



## **BUILD UP Skills – Estonia**

### **Action Plan for Training Workforce in the Estonian Construction Sector**



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Foundation KredEx

**Project partners**

Ministry of Economic Affairs and Communications  
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Foundation INNOVE  
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More details on the Buildest project can be found at <http://estonia.buildupskills.eu/>

More details on BUILD UP Skills can be found at [www.buildupskills.eu](http://www.buildupskills.eu)

More details on the IEE programme can be found at <http://ec.europa.eu/intelligentenergy>



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## Foreword

The primary goal of the European Union's (EU) climate and energy policy is to make energy generation and the EU economy more resource-effective, reducing energy consumption significantly by the year 2020 and increasing energy efficiency and the share of renewable energy (the so-called 20-20-20 targets). There is noteworthy potential for reducing consumption, especially in such an energy intensive sector as construction. As the building sector makes up 40% of the EU's total energy consumption, reducing energy consumption in this field is a priority for achieving the energy efficiency targets by 2020. It also means the need to increase the knowledge and skill of the workforce in the field of construction and thereby guaranteeing the high quality of construction work.

The Action Plan for Training Workforce in the Estonian Construction Sector up to 2020 describes the construction sector's development needs, the state of the workforce market and potential solutions based on the 20-20-20 targets. This analysis is the first output of the project, and its goal is to give an overview of how the Estonian construction sector developed and of its status quo, its legal and political background, the education system (vocational, higher and adult education) and to describe the workforce's needs for training and qualifications. In order to bring about a noteworthy reduction of energy consumption in the building sector and thereby achieve the European Union's 2020 targets, it is important to ensure the field's stable development, consistent quality and broader availability of training, to significantly increase the share of employees who have acquired specialized qualification in the fields.

The implementation of measures and activities proposed in this action plan for meeting the targets may at first glance seem overambitious, but the Buildest consortium feels that the changes in the construction sector are necessary for meeting the European Union's targets set for 2020 in the field of energy efficiency. Project Buildest is being implemented in Estonia by a five-member consortium consisting of Foundation KredEx (project coordinator), the Ministry of Economic Affairs and Communications, Tallinn University of Technology, the Estonian Association of Construction Entrepreneurs and Foundation Innove. The project also has a support group consisting of the Ministry of Education and Research, the Rakvere Smart House Competence Centre, the Qualifications Authority, the Union of Estonian Architects, the Estonian Association of Heating and Ventilation Engineers, State Real Estate Ltd, and the Estonian Union of Co-operative Housing Associations.

\*The Status Quo report is available at:

[http://buildupskills.eu/sites/default/files/Build%20Up%20Skills%20Estonian%20report\\_2012.pdf](http://buildupskills.eu/sites/default/files/Build%20Up%20Skills%20Estonian%20report_2012.pdf)

## **1. Summary**

### **1.1. Purpose of the action plan and methodology used to prepare it**

The purpose of the Action Plan for Training Workforce in the Estonian Construction Sector up to 2020 is to propose measures and, as a result, specific activities for reducing the divergences described in the first stage between the current preparation and the levels necessary to achieve the 2020 targets. The basis for preparation of the action plan is data gathered in the first stage of the project, which were submitted in the status quo analyses, 'Educational Opportunities and Workforce in the Estonian Construction Sector'.

In the course of preparing this action plan, the project working group included representatives from the Ministry of Education and Research (MER), the Estonian Qualifications Authority, vocational educational institutions (Järva County Vocational Educational Centre, Pärnu County Vocational Educational Centre, Tallinn School of Construction) and the Tallinn University of Applied Sciences. MER has helped to identify the rationale by which state-commissioned education has been developed in adult education and formal education. The Estonian Qualifications Authority, along with the aforementioned institutions, has made significant contributions to prepare a competence standard for the worker level that would describe the energy efficiency related skills, knowledge and views needed by skilled workers in the construction sector (see Annex 2). In addition the quality directors of major construction companies (AS Merko Ehitus and AS Nordecon) have been instrumental in articulating the content of the competence card (work passport) and providing a corporate assessment as to its necessity (see Annex 4).

The measures proposed for meeting the targets set forth in the action plan and the specific measures for implementation were collected and analysed as a result of six months of work on the part of the project working group, with the involvement of additional specialists from the project partners. The results of the work have been introduced in recent months to all of the primary interest groups. Confirmation letters from the project's main supporting members have been appended to this document.

### **1.2. Workforce market in the construction sector**

According to Statistics Estonia data, an average of 59,000 employees were employed in 2011, of whom the number directly employed by construction companies was around 41,000. The forecasts for 2012-2020 compiled on the basis of the overall numbers of people employed at construction companies indicate that the average number of the employed is 42,000-47,000 workers per year, which exceeds the average for the last 14 years but is lower than at the peak of the construction boom.\* The forecasts made on the basis of volume of construction work and value added in the construction field indicate that the number of employed will be greater than this. Forecasts made on various assumptions show that the number of employed by construction companies could rise to 45,000-50,000 people or more. Various forecasts indicate that 935–1,075 new skilled workers will be needed in the construction sector already by 2012. If in this decade, the growth in GDP proves to be just as successful as projections said it would, and the volume of construction work is at least 1,200-2,000 euros, there will be a need for workforce of up to 54,000 employees, which would be accompanied by a need for 1,200 workers who have acquired professional skills.

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\*The forecast distinguishes numbers of all employed in the construction sector from those employed at construction enterprises, the project target group is employees in the field of construction.

### **1.3. Shortcomings impacting the development of the workforce market**

In recent years, there have been 900-1,000 graduates per year in the construction field in vocational educational institutions. Yet we must take into consideration that admissions are down in 2010-2011, and thus the number of graduates in 2013 may be as low as 800. To ensure that the necessary replacement workforce is trained, admissions to vocational education must be increased significantly. Of graduates in construction specialities in vocational educational institutions, 36 per cent are not employed in their speciality or do not work for other reasons. This fact may reduce the number of new hires to as low as 600, which is much lower than even the most conservative forecast for workforce needs in the sector. In addition, pressure favouring the migration of workforce to neighbouring countries with a higher wage level is continuing at the current pace, as convergence of wage levels is not realistic in the near future (1/3 of the workers who leave are headed abroad).

The fluctuations on the Estonian construction market with regard to construction volumes are much greater than seen in neighbouring countries Finland and Sweden. The education system has a hard time responding to these sharp rises and falls, and thus the fluctuation also affects the employment of workers without speciality training. According to workforce study data, construction workers who lack professional training account for close to 50 per cent of workers at construction companies. As it is much harder to expand the knowledge of employees without professional training in the field of energy efficiency compared to those who have, there is the risk that the construction sector will be left with a noteworthy number of employees who lack the requisite know-how.

The ratio of training provided to engineering and technical personnel vs. workers is not based on the companies' needs. Of the graduates from the construction and architecture specialities, 67% have acquired a worker-level qualification and 33% hold higher education. For construction companies, a sustainable situation would be a case where a company has 2.5-3 construction workers per engineering and technical staff. Companies will not be sufficiently efficient and the shortage of workforce will put pressure on them to hire people who lack specialist training.

### **1.4. Aspects with the greatest influence on awareness of the workforce in the field of energy efficiency**

The readiness of companies to refer construction workers to training in the field of energy efficiency in the coming years is much lower (53% of companies that responded) than in the case of intent to refer engineering and technical personnel to such training (83% of respondents).<sup>1</sup> Of companies in the construction field, 95% are small and micro-enterprises, which have low capability to send employees to training, and finding resources for covering training costs or wages during the training period is above all a problem in the case of workers.

Close to 50 per cent of construction workers at construction companies have not received specialized training. As the number of new hires with specialized education is much lower than those leaving the employment market, the share of employees who lack construction education will likely increase, causing the largest share of the need for skills in the field. In general, no master-level specialists will be produced from the workers without specialized training. If workers who lack specialized training are also seen as a training target group, in-service training that deals narrowly with energy efficiency will not be sufficient here: it will be necessary to develop professional competences as a whole.

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<sup>1</sup>Workforce-related situation of Estonian construction companies and prospective need for workforce. Estonian Institute of Economic Research, 2012.

## **1.5. Skill requirements for the construction workforce**

Depending on the size of the company, one employee with master-level competence\* is required per 6-10 construction workers; this master level employee is of key importance to ensuring work quality and energy efficiency. If the average number of those employed at construction companies in the period 2012–2020 is taken to be 47,000 employees a year, of whom construction workers account for approximately 60%, that amounts to about 28,000 construction workers at construction companies in the coming years. And thus primary target group for training at the master level will be 3,500 employees.

The occupational standards in the construction field are being revised in connection with the transition to the eight-level qualification framework, the existing standards will be updated and new ones will be added. The point of departure here is to what degree the given competence (knowledge, skills and attitudes) in the specific occupational standard may influence the energy efficiency of the building or of the construction process. The higher the occupational qualification level, the more wide-ranging the energy efficiency-related competences must be.

In the course of the project, energy efficiency competences that will require significant further refinement in cooperation between the representatives of project target groups and professional committees were described. At the worker level (EstQF level IV) basic knowledge in the field of energy efficiency were described as a separate competence chart (see Annex 2), as a number of new worker occupational standards were already approved and the said energy efficiency competence chart can be referred to in these standards. The energy efficiency competences at the foreman level (EstQF level V) were described as a pervasive competence (see Annex 3). In addition, a draft occupational standard for certified energy efficiency specialist was prepared (EstQF level VII).

