones to correspond the real market needs, per areas of occupation.</p>	<p>It is necessary to introduce modular type qualifications, qualification validated based on the previously acquired knowledge (at a certain time). This action can be carried out by ANC with the support of the Sector Skills Committee in Constructions in collaboration with the sector skills committees for Energy and Environment and with the participation of the relevant actors on the constructions market,</p>	<p>Short term.</p> <p>Monitoring is provided by ANC with the participation of the Social Committee in Constructions. The National Consultation Committee created within the ROBUST project can be involved in analysing the stage of implementing the actions in order to ensure the reference to main actors (central relevant authorities and constructions market</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	<p>taking into account current qualifications as well as requirements on the labour market and the need to introduce skills specific to energy efficiency areas using renewable energy sources.</p> <p>Also, elaborating and reviewing the occupational standards must be performed by specialist in the field, specialists trained for this, assigned by the Sector Skills Committee for Constructions. It is mandatory that these standards will take into account the situation of the labour market on a European level, covering occupations recognised in the EU and required by the European Directives.</p> <p>The financing sources can be provided by the European Social Fund / Sectoral Operational Programme for Human Resources Development – POSDRU.</p> <p>It is appropriate to use the “Occupational Chart” tool, developed and implemented within the CALE project, and expanding the brick type system within the System for Sectoral Auto Regulations in Constructions.</p>	<p>representatives).</p>
<p>Analysis of the qualifications and skills on a national level in constructions in order to develop transferable credits and mechanisms for assessing the skills and competences and validating qualifications.</p> <p>Defining transferable credits for professional occupations / qualifications, respectively occupations relevant for the constructions sector and also introducing specific skills for EE and RES.</p>	<p>The occupational standards elaborated based on the latest methodologies have provided the term of transferable credits for each skill, however, until the analysis of the current qualifications system in constructions is completed and a detailed list of skills is compiled (including new ones), it is not possible to quantify the transferable credits.</p> <p>The following actions are proposed:</p> <ul style="list-style-type: none"> - Creating an analysis and work group 	<p>Short and medium term.</p> <p>Monitoring via ANC and the Sector Skills Committee in Constructions, with the involvement of The National Consultation Committee created within the ROBUST project.</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	<p>composed of relevant actors (Ministries, ANC, CNDIPT, Sector Skills Committees, Training Providers, National Europass Centre, professional associations within the field, social partners etc.);</p> <ul style="list-style-type: none"> - Analysing the experiences of other countries which have already introduced transferable credits (link to EQF_NCP_1 and EQF_NCP_1 projects “Activities of EQF National Coordination Points with a view to implement the EQF at national level”); - Elaborating a project for transferable credits system for continuous vocational training; - Public debate sustained by the created system; - Adopting (through Government resolution) with a testing enforcing period in order to allow the necessary amendments. <p>In order to develop this system, a possible solution is accessing a European Funds project.</p>	
<p>Developing mechanisms that allow for efficient vocational orientation in order to facilitate the real option of pupils in secondary schools towards constructions.</p> <p>Improving the information, counselling and vocational orientation network.</p>	<p>It is necessary to use, develop and maintain the network for PICAS territorial centres monitoring the qualified workforce supply and demand, or the need for qualifications within the constructions sector, as well as services developed within CALE project (occupational chart / occupational standards).</p> <p>For a better knowledge of demand on the constructions market, and also of the workforce qualifications, professional associations, the sector skills committee for constructions, local employment agencies play an important part.</p>	<p>Short term.</p> <p>Monitoring through the National Consultation Committee created within ROBUST project together with the Sector Skills Committee for Constructions and SASec mechanisms.</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
<p>Determining how to train the trainers and the need of greater involvement towards this end of university / research centres and professional associations.</p>	<p>Amending the legislation for adult vocational training, GO no. 129/2000 on adult vocational training, authorization methodology – selecting the trainers and terms for vocational training per qualification / specialization area, in order to allow for ensuring the appropriate vocational training for trainers in speciality areas corresponding to the training scheme (especially for EE and RES) – responsible institutions: ANC, MEN, MMFPSPV. Also, taking into consideration the specificity of the constructions sector, it is useful to use higher educated trainers for the theoretical courses and instructor-foremen for practice.</p> <p>Elaborating the qualification schemes determined as priorities in the ROBUST project (maximum relevance qualifications for EE and RES) can be provided by accessing 2nd Pillar of the Build Up Skills action (where also training the trainers can be done)</p>	<p>Short term. Monitoring through ANC, MEN, MMFPSPV and SASeC mechanisms</p>
<p>Defining a monitoring system in order to periodically check for the implementation of the requirements and to allow performing corrective actions taking into account re-evaluations along the way (being necessary to determine persons in charge of reporting and assessment, relevant timeframes and intervention and control tools).</p>	<p>MDRAP, through the National Body for acknowledging constructions qualifications in practice performs the monitoring of the implemented actions.</p> <p>The National Consultation Committee created within ROBUST project can be involved in analyzing the level of implementing the actions in order to ensure consulting the main actors (relevant central authorities and representatives of the constructions market).</p> <p>The System for Auto Regulations in Constructions (SASeC) has a very important role in monitoring the workforce qualification by</p>	<p>Short and medium term. Monitoring through the National Consultation Committee created within ROBUST project by means of continuous consultancy with the National Platform for Qualification and using the SASeC mechanisms.</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	means of structuring the occupational chart and introducing the electronic framework of the constructions worker (project). This framework would allow registering the background of vocational training (certificates and diplomas, including credits transferable on acquired achieved skills) on the central server at the General Secretary of SASeC, background for health and safety courses and other information.	
Objective 3: Increasing the administrative capacity (central/local authorities and Sector Skills Committees)		
Continuing / Developing / Institutionalizing the National Qualification Platform (NQP initiated within ROBUST) as an independent advisory, endorsement and monitoring structure of the strategies in qualifying the workforce in constructions for achieving the 2020 agenda, the national action plan (NAP) etc.	It is necessary to support national partnerships between governmental institutions, companies and social partners, including formalizing / institutionalizing the dialogue platform constituted within National Consultation Committee ROBUST for facilitating continuity in exchange of information and synchronizing several short and medium term strategies. Financing PNC's institutionalization and functioning can be achieved from the state budget through a protocol between the relevant Ministries (MDRAP, ME, MEN, MMSC) or by means of defining and implementing a priority project using structural funds. Also, it is appropriate to institutionalize an independent body for advising and monitor the national action plans for EE, RES and OFM, workforce market forecast and updating measures (structures similar to the energy agencies acting locally together with the AJOFMs)	Short term (2013). The so created structure can be used for monitoring the actions determined and employed within the roadmap and for ensuring an extended legal framework in order to ensure the implementation of aspects of workforce qualification in constructions in all the sectoral strategies, therefore ensuring the coherence of the relevant directions.
Strengthening the capacity of relevant partners in constructions in view of active involvement in	Designing the procedure for ensuring ANC financing for specialists from the Sector Skills	Short term. Monitoring through the National Consultation