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\*We consider master level competences to be the skills of supervising construction workers with lower qualifications and of conveying professional skills and knowledge, and the readiness to take responsibility for organization of work, use of materials and outcome of work.



## 2. Strategies and action plans in connection with the EU 2020 targets

For the purpose of cleaner, more environmentally friendly use of energy, the EU is implementing a clearly greener energy policy. In order to raise awareness of energy efficiency, the EU has established many strategy documents and development plans that should, through the cohesion policy, reach the level of every member state.

European strategies and plans have found very broad-based support, but because they are advisory in nature, directives and regulations of the European Parliament and of the Council are also applied in order to transpose energy targets into the legal acts and policy of member states. The more resource-effective and cleaner development of the EU requires a clear and consistent strategy and implementation of the action plan.

### 2.1. Strategies related to the European Union energy targets

The most important strategy documents related to EU energy policy up to 2020:

- Climate and energy package.<sup>2</sup>
- ‘Europe 2020’ – the EU strategy for smart and sustainable growth.<sup>3</sup>

With the decision adopted in 2008, the EU leaders approved a comprehensive package of measures for reducing emissions – the so-called climate and energy package. As a result of the climate and energy package, the EU should be able to attain its climate targets for 2020 (the so-called 20-20-20 targets):

1. Reducing energy consumption by 20%.
2. Reducing greenhouse gas emissions by 20% compared to the 1990 indicators; 30% if the rest of the world joins the global climate agreement.
3. Increasing the share of renewable energy in energy consumption by 20%.
4. Increasing the share of biofuels in EU transport fuels to 10 per cent.

The Europe 2020 strategy has three priorities that support one another: promoting more resource-effective, environmentally friendly and more competitive economy. One of the EU’s primary targets for 2020 is the following:

- three climate and energy targets must be fulfilled (20%, 20%, 20%, including raising the emissions reduction threshold to 30% if appropriate conditions are met).

### 2.2. Horizontal strategic plans related to the Estonian energy sector

The national horizontal strategic plans establish a foundation and prerequisites for plans related to Estonian energy security.

- ‘Estonia 2020’ competitiveness strategy.<sup>4</sup>
- National strategy for Estonia’s sustainable development, ‘Sustainable Estonia 21’<sup>5</sup>

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<sup>2</sup><http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/628&format=HTML&aged=1&language=EN&guiLanguage=en>

<sup>3</sup><http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

<sup>4</sup>[http://ec.europa.eu/europe2020/pdf/nd/nrp2012\\_estonia\\_en.pdf](http://ec.europa.eu/europe2020/pdf/nd/nrp2012_estonia_en.pdf)

<sup>5</sup>[http://www.envir.ee/orb.aw/class=file/action=preview/id=90658/SE21\\_est\\_web.pdf](http://www.envir.ee/orb.aw/class=file/action=preview/id=90658/SE21_est_web.pdf)

### 2.2.1. The 'Estonia 2020' competitiveness strategy

The 'Estonia 2020' competitiveness strategy is Estonia's strategy for achieving the Europe 2020 objectives. With regard to an environmentally friendly economy and energy sector, the following objectives have been set for 2020:

- The limit for greenhouse gas emissions in 2020 may be 11 per cent higher than in 2005;
- The share of renewable energy must make up 25 per cent of end energy consumption (this goal has been now met by Estonia);
- End consumption of energy must remain at the 2010 level – i.e. energy end consumption must be reduced by 11 per cent compared to the projection for 2020.

### 2.2.2. The 'Sustainable Estonia 21' national strategy for Estonia's sustainable development

The strategy supports, along broad lines, the growth of the share of generation of energy based on renewable energy, but a threat is also seen in growing pressure on the natural environment and biodiversity. The Estonian energy sector must be reorganized, supporting and according priority to energy conserving activities.

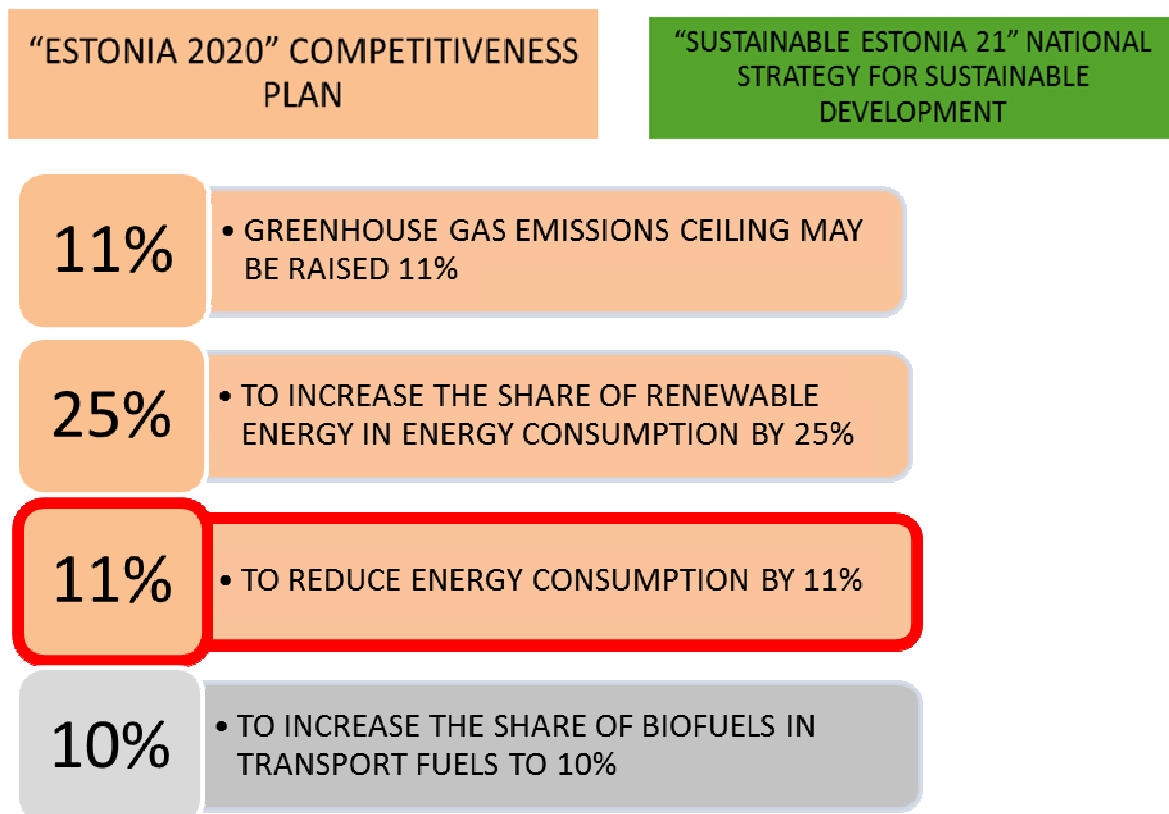
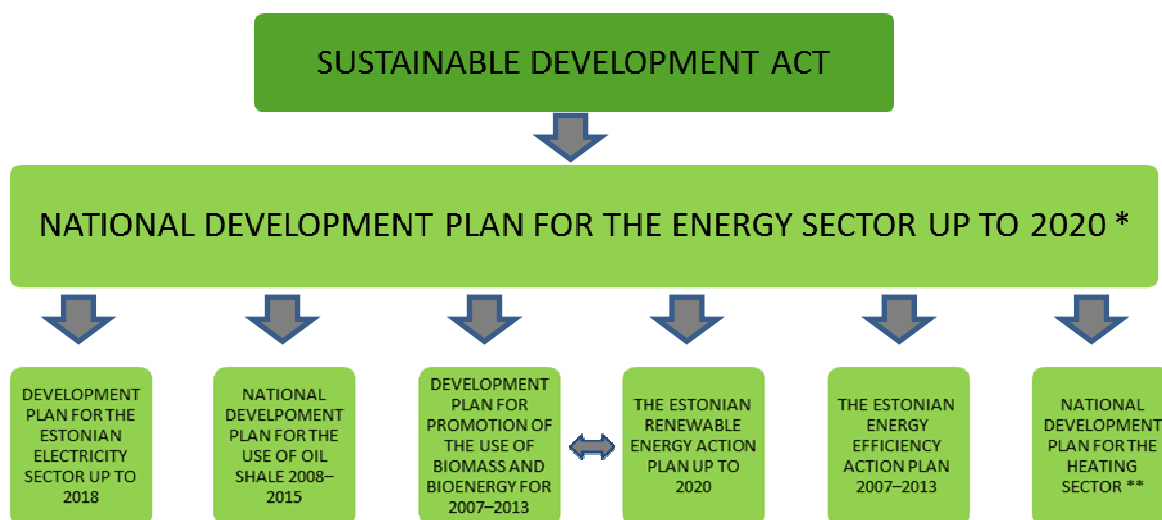


Figure 2.1. Estonia's climate and energy targets

### 2.3. Development plans related to national energy security

The basis of Estonia's energy security is the 'National development plan for the energy sector up to 2020'<sup>6</sup>, which is divided into five development parts (potentially into six). The goal of the national development plan for the energy sector is to integrate specific development plans in the field and to provide general directions in energy policy up to the year 2020.



\* Replaced 'National long-term development plan for fuel and energy up to 2015'. By the end of 2013, it is planned to update the national development plan ('National development plan for energy sector up to 2030'. The perspective of the plan extends to 2050).

\*\*Potential development plan.

**Figure 2.2.** Development plans related to national energy security

'Estonian renewable energy action plan up to 2020'.<sup>7</sup> The action plan breaks down into the following parts: 1) forecast for end consumption of energy, 2) objective and development curves, 3) measures, 4) evaluation. The objectives of the action plan is to increase the share of renewable energy to 25 per cent by 2020 and the share of bio fuels to 10 per cent of transport fuels.

The 'Energy efficiency target programme 2007-2013'<sup>8</sup> articulates the aims of Estonia's fuels and energy policy for 2007-2013 and the measures necessary for achieving them, as a result of which this is one of the most important documents in the broader energy conservation context. The action plan proceeds from Article 4 of directive 2006/32/EC, which obliges all member states to reduce energy consumption by 9% in the next 9 years compared to the average energy consumption in 2000-2005 in sectors belonging to the scope of application of the directive. After the financing targets for the period 2014-2020 are in place, the 'Estonian energy conservation target programme 2014-2020' will be compiled.

<sup>6</sup><http://www.mkm.ee/public/ENMAK.pdf>

<sup>7</sup>[http://www.mkm.ee/public/nreap\\_EE\\_final\\_101126.pdf](http://www.mkm.ee/public/nreap_EE_final_101126.pdf)

<sup>8</sup>[https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/energias\\_stu\\_programm\\_kinnitatud05.11.07.pdf](https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/energias_stu_programm_kinnitatud05.11.07.pdf)

### 2.3.1. Interim summary of the 'Energy efficiency target programme 2007–2013'

The document<sup>9</sup> explains Estonia's objectives in the field of energy conservation and efficiency, measure and programmes for achieving the goals, the associations between this document and other national policies and implementation of requirements stemming from the energy services directive 2006/32/EC in Estonia.

Directives 2006/32/EC and 2010/31/EU and domestic initiatives (such as the 'Estonia 2020' competitiveness strategy) determine the most important objectives in Estonia's energy conservation policy:

- to ensure that the objective of energy conservation and efficiency stemming from directive 2006/32/EC is fulfilled and to achieve savings of 9.9 PJ (petajoule; 1,015 J) from measures implemented in 2008-2016, including 6.6 PJ savings as a result of measures implemented in 2008–2013;
- to ensure that the energy conservation objective set out in the 'Estonia 2020' strategy is fulfilled. The aim of 'Estonia 2020' is to keep energy end consumption in Estonia in 2020 at the same level as 2010. That means keeping energy consumption at 121.3 PJ and total energy savings compared to the development plan 'Renewable energy action plan up to 2020' of 11.5% - 15.7 PJ by 2020;
- to establish in Estonia, by 2015, at least 10 publicly-accessible special near zero-energy buildings with a useful area of at least 5,000 m<sup>2</sup> total.

A very important measure for sustainable consumption of energy in buildings is high-quality implementation of regulations on their energy efficiency. In terms of raising the qualification of specialists dealing with these matters and ensuring the functionality of requirements, Estonia still faces much more work.

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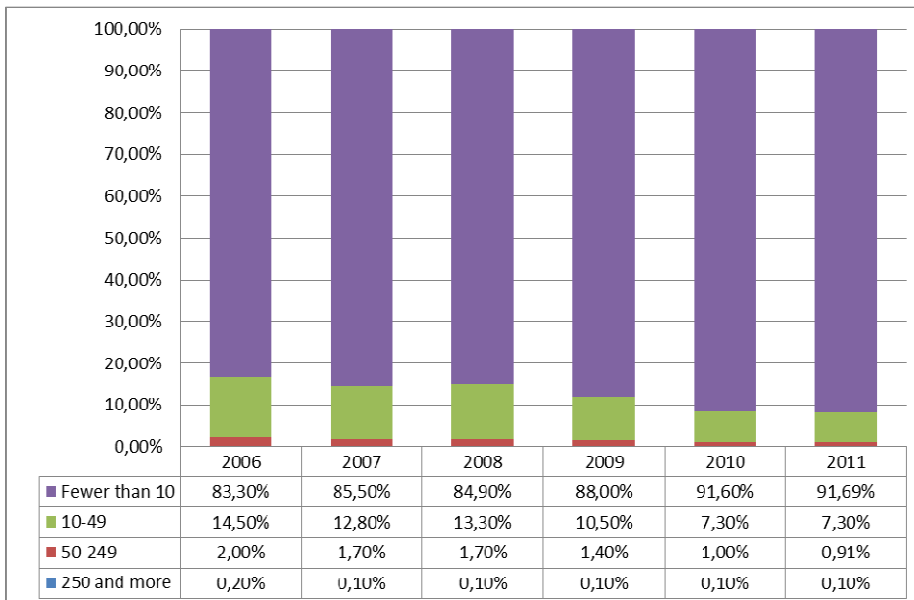
<sup>9</sup><http://www.buildup.eu/system/files/content/EE%20-%20Energy%20Efficiency%20Action%20Plan%20EN.pdf>

### 3. Overview of the construction sector

#### 3.1. Companies operating in the construction sector

The Estonian construction sector is largely oriented at the internal market and thus has been impacted mainly by Estonian economic development. The construction sector responds fairly abruptly to changes in the economy. In good times, construction volumes grow quickly and as economic growth slows, volumes decrease significantly.

According to Statistics Estonia data, over 9,600 companies in Estonia indicated construction as their primary area of activity in 2011.<sup>10</sup> Over 90 per cent of these were microenterprises with fewer than 10 employees; there are few companies in the construction sector with more than 250 employees. Ascertaining the number of active companies is very difficult due to the large percentage of microenterprises. The most realistic approach to ascertaining the numbers of active companies is to rely on the data from the Register of Economic Activities, which indicated that as of January 2012 there were 4,600 companies with an activity license in construction.



**Figure 3.1.** Distribution of companies according to number of employees (%)

The abundance of microenterprises points to the fact that specialization is widespread in the construction market. The predominant form of work is construction based on the project management method, where tens of contractors take part on the basis of different tiers of subcontracting agreements in building on one site and the prime contractor or project management company is in charge of all of them. The project management method supports a more cost-effective use of resources and ensures that the construction companies have greater flexibility to adapt to crisis and peak times.

As to the nature of their contract work, Estonian construction companies can be divided into three types:

- **Contractors** – construction companies whose activity focuses on some narrower type of work (electrical, concrete, finishing etc). These are predominantly micro-companies with fewer than 10 employees (most of whom are construction workers).

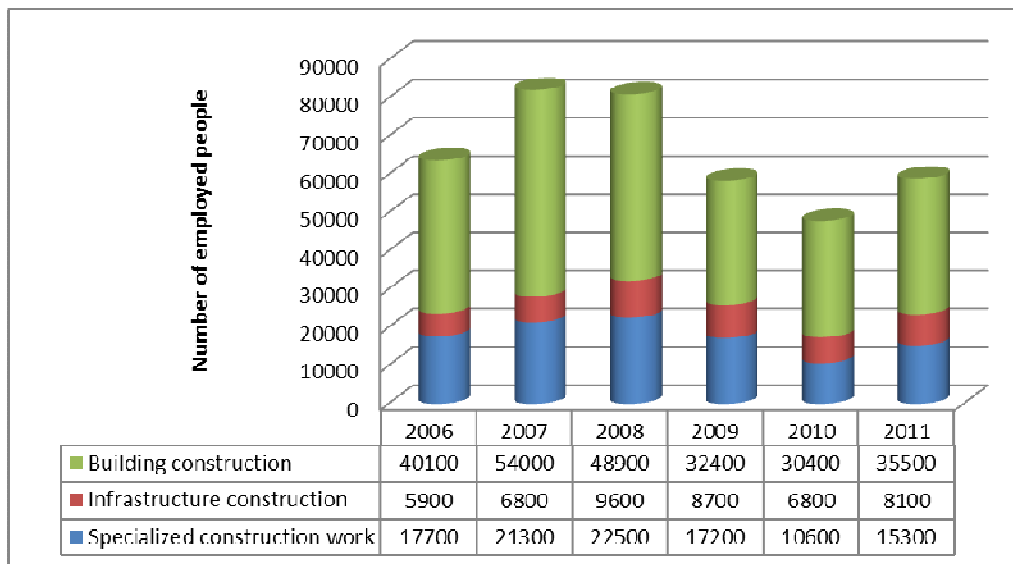
<sup>10</sup>Statistics Estonia. Construction economic indicators, table EH032 (classification of areas of economic activity EMTAK 2008, area of activity F – construction).

- **Project management companies** – construction companies that do not perform construction themselves but manage and coordinate the work of subcontractors. As a rule this category includes companies with 10-49 employees, most of them engineering and technical personnel. Project management companies generally do not have their own construction workers.
- **Prime contractors** – construction companies that manage and coordinate the work of subcontractors on the site, but are prepared to perform some types of work using their own personnel as well. This group includes mid-sized companies with 50 or more employees and large companies with 250 or more employees. Usually people operate on the largest, most complicated sites, where the duration of construction is longer. Having one’s own workers on certain types of work allows companies to better adapt to changes on the construction market and hedge the risks stemming from fluctuating subcontracting prices.

Nevertheless, the Estonian construction market is quite vulnerable to economic influences due to its small size, and thus periods of boom and decline in various construction fields occur more suddenly than in larger economies. The major fluctuations on the construction market very significantly impact the opportunities of companies to develop third employee ranks in a purposeful fashion and be engaged in raising their qualifications; rather the challenge for companies is to continually train new non-qualified employees.