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
<p>quality assurance in CVT, including specific vocational training of the Sector Skills Committee members in order for them to be able to fulfil their duties in the process of validating qualifications in the vocational training system.</p>	<p>Committees used to check and validate OS.</p> <p>It is also necessary to ensure the identification of financing sources used to ensure the participation of the relevant specialists performing occupational and occupational standards analysis per specific areas (including EE and RES).</p>	<p>Committee created within ROBUST project together with the Sector Skills Committee in Constructions and SASeC mechanisms.</p>
<p>Developing networks and partnerships for promoting work environments with incentives on learning “learning regions”</p>	<p>Creating local or regional clusters. MEN is in charge, with the involvement of both relevant central authorities (MDRAP, ME, MMFPSPV) and professional associations and constructions entrepreneurs.</p>	<p>Short and medium term.</p>
<p>Expanding the dialogue to adapt the IVT and CVT to the market demand on workforce qualifications and skills in constructions, including involving the main local actors.</p>	<p>This action must be achieved by means of:</p> <ul style="list-style-type: none"> • Expanding the dialogue in institutionalized system with social partners and construction market representatives and providing professional training. • Developing dialogue structures between the central administration and local (or regional) public administration authorities and regional development agencies, using existing mechanisms and cooperating networks (Mayors’ Convention, the Association of Energy Towns in Romania and the initiative of the Mayors’ Club, local and regional Agencies for energy management). <p>To this end it is necessary to use the National Qualification Platform and National Consultation Committee within ROBUST project, in an institutionalized system.</p>	<p>Short term.</p> <p>Monitoring through MDRAP, OER, the Association of Romanian Towns, Mayors’ Club.</p> <p>It is necessary to use the National Qualification Platform.</p>
<p>Drafting proper tools for collecting or updating the statistics on the pool of buildings in Romania and the workforce in constructions:</p>	<p>Main actors: National institute for statistics, implementing bodies for financing programmes in EE / RES area and the National</p>	<p>Short term.</p> <p>Involving the National Consultation Committee created within ROBUST project in order to</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
<ul style="list-style-type: none"> • Data on non-residential buildings (per categories): number of buildings, net area / ADC – conditioned / heated, energy usage per utilities categories; energy production from renewable sources in situ (building level). • Centralized data on monitoring the implementation of investments programmes in EE / RES, for example: data regarding reducing the usage following the thermal rehabilitation; implemented solutions – real costs and highlighted problems (low quality technologies and building materials, noncompliant execution), solutions, abilities and characteristics implemented in “Green House” programme • Data on construction workforce regarding skills in energy efficiency and using renewable energy. 	<p>Forecast Committee. Improvement proposals and implementing mechanisms can come from MDRAP, business associations, professional associations, based on the need to analyse the reporting field.</p>	<p>analyse the need and possibilities to create or determine viable tools for collecting and processing data in order to ensure specific data base (useful for developing strategies in building sector and workforce training) and facilitating reporting to the European Committee for information provided in the legal framework for adopting European Directives. Using the database owned by cities signing the Mayors’ Convention for public buildings.</p>
<p>Objective 4: Information for increasing the awareness / understanding level for stimulating the demand of EE and RES solutions (consumers / investors and employers)</p>		
<p>Actions to stimulate the market on energy efficiency and use of renewable sources in buildings.</p>	<p>It is a priority to support via information campaigns the national programmes on building energy efficiency. It is absolutely necessary to change the message of “free rehabilitation” with an intense communication in order to convince the home owners that the buildings’ energy efficiency is to their benefit (it may a profitable business that is worth investing in).</p> <p>Moreover, one needs to start with the active promotion of making “nearly-zero energy” buildings</p> <p>The information and promotion campaigns must be supported by a monitoring and assessment</p>	<p>Monitoring via MDRAP and the bodies for implementing the national programmes for building rehabilitation/ energy efficiency. Performing a system of correlation with the data base on energy performance certificates (MDRAP and INCD URBAN-INCERC, with the support of the professional associations)</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	<p>system of energy consumption post-efficiency, with credible/ validated results.</p> <p>The key actors are MDRAP, INCD URBAN-INCERC and the relevant professional associations.</p>	
<p>Actions for increasing the visibility and awareness for the evolution of the workforce in constructions so as to ensure the requirements on energy efficiency and use of RES in buildings</p>	<p>Professional organizations in cooperation with the local authorities shall organize seminars, workshops, national or regional information campaigns, all with the purpose of changing obsolete mentality and raising awareness on the need for the continuous improvement of the workforce.</p>	<p>It is necessary to implement short and medium term actions, by defining a long term communication strategy (taking into account the European strategies in the fields of education, increasing competitiveness in constructions, energy efficiency and use of renewable energy sources).</p>
<p>Actions for raising awareness among employees in constructions with respect to energy efficiency and ensuring sustainability in the built environment.</p>	<p>Professional associations alongside entrepreneurs in constructions shall organize seminars, workshops, national or regional information campaigns on the energy efficiency of buildings, the sustainability of the built environment</p>	<p>It is necessary to implement short and medium term actions, by defining a long term communication strategy (taking into account the European strategies in the fields of energy efficiency and use of renewable energy sources, education and increasing competitiveness in constructions).</p>