### 3.2. The labour market in the construction sector

In total, an average of 59,000 employees were employed in the construction sector in Estonia in 2011, of whom 35,500 were engaged in building construction, and 15,300 were engaged in the field of specialized construction and 8,100 were involved in building infrastructure. Those directly engaged in construction accounted for somewhat fewer than in the entire sector, about 41,000 employees in 2011.



**Figure 3.2.** People employed in the construction sector according to primary area of activity (Estonian Register of Economic Activities 2008)

On the basis of the table shown in figure 3.2, on average 55,700 people per year are employed in building construction and specialized construction. If we assume that construction workers account for an average of 50-60% of the employees in the construction sector, we arrive at an average construction worker figure of 27,000 to 33,000.

A survey of construction companies shows that nearly half of them plan to increase the number of employees in the next few years. The greatest need is for construction workers. Only a few companies plan

cuts in workforce and in that case, only in a few construction specialities. The forecasts from companies allowed the overall numbers of employees in different professions to be forecast for the coming years. The increase proved quite sizeable, ranging from a factor of 1.24 (carpenters) to 1.57 (sheet metal workers). Other professions where the companies said employee ranks should be increased included, besides those listed in the table, general construction workers, assistants, technicians, suspended ceiling installers and roofers.

**Table 3.1.** Changes projected in employee numbers up to 2015<sup>11</sup>

	Respondents to the question* %	At respondent companies %			Growth in employee numbers by 2015 (times)	
		Number of employees in coming years will increase	will remain at same level	will decrease	in growing enterprises**	total in profession
<b>Construction workers</b>						
Finishers	91	53.5	44.2	2.3	1.79	1.30
Carpenter	92	58.3	41.7	–	1.47	1.24
Bricklayer	90	54.8	45.2	–	2.11	1.39
Environment technology	83	64.3	35.7	–	1.72	1.37
Ventilation technician	80	72.7	27.3	–	1.76	1.45
Concrete worker	86	73.1	26.9	–	1.47	1.31
Sheet metal worker	71	75.0	25.0	–	2.60	1.57
Machinery operator	75	23.1	69.2	7.7	2.25	1.05
Welder	94	52.6	47.4	–	2.56	1.37
Electrician	87	61.1	38.9	–	1.82	1.43
Other construction workers	74	68.4	31.6	–	1.43	1.19
<b>ITP</b>						
General construction	75	44.4	53.3	2.2	1.19	1.10
Technical utility systems	90	50.0	50.0	–	1.46	1.08
Road construction	100	25.0	75.0	–	1.19	1.05
Other fields	61	33.3	66.7	–	1.95	

Taking into account the underproduction of qualified workforce in the educational system, it is very likely that it will be hard for companies to find suitable workforce in the years ahead. There is a need for significant substantive analysis regarding how the distribution of qualifications in state-commissioned education conforms to the needs of companies. To ensure the necessary amount qualified workforce, school graduates with vocational education is not sufficient; forecasts indicate that this will cover only 50 per cent of companies' needs. For this reason, it is very important that an in-service and retraining system be developed, through which to increase the supply of workforce in the field of construction.

### 3.3. Buildings' energy consumption and development of renewable energy

End consumption of energy in Estonia in 2010 was 121.3 PJ (petajoules), of which buildings consume a total 47 PJ (petajoules). Potential is seen to reduce this about 25 per cent in building energy consumption. The energy savings forecast for 2016 if the measures described in the interim summary of the 'Energy efficiency target programme 2007-2013' are applied will be around 3.5 PJ.

<sup>11</sup> Workforce-related situation of Estonian construction companies and prospective need for workforce, table 1.4, p. 12.

\*Of the companies already with employees in this profession.

\*\*In companies where it was projected that numbers of employees in that profession would be increased.

Information is not gathered periodically in Estonia on the energy condition of the building stock, and thus no corresponding overall statistics is available. But several large-scale studies on specific types of buildings have been conducted (e.g. research commissioned by KredEx on the 'Structural/technical condition of prefabricated apartment buildings and projected lifespan'<sup>12</sup>).

The development of renewable energy in Estonia in recent years has been much faster than planned in Estonia's renewable energy action plan up to 2020. The share of renewable energy in end consumption in 2010 proved to be 104 ktoe (4.35 PJ; 1.21 TWh) greater than planned. The 'Estonian renewable energy action plan up to 2020' predicted that the share of renewable energy in 2010 would be 20.9 per cent, but in actuality it made up 24.0 per cent.

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<sup>12</sup>[http://www.kredex.ee/public/Uuringud/Suurpaneelamute\\_uuringu\\_loppraport\\_trukk.pdf](http://www.kredex.ee/public/Uuringud/Suurpaneelamute_uuringu_loppraport_trukk.pdf)



#### 4. Construction education and training at the vocational education level

A national competence-based qualification system is being developed in Estonia, which will create the framework for developing, evaluating, recognizing and comparing professional competency. Part of the qualification system will be made up by the **occupational qualifications system**<sup>13</sup>, which integrates the educational system with the labour market. The development of the occupational qualifications system is coordinated by the Estonian Qualifications Authority.

The competence circle seen in figure 4.1 shows how the occupational qualifications system integrates the job market with the lifelong learning system (formal, non-formal and informal study) and sets out the components of the process and the links between them.

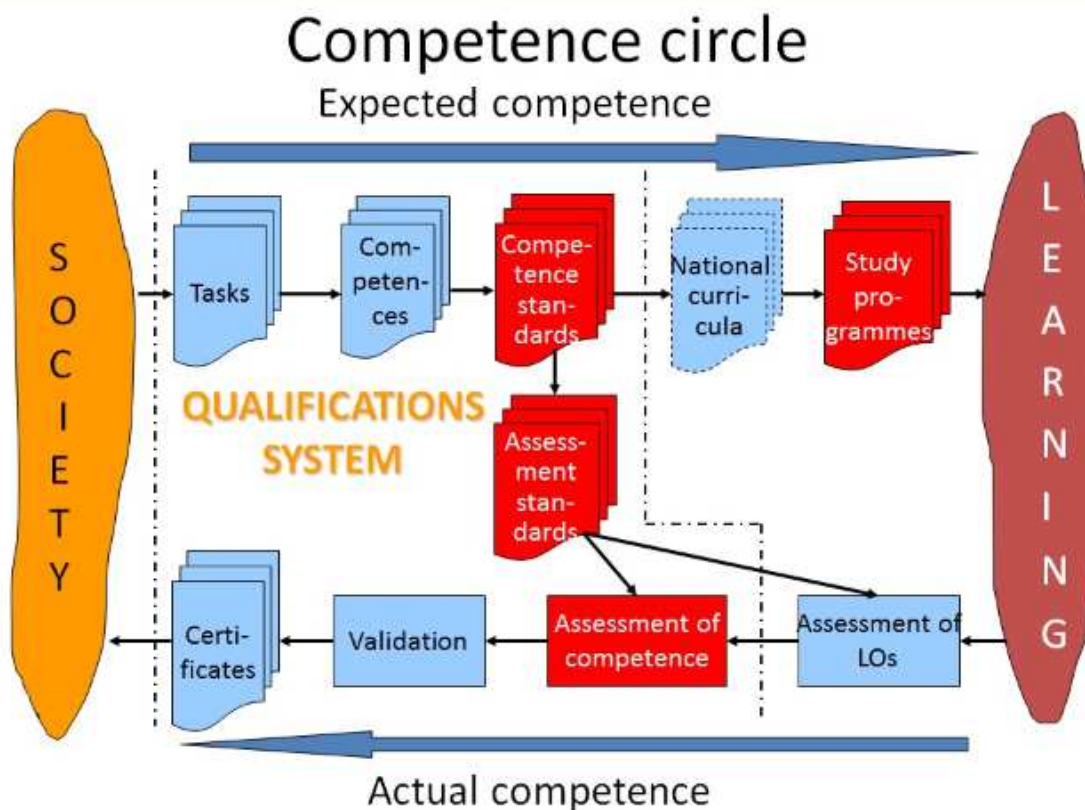
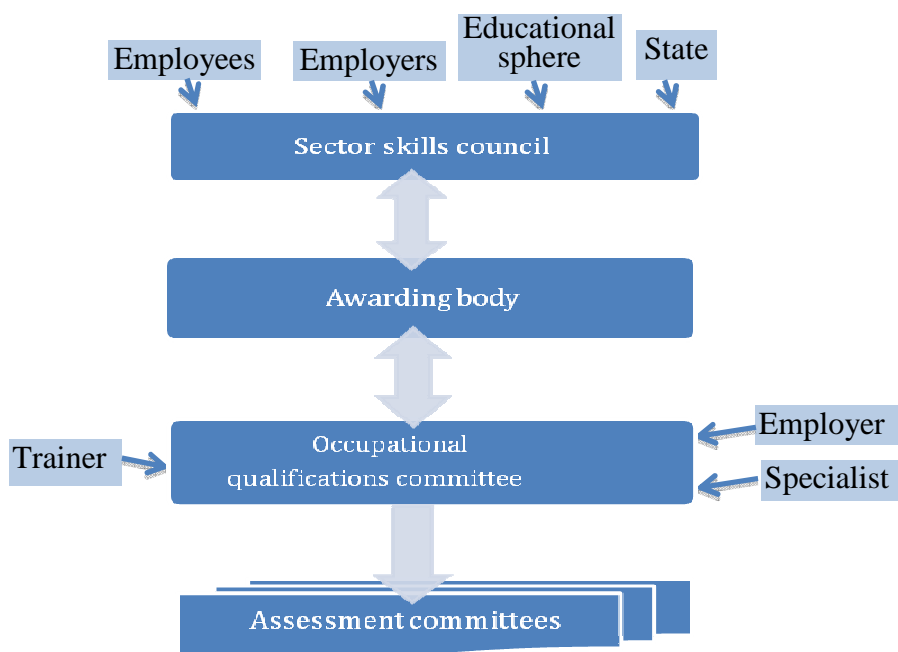


Figure 4.1. Competence circle (source: Estonian Qualifications Authority)<sup>14</sup>

The Estonian Qualifications Authority's sector skills councils select bodies that award occupational qualifications pursuant to open competition procedure. Occupational qualifications committees operating at the awarding bodies decide on awarding qualifications, and form assessment committees for that purpose.