<p>Objective 5: Implementing and maintaining a quality assurance framework that is at the basis of a proper accreditation / authorization system of CVT</p>		
<p>Development, improvement and implementation of specific tools for quality assurance; improvement of the current methodology for authorizing continuous vocational training providers; training and improving the quality assessors; ensuring compliance with the European Quality Assurance Reference Framework.</p>	<p>Amending the legislation on adult vocational training, G.O. no.120/2000 on adult vocational training</p> <p>Along with the introduction of a quality assurance system in the Continuous Vocational Training, one shall set the necessary premises for increasing the quality of the manner of teaching terms, as well as of the level of training of the trainers so that the training of the workforce be carried out at a European level.</p> <p>The main actors are MEN, ANC, MMFPSPV, with the involvement of accredited companies</p>	<p>Short term.</p> <p>Monitoring through MEN, ANC, MMFPSPV, and Sector Skills Committee in Constructions.</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	<p>which organize qualification or specialty courses for the workforce.</p> <p>Including along priority lines for vocational training programmes funded from European funds during 2014- 2020 of projects that encourage the quality in CVT also by involving construction private companies and providers of EE and RES providers as applicants for accessing these European funds.</p>	
<p>Assuring a coherent system for acknowledging qualifications acquired in informal or non-formal conditions. Assessing vocational competences acquired in informal, non-formal contexts shall be carried out with competence assessment centres, by a committee that consists of representatives of employers' associations and/or professional associations alongside the competence assessor (ensuring specific/technical assessment competences).</p>	<p>Amending the Procedure for assessment and certification of vocational competences acquired other than via formal methods.</p> <p>MEN, ANC and MMFPSPV, along with the appointed specialists in the Sector Skills Committee in Constructions shall organize the competence assessment centres which also have to consist of representatives of the employers' associations and of the professional associations involved.</p>	<p>Short term.</p> <p>Monitoring through MEN, ANC, MMFPSPV, Sector Skills Committee in Constructions.</p>
<p>Objective 6: Identifying/ increasing funding sources so as to reach the 20-20-20 objectives (including for vocational training)</p>		
<p>Defining and substantiating national programmes which may be included in the municipalities' energy strategies, such as: "Green House" programme, "Declaration of Energy Independence" initiative (SunE), Micro-funding (loans for EE and RES), "Money from the Sun" etc.</p> <p>Granting financial resources within structural funds 2014-2020 for the implementation of measures on energy efficiency and use of RES in public buildings.</p>	<p>Financing programmes of this type are focused on the development of a local "industry" in the field of EE and RES. It is necessary to define programme sheets that argue the need and opportunity of the scheme and to detail the next steps, the desired impact at the end of the programme and potential problems (risks). This activity must be carried out with the involvement of central authorities and employers' associations, professional associations, entrepreneurs in constructions and non-profit organizations (such as BPIE).</p>	<p>Short term (2013-2015).</p> <p>It is necessary to create a proper consultation framework (e.g., the National Consultation Committee created within the ROBUST project, ensuring the participation of the authorities responsible for implementing the financing programmes) so as to ensure coherence between various financing schemes and monitoring the impact of their implementation.</p> <p>Defining the monitoring indexes and follow-up.</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
<p>Defining mechanisms to fund the qualification schemes for the workforce by the state, via dedicated programmes with a well-sized funding level and tools for a flexible implementation:</p> <ul style="list-style-type: none"> - Granting vouchers for vocational training, - Allocating a percentage for continuous vocational training. 	<p>Granting vouchers for vocational training is a common practice within EU countries (Italy for example). Persons in search of a job receive a voucher for the participation to vocational training courses carried out by authorized training providers. It is necessary to complete the unemployment law (76/2002) with the terms of granting these vouchers as well as the rights and obligations of the persons receiving them.</p> <p>If certain already existing contributions are reduced, one could allocate a percentage (such as 0.5%) to continuous vocational training. This percentage would be gathered from the companies in constructions, while the amounts collected from taxes are used by means of parity systems (e.g., via SASeC) and used for the continuous vocational training of the personnel in construction companies in order to fulfil the obligations stipulated in the Labour Code.</p> <p>By means of the central authorities (MEN, MMFPSPV), the local employment agencies, the employers' associations in constructions, the sector skills committee in constructions as well as professional associations one can generalize this best practice example in Romania.</p>	<p>Short and medium term. Monitoring through SASeC and AJOFM. Defining the monitoring indexes and follow-up.</p>
<p>Identifying medium and long term financing programmes for supporting the drafting of the occupational standards for the new occupations added to COR, respectively for the review of the occupational standards per occupation areas.</p>	<p>Taking into account the possibility to finance the drafting and review of occupational standards in the terms of reference for programmes financed from European funds in the period 2014-2020.</p> <p>The main actors involved are: MDRAP, ME, ANC, government authorities, with the involvement of professional associations and</p>	<p>Continuous performance. The Authority for the Coordination of Structural Funds (Ministry of European Funds) has an important role in ensuring a proper framework for the performance of public procurement procedures carried out within projects financed from structural funds and for granting technical</p>