<sup>13</sup> <http://www.hm.ee/index.php?044825>

<sup>14</sup> <http://www.kutsekoda.ee/fwkw/contenthelper/10216448/10216464>



**Figure 4.2.** Parties in the competence circle (source: Estonian Qualifications Authority)

As of September 2008, Estonia has an **eight-level national qualifications framework (EstQF)<sup>15</sup>** that integrates educational and occupational qualifications. It is in conformity with the European Qualification Framework (EQF). The descriptions of the EstQF levels are set forth in an annex to the Occupational Qualifications Act<sup>16</sup> and these specify the general requirements for academic results and occupational qualifications levels in the occupational qualifications system. Occupational qualifications – the professions – are situated at EstQF levels II-VIII. The qualifications of skilled workers in the construction sector are situated at EstQF levels III-V.

To bring the competence of school graduates and employees into conformity with the requirements of the labour market, the occupational qualifications system determines the necessary competence for working successfully in various roles in the profession and a corresponding occupational standard is prepared for each one of them. The competences described in the occupational standards are the basis for organization of the relevant training as well as for in-service and re-training; they are the basis for evaluating the employee’s competence. **The employee’s evaluated and certified competences are the basis for awarding occupational qualifications.**

#### 4.1. Awarding occupational qualifications in the field of construction

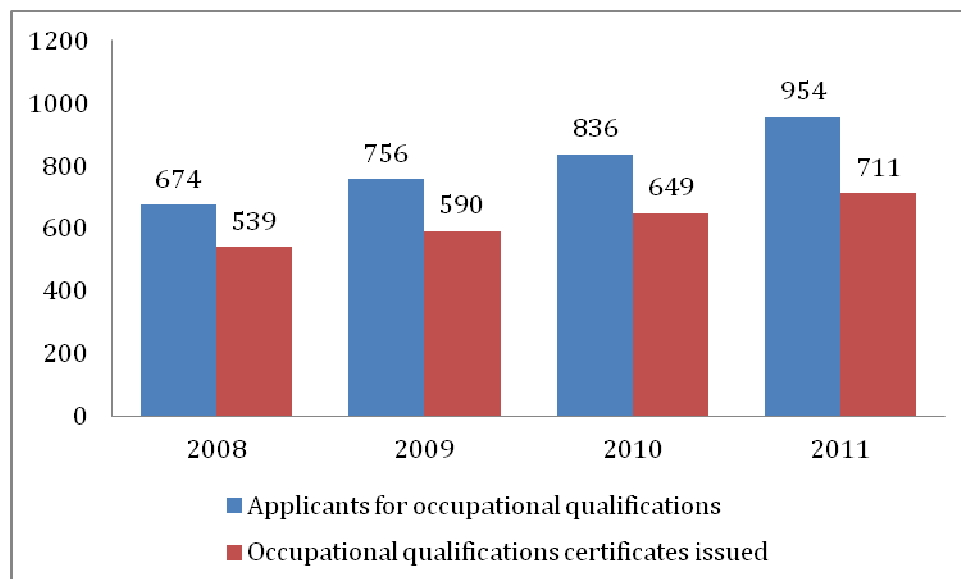
As of 2002, the Estonian Association of Construction Entrepreneurs is the body responsible for awarding occupational qualifications to skilled workers in the field of construction. The skilled worker occupational qualification examination can be taken in the following occupations: construction finishing specialist (tile installer, plasterer, painter, flooring installer), carpenter, mason, plumber and ventilation technician.

In the field of construction, the number of applicants has seen a stable increase, above all due to first-level occupational qualifications seekers – primarily graduates of vocational educational institutions. At the moment, taking the occupational qualification examination is voluntary for graduates. Around 70% of the

<sup>15</sup> <http://www.kutsekoda.ee/fwkwfb/10088731>

<sup>16</sup> <http://www.kutsekoda.ee/fwkwcontenthelper/10445708/10445709>

graduates of construction specialities at the vocational educational institution in a given year take the occupational qualification examination.



**Figure 4.3.** Number of applicants for occupational qualifications and occupational qualifications certificates issued in the field of construction 2008-2011<sup>17</sup>

In the period 2008–2011, first-level occupational qualifications were issued to 1,981 persons, of whom the predominant share received construction finishing specialist I and bricklayer occupational qualifications certification.\* The number of those taking the examination for first-time certification as an environmental technician is seeing an increase.

**Table 4.1.** Dynamics characteristic of the number of first-level occupational qualification examination takers, 2008–2011

First-level occupational qualifications	2008	2009	2010	2011	Total
Carpenter I	3	3	31	20	<b>57</b>
Construction finishing specialist II	188	257	254	283	<b>982</b>
Bricklayer I	149	169	218	191	<b>727</b>
Potter I	0	0	0	8	<b>8</b>
Environmental technician I	16	14	20	40	<b>90</b>
Ventilation technician I	0	12	0	5	<b>17</b>
<b>Total</b>	<b>356</b>	<b>455</b>	<b>523</b>	<b>547</b>	<b>1881</b>

Occupational qualifications are not actively sought at higher levels of skilled workers in the field of construction (except for the construction manager profession). The reason for this may be seen as the fact that employers do not place enough value on occupational qualifications of employees; the employee must also pay his or her own costs in the process.

<sup>17</sup>Extract from the Register of Occupational Qualifications as of 1 May 2012.

<http://www.kutsekoda.ee/et/kutseregister/kutsetunnistused>

\*The occupational qualification levels are shown in the old, five-level qualification framework. In the new, 8-level occupational qualifications framework, these first-level qualifications correspond to EstQF qualification level III.

**Table 4.2.** Number of occupational qualifications awarded to skilled workers in the construction industry as of 1 May 2012<sup>18</sup>

Occupational area*	Valid occupational standards	Occupational qualifications level I	Occupational qualifications level II	Occupational qualifications level III
Construction management	Construction manager*			641
General construction	Concrete structure builder	–	–	1
	Finishers	1102	30	0
	Carpenter	61	6	2
	Log house builder	68	21	16
	Sheet metal worker	0	1	1
	Bricklayer	756	6	6
	Potter	8	54	63
	Potter-restorer	0	0	5
Environmental technology	Plumber	89	5	1
	Ventilation technician	17	11	0

\*The occupational standard for construction manager envisions only qualifications level III.

Three awarders of occupational qualifications\*\* are connected with the field of building construction, and as of 1 January 2012 they had issued 849 occupational qualifications certificates at different occupational qualifications levels and titles.

**Table 4.3.** Number of valid engineering qualifications awarded in the construction industry as of 1 May 2012<sup>19</sup>

Awarder of qualifications	Valid occupational standards	Valid occupational certificates
Estonian Association of Civil Engineers	Construction engineer	178
	Statutory construction engineer	307
	Authorized construction engineer	92
Estonian Association of Heating and Ventilation Engineers	Energy auditor	50
	Statutory energy auditor	24
	Authorized energy auditor	6
	Issuer of energy labels for buildings	111
Estonian Association of Heat Equipment Engineers	Heating equipment engineer	2
	Statutory heating equipment engineer	28
	Authorized heating equipment engineer	51

As the occupational standards in the field of construction are being updated in connection with the transition to the eight-level qualification framework, there is the possibility of supplementing the occupational standards for various occupation levels with energy efficient construction related competences. The point of departure here is to what degree the given competence (knowledge, skills and attitudes) in the specific occupational standard may influence the energy efficiency of the building or of the construction process.

<sup>18</sup>Extract from the Register of Occupational Qualifications as of 1 May 2012.

<http://www.kutsekoda.ee/et/kutseregister/kutsetunnistused>

\*The occupational area is assigned pursuant to the classification of occupations based on the International Standard Classification of Occupations 2008 (acronym ISCO).