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
	non-profit organizations (e.g. BPIE).	assistance for the implementation of the financing programmes.
Objective 7: Integrating the “green” policies by promoting behavioural and cultural changes		
Energy education for the consumers in the domestic and non-residential sector in order to change the behaviour (by granting energy consultancy and by using existing tools, i.e. promoting energy performance certificates)	Link with Objective 4. Schools, high schools, professional associations alongside entrepreneurs in constructions shall organize seminars and national or regional information campaigns on the energy efficiency of buildings, the sustainability of the built environment	Continuous performance, analyses for assessing the behavioural change among energy consumers. Drafting, distributing and centralizing the results of the questionnaires on the assessment of the campaigns' effects.
Adding to the current qualification system the new occupations, raising awareness on the concepts of "sustainable building" or "green building" by adding the necessary skills for mounting and exploiting modern systems of energy saving and of producing energy from renewable sources	The “sustainable building” or “green building” concepts must be taken into account starting with the curriculum in the initial education and finishing with the adult vocational training programmes (as innovating elements for increasing the attractiveness of qualifications that became unpopular). Professional associations alongside entrepreneurs in constructions shall organize seminars, workshops and information campaigns on the awareness of "sustainable building" or "green building" concepts, thus becoming aware of the need to acquire the necessary competences for mounting and exploiting modern systems of energy saving and for producing energy from renewable sources.	The action spreads on a medium and long term, but it must start immediately in order to benefit from an impact in the timeframe envisaged for the roadmap.
Introducing teaching on the concepts of energy efficiency and sustainability in schools. Developing skills on energy efficiency and use of renewable energy sources in vocational schools.	Professional associations, local authorities alongside the schools' management shall organize seminars and information campaigns regarding energy efficiency in buildings, the sustainability of the built environment, the use of renewable energy sources.	Medium term, starting immediately to define a strategy to complete the education system.

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
Influencing policies on public procurement in order to stimulate the demand of energy efficiency measures, including by increasing the scores pertaining to purchasing equipment and installations leading to increasing the energy efficiency of buildings.	The central and local public authorities, contracting authorities that carry out procurements from public funds , national and European financing bodies . The professional associations and support organizations have a very important role in consulting the relevant ministries so as to ensure the development and implementation of green procurement tools.	Short and medium term. Introducing in the specific legislation the minimum performance indicators in case of services and products procurement as per the principles of the Eco-design Directive and of EE and RES in public buildings/ ANRMAP
Imposing the mandatory provision of reaching the minimum energy performance conditions on all new buildings built or purchased with European of public national funds.	The Intermediary Bodies in cooperation with the line ministry shall add to the Applicant's Guide the specific terms on the design and construction of buildings.	Short term.
Objective 8: Diminishing/stopping the migration of the workforce in constructions and reducing the unregistered workforce		
<ul style="list-style-type: none"> • Stimulating commercial partnerships between Romanian companies and companies in the EU for creating common projects, with highly qualified local workforce and paid at the EU level. • Eliminating the dumping prices from tenders for public work procurements by laws and encouraging quality works by increasing the scores of companies with certified personnel or by introducing certification requirements in the tender specifications. • Changing the existing mentality so that quality gets the focus, not the low price, thus encouraging the qualification of the workforce and creating the possibility to increase salaries proportionately with the quality of the provided work. • Attracting European funds for re-launching activities in constructions, including by using RES and energy performance systems, all 	The main actors involved are the central relevant authorities for constructions, EE and RES, environment, education and labour, the sector skills committee in constructions, the entrepreneurs in constructions, the workforce, local authorities.	Medium term, starting immediately with the actions in the context of consultations for a long term strategy. Continuous implementation until 2020.