\*\* Estonian Association of Construction Engineers (<http://www.ehitusinsener.ee>), Estonian Association of Heating and Ventilation Engineers (<http://www.ekvy.ee>), Estonian Association of Heating Equipment Engineers Society (<http://www.estis.ee>)

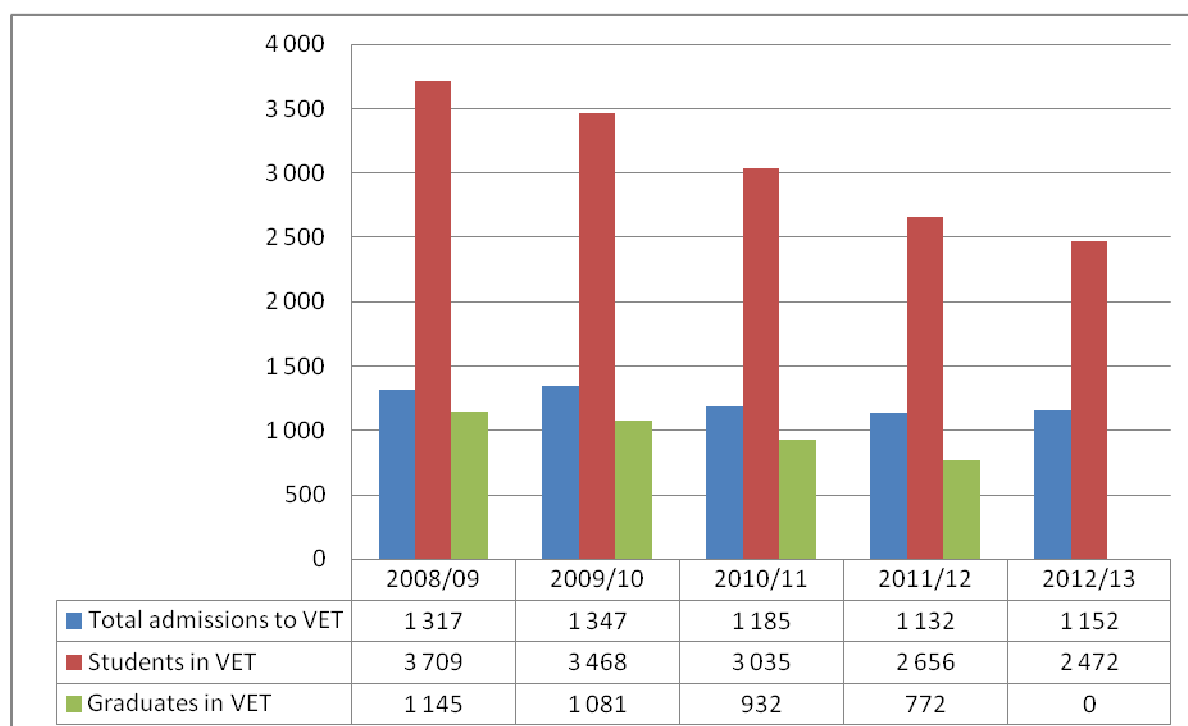
<sup>19</sup>Extract from the Register of Occupational Qualifications as of 1 May 2012.

<http://www.kutsekoda.ee/et/kutseregister/kutsetunnistused>

## 4.2. Structure of the vocational educational system\* and number of students

The most important function of vocational education and training (VET) is to create, through achieving professional and social competence, a basis allowing the student to be successful in his or her chosen occupation and to ensure that the student is prepared for further development in the occupational and lifelong learning.

Estonia has a total of 42 vocational educational institutions, and construction specialities are taught in 19 schools\*\* located in different regions. As of 10.11.2012, a total of 26172 people studied at vocational educational institutions. The field of vocational education with the largest number of students is technology, manufacturing and construction\*\*\*, which also includes the construction and civil engineering works curriculum group. In the 2011/12 academic year, 10,976 students are studying there, which is 40 per cent of all vocational students.



**Figure 4.4.** Dynamics characterizing admissions, number of students and graduates in the construction and civil engineering works curriculum group in 2008/09-2012/13<sup>20</sup>

\***The vocational education system** is considered to be the institutions dealing with vocational education and the vocational educational and development activities taking place in these institutions at the basic and secondary education level and formal education or adult professional training.

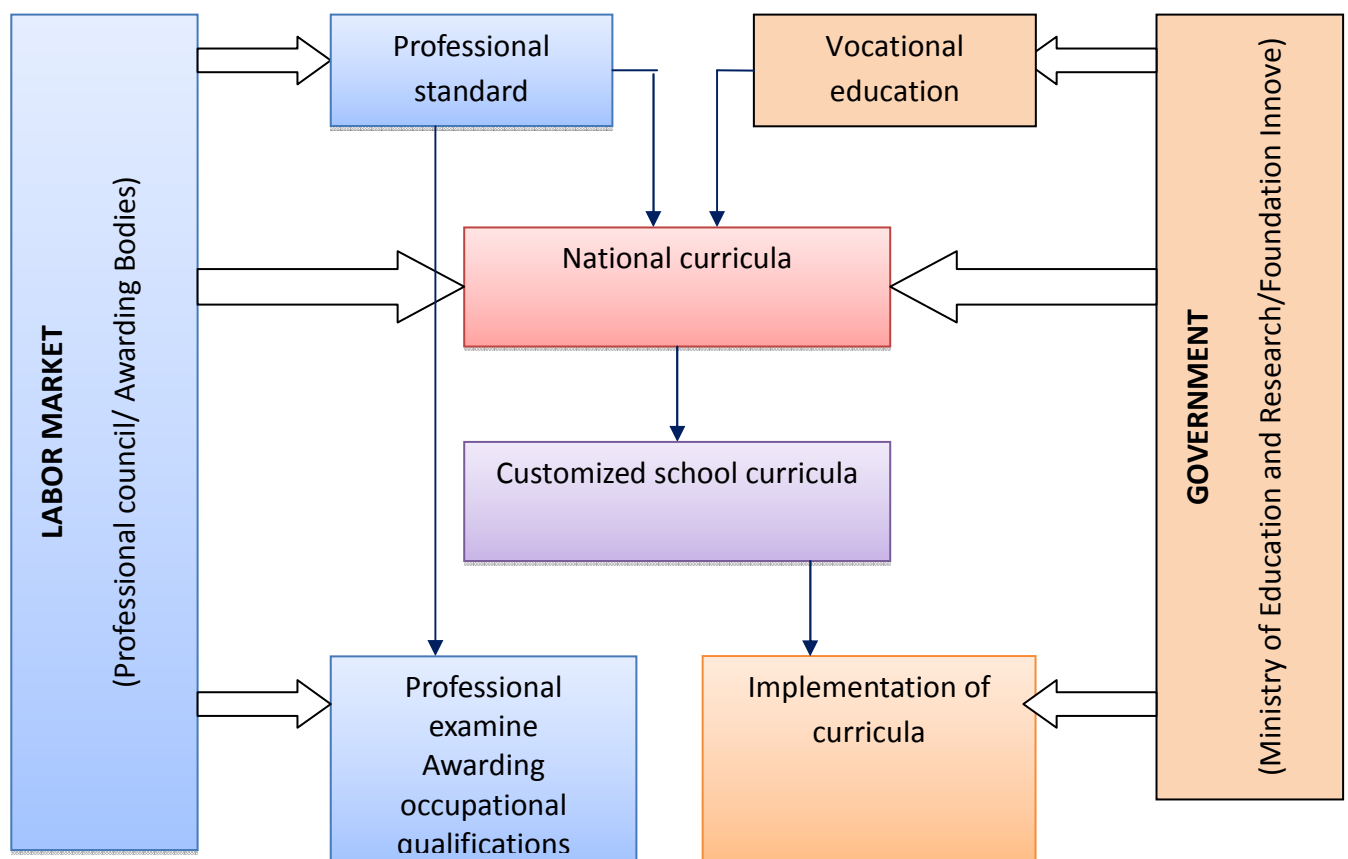
\*\* Haapsalu Vocational Education Centre, Hiiumaa Regional Training Centre, Ida-Viru County Vocational Education Centre, Järva County Vocational Education Centre, Kehtna Economics and Technology School, Kuressaare Regional Training Centre, Narva Vocational Education Centre, Põltsamaa Regional Training Centre, Pärnu County Vocational Education Centre, Rakvere Regional Training Centre, Sillamäe Training Centre, Tallinn Construction School, Tallinn Kopli Regional Training Centre, Tallinn Lasnamäe School of Mechanics, Tartu Vocational Education Centre, Valga County Vocational Education Centre, Vana-Antsla Kutsekeskkool, Vana-Vigala Technology and Service School, Viljandi Joint Vocational Secondary School.

\*\*\* The 97 classifiers of the ISCED (International Standard of Classification of Education) are used to categorize specialities in vocational education. The ISCED is a single international standard for categorizing educational levels and curricula. Its purpose is to enable comparability of national educational systems and educational statistics. ISCED describes eight fields of study, which are divided into 24 areas of activity and 91 curriculum groups. Estonia offers vocational training in 33 curriculum groups.

<sup>20</sup> EEIS, extract from the Ministry of Education and Research analysis division as of April 2013.

The general developments with regard to decrease in the number of students also have a direct effect on the **construction and civil engineering works curriculum group**, where the number of students has fallen to 2,472.

#### 4.3. Ensuring the content and quality of vocational studies in vocational education



**Figure 4.5.** Preparation of curricula in vocational education<sup>21</sup>

Starting in the 2008/09 academic year, students are accepted to schools only on the basis of curricula that conform to national curricula.\* The working groups consisting of professional specialists and vocational teachers who deal with preparation of national curricula and the **implementation of the working groups has promoted greater consistency in quality of vocational studies**, ensuring students from one school to the next as well as in all regions **equal opportunity to enter the open job market**.

The basis for professional training in the field of construction is the 'National curriculum of construction specialities'<sup>22</sup>, which defines the volume of vocational study, compulsory content and requirements for commencing and completing study in the following specialities:

- 1) mason;
- 2) finishing work in construction;

<sup>21</sup><http://ekka.archimedes.ee/dokumendid>

\*A **national curriculum** is a document that determines the objectives and functions of vocational training, the requirements for starting study and graduating, the curricular modules and their number of credit points, along with brief descriptions, possibilities and conditions for selecting modules and options for specialization.