Proposed actions	Required resources, executives and contributions	Time planning and monitoring mechanisms
<p>leading to the creation of new jobs but also imposing the proper qualification.</p> <ul style="list-style-type: none"> • The administrative reform of taxes and taxations so as to encourage the companies with certified workforce as well as those that show a constant care for qualifying their workforce. • Implementing the European methods for organizing labour by focusing on CVT, on assessing the vocational needs of the employees and compensating them depending on the quality of the works. 		

7. CONCLUSIONS

The analyses carried out and the debates organized within the project highlighted that Romania has broadly the institutional and legislative basis necessary for the development of coherent strategies for the qualification of the workforce required for reaching the 2020 objectives with respect to energy efficiency and use of renewable energy sources in buildings.

Additional efforts must be made to ensure the continuity and coherence of implementing the actions stipulated in the roadmap proposed in this report, by means of an efficient cross-border cooperation in order to eliminate gaps and overcome the identified obstacles.

To this end, a success factor would be to continue the dialogue within the National Consultation Committee by institutionalizing this work group for the facilitation of the medium and long term dialogue in order to take over the general interest objectives in the sector-level strategies and the action plans on energy efficiency and renewable resources, regional development and public administration, education and labour. This also includes the prioritization of financial allocations for the practical support of actions validated within the project (programmes supported from budgetary resources or from European funding during 2014-2020).

It is necessary to support the three-party dialogue platforms including by stimulating the National Qualifications Platform (use of the project's website www.iee-robust.ro), as debate forum and means of promoting the private-public dialogue at the central and local level so as to ensure the implementation of the qualification objectives for the workforce in constructions in direct link with the real development of the market for EE and RES in buildings solutions and for the progress of achieving the objectives that Romania undertook for 2020 in these areas.

Starting from the results of the status quo analysis carried out within the project [1], the current roadmap achieved a common definition of the guidelines and priority measures necessary for the substantiation of a coherent national strategy for the qualification of the workforce in constructions in order to reach the targets for energy savings and use of renewable energy sources in buildings, objectives that Romania undertook for 2020.

The team of the IEE-Robust project would like to thank all the stakeholders contributing to the successful performance of the project and expresses its availability to contribute as well in the following period to promoting best practices and to supporting the practical implementation of the actions envisaged in this roadmap.

8. ACCEPTANCE AND COMMITMENT TO THE ROADMAP

Following briefings, consultations and discussions (National Consultation Committee members), the drafting of a memorandum was initiated in order to document the endorsement of the developed roadmap, upon signing by the relevant authorities/ Ministries (Regional Development, Education, Economy, Environment, Labour). The memorandum includes the motivation and main objectives of the national qualification strategy for EE and RES use in buildings, the actors involved and the roadmap developed within the proposed action, in which the signing parties are undertaking the actions under their responsibilities defined in the roadmap.

The roadmap has also full support from the Construction sector and business environment representatives (Romanian Association of Construction Entrepreneurs, the Ownership of Romanian Contractors, Chamber of Commerce and Industry of Romania), also members of the National Consultation Committee.

The relevant Sector Skills committees (Sector Skills Committee in Constructions, Sector Skills Committee for Electricity, Thermal Power, Oil and Gas and Sector Skills Committee for Vocational Training in the field of Environmental Protection) are running now according to legal framework requirements (having status of public utility entity, with legal personality) and discussions started in order to establishing an effective cooperation by inter-sectoral working groups, in the view to focus on the issues covered by the proposed action.