<sup>22</sup><https://www.riigiteataja.ee/akt/12940025>

- 3) carpenter;
- 4) plumber;
- 5) restorer of wood and stone buildings;
- 6) facility service person;
- 7) road construction;
- 8) land improvement and hydrotechnics.

The total volume of vocational study is 80 weeks of study (3,200 hours): The content of study is in the form of modules that determine the knowledge, skills and attitudes in conformity to occupational skill requirements. The national curriculum sets out brief output based descriptions of the modules.

To complete a study programme, the study results set forth in the curriculum must be achieved and a final examination in the speciality must be passed. Graduates of vocational educational institutions have the right to take the relevant occupational qualification examination instead of the final examination in the speciality. Those taking the occupational qualification examination are awarded a first-level occupational qualifications certificate.\* The cost of an occupational qualification examination taken in place of a final examination in the speciality shall be covered from state funds.

**The topics of energy conservation and building energy efficiency are not directly covered in the national curriculum.** Thus there is no overview of how much and what topics related to energy conservation and energy efficiency are dealt with during study. That is why **cooperation with higher educational institutions is very important for promoting the field, as is preparing textbooks and guidelines and developing study methodology.**

To complete a study programme, the study results set forth in the curriculum must be achieved and a final examination in the speciality must be passed. Graduates of vocational educational institutions have the right to take the relevant occupational qualification examination instead of the final examination in the speciality. Those taking the occupational qualification examination are awarded a first-level occupational qualifications certificate.\*\*

**The most important specialities in the context of energy efficiency** and the occupational qualifications acquired after passing the first-level occupational qualification examination are shown in the table below.

**Table 4.4.** Curricula in the specialities and occupational qualifications awarded upon completing the studies

Curriculum in the speciality	Occupational qualifications
Mason	Bricklayer
Finishing work in construction	Finisher
Carpenter	Carpenter
Plumber	Plumber (including ventilation technician)
Facility service person	Facility service person

\* Occupational qualification is substantiated by a qualifications certificate. The holder of a qualifications certificate has the right to use the occupational title stemming from the occupational area or its abbreviation. The issuer shall register the qualifications certificates and they shall be entered into the Register of Occupational Qualifications in accordance with the Statutes of the Register of Occupational Qualification. There is a fee for taking the qualification examination.

\*\* Occupational qualification is substantiated by a qualifications certificate. The holder of a qualifications certificate has the right to use the occupational title stemming from the occupational area or its abbreviation. The issuer shall register the qualifications certificates and they shall be entered into the Register of Occupational Qualifications in accordance with the Statutes of the Register of Occupational Qualification. There is a fee for taking the qualification examination.

Schools that teach construction specialities are primarily state-run vocational educational institutions, and two are municipal. There are no private vocational educational institutions. State and municipal vocational educational institutions receive funding from the state budget to cover operating costs and investments.<sup>23</sup>

**The basis for planning state commissioning of education** (hereinafter SCE) **at vocational educational institutions** in both formal education and work-related training for adults is the Ministry of Economic Affairs' employment forecast, released each year with a 6-7-year perspective. To ensure a flexible response, the data from the Unemployment Insurance Fund on changes to the employment structure are also taken into account.

Starting in 2007, the number of student places in the curriculum group ordered by vocational educational institutions is approved for the subsequent three calendar years.<sup>24</sup> In addition to formal education, **the state commissions, as of 2007, study places for adult professional in-service training.** For every budget year, the cabinet by regulation establishes the basic cost of a student place<sup>25</sup>, which has remained the same for the last three years. In 2012 the cost was 1,893 euros.<sup>26</sup> Considering the share of practical instruction in the construction field and the high requirements for supply of materials and tools, **the state funds are not enough to implement the curriculum at the level expected by employers.**

Quality was the main theme in the Estonian vocational education system development plans for 2005–2008 and 2009–2013. **National certification and the underlying process of accreditation** are one part of the quality control model in vocational education, which includes various in-house evaluation and external evaluation means.

Accreditation is performed on the basis of the curriculum group, focusing on implementation of the curriculum, methodological bases of study, the student's development, development of the curricula and study process and quality and sustainability of results. Representatives of employers in the given field and education experts are involved in the school evaluation process. The Estonian Higher Education Quality Agency (EKKA)<sup>27</sup> coordinates the activities.

Accreditation of curriculum groups is one stage in the chain of national certification, beginning with internal evaluation at the educational institution and ending with the issuing of a directive by the Minister of Education and Research, where the right to carry out study in a specific curriculum group is given.<sup>28</sup>

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<sup>23</sup>Financing of student places from SCE can be applied for by privately owned vocational educational institution as well. In addition, income can be earned from provision of paid services related to the school's main area of activity, and other sources of financing may be used (e.g. targeted and project-based allocations etc). Section 33 of Vocational Education Institutions Act. <https://www.riigiteataja.ee/akt/108072011009?leiaKehtiv>

<sup>24</sup>Procedure for preparing SCE was approved in 2007 by Minister of Education and Research regulation no. 1 of 11 January 2010.

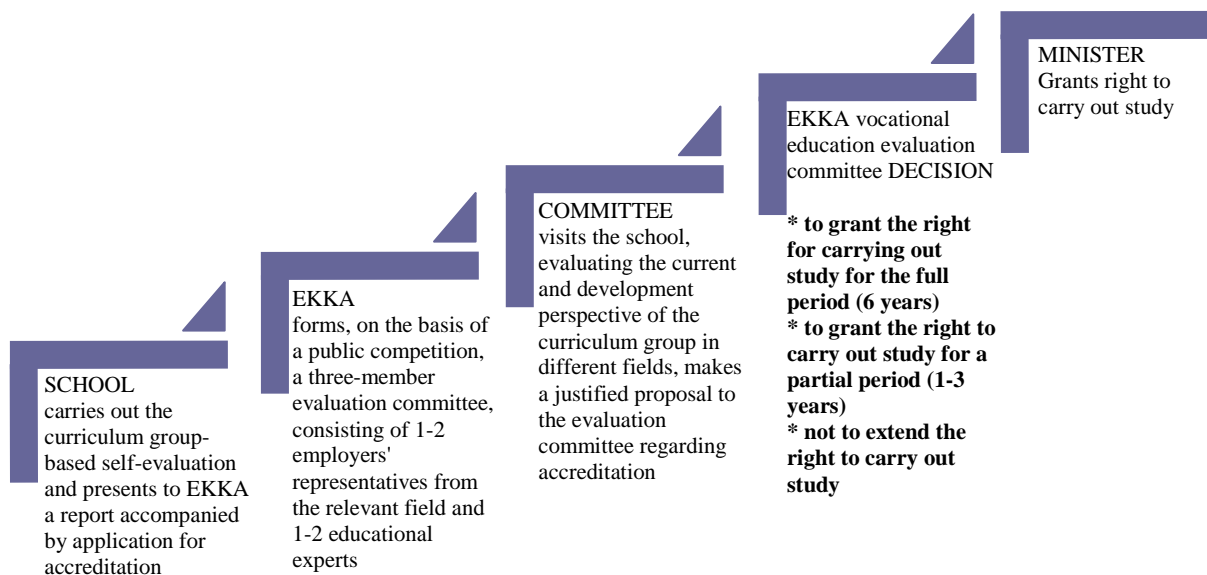
<sup>25</sup><https://www.riigiteataja.ee/akt/130012012005>

<sup>26</sup>In the last three years the basic cost of a student place was 1,262 EUR, to which the curriculum group and study format coefficients are added, which are between 1-4 and are established by Government regulation no. 42 of 9 February 2006. <https://www.riigiteataja.ee/akt/993266?leiaKehtiv>

<sup>27</sup>The Estonian Higher Education Quality Agency EKKA is part of the structure of the Archimedes Foundation, is independent in its assessments and is entered into the European Quality Assurance Register for Higher Education. For more detail, see <http://www.ekka.archimedes.ee/kutsekoolile>

<sup>28</sup>Summary from the vocational education curriculum group accreditation pilot round. The Estonian Higher Education Quality Agency 2012, p 3. <http://ekka.archimedes.ee/uudised>