The active consultations within the National Qualification Platform and National Consultation Committee are to be considered as a success story of the BUILD UP Skills Romania project and the need to ensure continuity of open and effective consultation process is widely acknowledged. Thus, a proposal for institutionalisation of National Consultation Committee was made and is under definition within the Ministry of Regional Development and Public Administration.

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11. GLOSSARY WITH TERMS AND ACRONYMS

National qualifications system – refers to all the aspects of the activity related to the recognition of learning and other mechanisms that link education and training to the labour market and civil society. This includes the development and implementation of institutional arrangements and processes relating to quality assurance, assessment and the award of qualifications. A national qualifications system may be composed of several subsystems and may include a National Qualifications Framework;

The National Qualifications Framework – represents an instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which aims to integrate and coordinate national qualifications subsystems and improve the transparency, access, progression and quality of qualifications in relation to the labour market and civil society;

Qualification – represents a formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards;

Knowledge – represents the result of assimilating information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study (in the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual);

Skills – represent the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments);

Competence – represents the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy.

Learning outcomes - represent what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence;

Identifying the learning results - is the process by means of which individuals, alone or with the support of the specialized personnel, become aware of the competences they hold;

Assessing the learning results –is the process by means of which one determines that a person has acquired certain knowledge, skills and competences;

Validating the learning results –is the process by means of which one confirms whether the assessed learning results, acquired by an individual, correspond to the specific requirements for a unit of learning results or for a qualification;

Certifying the learning results –is the process by means of which the learning results acquired by the individual learning in different contexts are confirmed formally, after an assessment process. This results into a degree or a certificate.

Acknowledging the learning results –is the process of attesting the validated and certified learning results by granting units of learning results or qualifications.

Acronyms

ACIS	Authority for the Coordination of Structural Instruments
acm	hot domestic water
ACPART	National Agency for Qualifications in Higher Education and Partnership with the Economic and Social Environment
AFM	Environment Fund Administration
AIIR	Romanian Association of Building Services Engineers
AJOFM	County Employment Agency
ANC	National Qualifications Authority
ANCE	National Association of Builders
ANOFM	National Employment Agency
ANPCDEFP	National Agency for Community Programmes in Education and Vocational Training
ANRE	Romanian Energy Regulating Authority
ANRM	National Agency for Mineral Resources
ANSQ	Analysis of the National Status-Quo
AP	Priority Axis of Sectoral Operational Programmes (SOP)
ARACO	Romanian Association of Construction Entrepreneurs
ARCE	Romanian Agency for Energy Preservation
AREE	Romanian Association for Wind Power
BAPV	Building Applied Photovoltaics
BDG	Business Development Group
BIPV	Building Integrated Photovoltaics
BNS	National Trade Union Block
BPIE	Building Performance Institute Europe
CALE	Quality in Education
CCM	Collective Bargaining Contract
CCS	Carbon Capture and Storage technologies
CDI	Research, Development, Innovation
CEDEFOP	European Centre for the Development of Vocational Training
CIM	Individual Bargaining Contract
CLD	Curriculum in Local Development
CLDPS	Local Committee for Developing the Social Partnership
CMC	House of Builders Foundation
CNC	National Qualifications Framework
CNC	National Consultation Committee within ROBUST
CNCEIP	National Centre for Curriculum and Evaluation in Pre-university Education
CNCFPA	National Qualifications Council and Adult Vocational Training
CNCIS	National Qualifications Framework in Higher Education in Romania
CNDIPT	National Centre for the Development of Technical and Vocational Education and Training
CNFIS	National Council for Financing Higher Education
CNP	National Prognosis Commission
COR	Classification of Occupations in Romania
CPE	Energy Performance Certificate
CSNR	National Reference Strategic Framework
CVT	Continuous Vocational Training
DDMFSS	County Directorate for Labour, Family and Social Solidarity (currently the County Directorate for Labour and Social Protection)
DIY	Do It Yourself
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECVET	European Credit System for Vocational Education and Training
EDD	Education for Sustainable Development

EE	Energy Efficiency
EFG	European Federation of Geologists
EFRD	European Fund for Regional Development
EGEC	European Geothermal Energy Council
ELLI	European Lifelong Learning Index
ENQA-VET	European Network for Quality Assurance in Vocational Education and Training
EQARF	European Quality Assurance Reference Framework
EQF	European Qualifications Framework
E-RES	Electricity produced from Renewable Energy Sources
ERU	Emissions Reduction Units
ESCO Company	Energy Services Company
ESCOT	European Skills, Competences and Occupations Taxonomy
ESF	European Social Fund
EU	European Union
EUA	Certificates of GHG emissions
EU-ETS	EU Emission Trading Scheme
FGS	General Federation of Unions “Familia”
FREE	Romanian Fund for Energy Efficiency
FSFP	Sectoral Funds for Vocational Training
GC	Green Certificate
GD	Government Decision
GDP	Gross Domestic Product
GEO	Government Emergency Ordinance
GHG	Greenhouse Gas Emissions
GNAC	National Group for Quality Assurance in Vocational Training
GO	Government Ordinance
GSHP	Ground Source Heat Pump
IEC	(SOP) Increasing of Economic Competitiveness
ILO	International Labour Office
INCSMPS	National Institute for Scientific Research on Labour Market and Social Protection
INEGES	National Inventory of Greenhouse Gas Emissions
ISCED	International Standard Classification of Education
ISCIR	State Inspection Body for the Control of Boilers, Pressure Vessels and Hoisting Equipment
IVT	Initial Vocational Training
KAI	Key Area of Intervention of Sectoral Operational Programmes (SOP)
MAI	Ministry of Administration and Internal Affairs
MDAR	Ministry of Agriculture and Rural Development
MDLPL	Ministry of Development, Public Works and Housing
MDRAP	Ministry of Regional Development and Public Administration
MDRT	Ministry of Regional Development and Tourism
ME	Ministry of Economy
MECMA	Ministry of Economy, Commerce and Business Environment
MECTS	Ministry of Education, Research, Youth and Sport
MEF	Ministry of Economy and Finance
MEN	Ministry of National Education
MFP	Ministry of Public Finance
MI	Ministry of Internal Affairs
MIRA	Ministry of Internal Affairs and Administrative Reform
MMDD	Ministry of Environment and Sustainable Development
MMFPS	Ministry of Labour, Family and Social Protection
MMP	Ministry of Environment and Forests
MMSSF	Ministry of Labour, Social Solidarity and Family
MT	Ministry of Transports
NIS	National Institute of Statistics

nZEB	Nearly Zero Energy Buildings
OEN	National Energy Observer
OER	Association Energy Cities Romania
OS	Occupational Standard(s)
PAS	School Action Plan
PEC	Building Energy Performance
PICAS	Information, Guidance and Specialized Assistance Points
PLAI	Local Education Action Plan
PNA	National Action Plan
PNAEE	National Action Plan in Energy Efficiency
PNAER	National Action Plan in Energy from Renewable Sources
PND	National Development Plan
PNDR	National Programme for Rural Development
PNR	National Reform Programme 2011-2013
PRAI	Regional Education Action Plan
PSC	Construction Business Owners
RES	Renewable Energy Sources, as per the definition in Directive 2001/77/EC of the European Parliament and of the Council
RNC	National Qualifications Registry
ROBUST	Romanian Build-Up Skills: Qualification platform and roadmap for the building workforce on energy-efficiency and renewable energy to meet 2020 Targets
SDD	Strategy for Sustainable Development
SEN	National Power System
SIDRU	Human Resources Development Integrated Strategy
SOP	Sectoral Operational Programme
SOP HRD	(SOP) Human Resources Development
SPO	Public Employment Service
SPP	Vocational Training Standard
SRG	GEOEXCHANGE Romanian Society
SSM	Labour Health and Safety
SUNE	Association New Energy Sources
UECNCFPA	Executive Unit of the National Qualifications Council and Adult Vocational Training
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value Added Tax
VET	Vocational Education and Training