**Figure 4.6.** Accreditation system

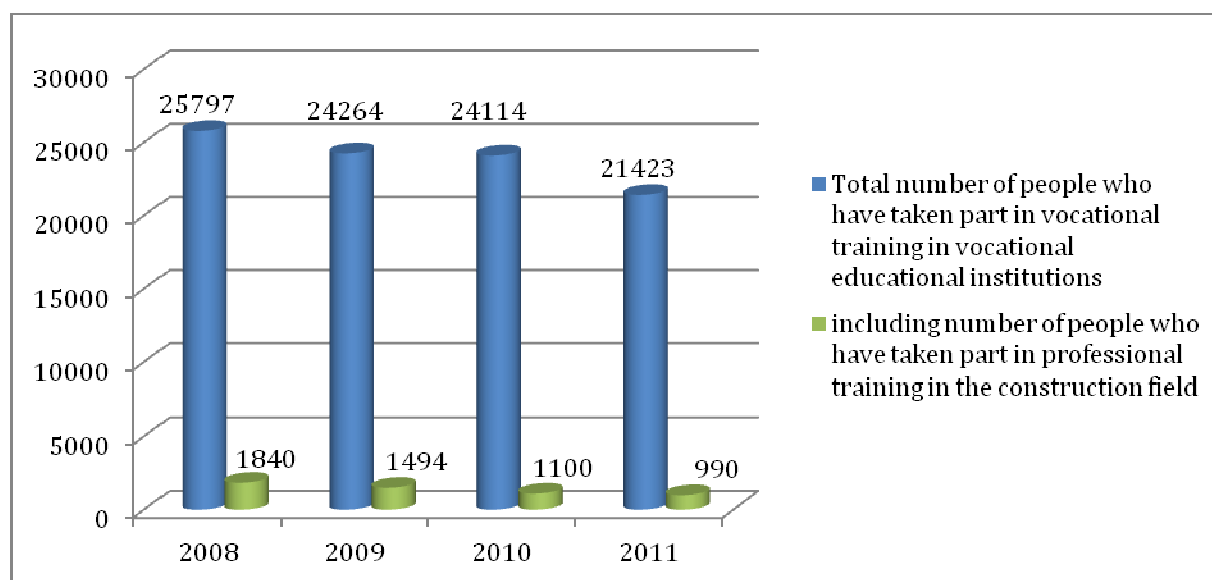
In 2011, all of the schools that offer construction specialities passed accreditation (19 of them). The right to carry out study for the full period (6 years) was given to five schools. It was surprising that the schools that received partial, 3-year accreditation was so high. These schools may re-apply for state certification in 2014.

## 5. Adult education in the construction field

Construction related in-service training is offered at all vocational educational institution, institutions of professional higher education and public universities that offer formal education in the field. In general, the selection of training topics proceeds from fields of formal education. Special programmes are prepared for trainings ordered by companies and professional associations. Other providers of training on the market are professional associations and private training companies.

Based on the purpose of study, professional training take place as follows:

- **as primary** study to allow persons not certified in a speciality or profession to acquire elementary professional and specialized knowledge skills and experience;
- **as retraining** to allow them to acquire new professional and specialized knowledge skills and experience;
- **as in-service training** to supplement existing professional and specialized knowledge skills and experience.



**Figure 5.1.** Participants in professional in-service training at vocational educational institutions from 2008-2011<sup>29</sup>

On the basis of the data entered by vocational educational institutions into EEIS (table 5.1) the greatest number of in-service trainings have been held for construction finishing specialists, carpenters and masons. The in-service training programmes offered by vocational educational institutions are thorough (80-400 contact hours), and the average length of the trainings has grown significantly in the recent years.

**Table 5.1.** Professional in-service training for target groups in the construction field

Training target group	2008		2009		2010		2011	
	Trainings	Average number of hours	Trainings	Average number of hours	Trainings	Average number of hours	Trainings	Average number of hours
Construction finisher (incl. plasterer, tile installer, painter, flooring installer)	47	90	39	116	23	79	36	70

<sup>29</sup>Source: Ministry of education and Research, Vocational and Adult education department, 12 March 2012.

Carpenter	10	60	6	70	13	125	11	164
Bricklayer*	30	109	47	98	32	87	25	94
Plumber	6	74	12	119	7	110	11	105
Ventilation technician	2	40	1	40	–	–	–	–
Concrete worker	2	320	–	–	5	51	3	86
Sheet metal worker	–	–	5	56	3	58	4	100
Machinery operator	2	32	1	28	1	43	–	–
Welder	–	–	–	–	–	–	–	–
Electrician	–	–	1	40	–	–	–	–
Other construction worker	42	27	17	25	17	43	11	44
Employee at engineer level	1	12	–	–	1	24	1	8

The Ministry of Education and Research allows vocational education institutions, through state-commissioned education, to organize free of charge in-service training for employees at the worker level. Amount of SCE in the construction and civil engineering works curriculum group has remained at the level of years past. Analysing the total amount of SCE, we see an opportunity to increase the share of technology, manufacturing and construction as a high-priority field. The training topics offered also need to be better integrated with the need of companies for workforce. The share of building energy efficiency topics can be increased already through the SCE for the second half of 2012. In 2013 and 2014 already up to 80% of the SCE at vocational education institutions should be linked with building energy efficiency. This is the most important measure for increasing the amount of training activity at the worker level.

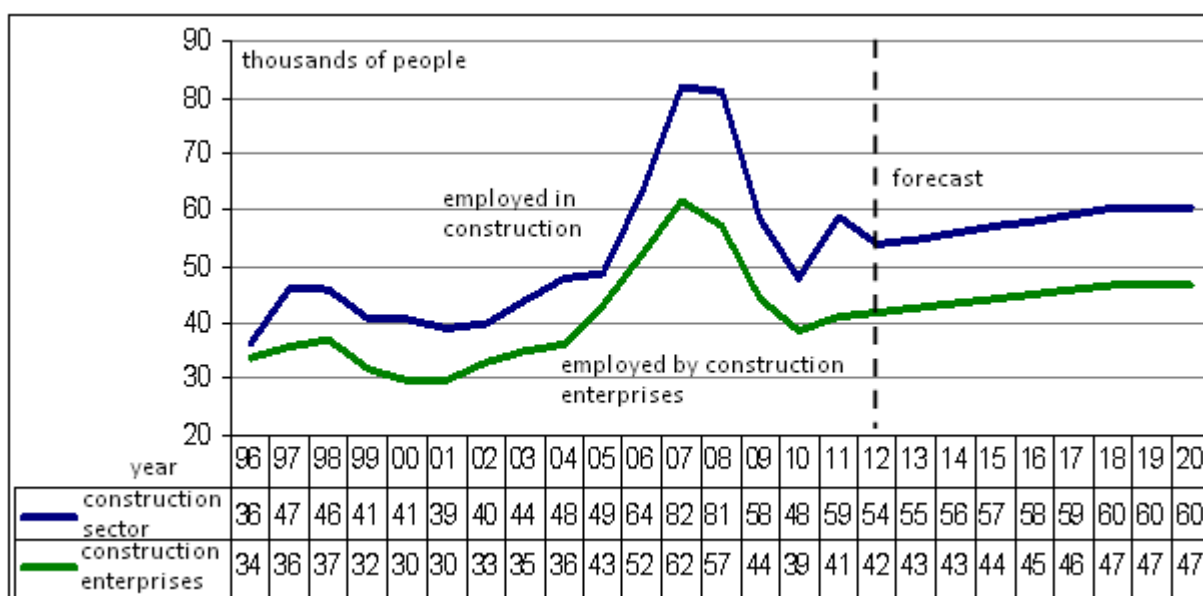
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\*Including training for potters.

## 6. Divergence between the current professional skills of the workforce and the levels necessary for achieving the 2020 objectives

### 6.1. Development of the labour market in the construction field

The forecasts for 2012-2020 compiled on the basis of the overall numbers of people employed at construction companies indicate that the average number of the employed is 42,000-47,000 workers per year, which exceeds the average for the last 14 years but is lower than at the peak of the construction boom.\* The forecasts made on the basis of volume of construction work and value added in the construction field indicate that the number of employed will be greater than this. Forecasts made on various assumptions show that the number of employed by construction companies could rise to 45,000-50,000 people or more.



**Figure 6.1.** Forecast as to the number of employed in the construction sector and by construction companies in 2012-2020 on the basis of the total number (thousands of people)<sup>30</sup>

The workforce study data signal an urgent shortage of workforce in the sector – close to one-half of companies (48%) said they needed one or more employees immediately – but they also point to high fluidity of the workforce. Workers leave to go to other construction companies or other work, go abroad or on pension. The working lifespan of the employees in the construction sector is shorter than overall – a factor that exerts a significant impact on supply of workforce. People retire from construction work predominantly before pension age, on average at 57.3 years. To replace the workers who leave due to age-related reasons, an average of 2.75% of construction workers must be found each year and 2.55% of new engineering and technical workers must be replaced each year, thus the need for replacement workforce constitutes nearly 3% of the current number of employees. If in this decade, the growth in GDP proves to be just as successful as projections said it would, and the volume of construction work is at least 1,200-2,000 euros, there will be a need for workforce of up to 54,000 employees, which would be accompanied by a need for 1,200 workers who have acquired professional skills.

\*The forecast distinguishes numbers of all employed in the construction sector from those employed at construction enterprises, the project target group is employees in the field of construction.

<sup>30</sup>Statistics Estonia, Estonian Institute of Economic Research calculations on the basis of the study 'Workforce-related situation of Estonian construction companies and prospective need for workforce', May 2012.

**The following shortcomings have the most influence on the development of the labour market in the construction sector:**

- In recent years, there have been 900-1,000 graduates per year in the construction field in vocational educational institutions (hereinafter vocational schools). Yet we must take into consideration that admissions are down in 2010-2011, and thus the number of graduates in 2013 may be as low as 800. To ensure that the necessary replacement workforce is trained, admissions to vocational education must be increased significantly.
- Of graduates in construction specialities in vocational schools, 36 per cent are not employed in their speciality or do not work for other reasons. This fact may end up reducing the number of new hires even to 600. Those who do not start work in their area of speciality are a very important potential workforce resource, who could be brought back to the labour market in the field of construction through better cooperation between vocational schools and companies.
- The fluctuations on the Estonian construction market with regard to construction volumes are much greater than seen in neighbouring countries Finland and Sweden. The education system has a hard time responding to these sharp rises and falls, and thus the fluctuation also affects the employment of workers without speciality training. According to workforce study data, construction workers who lack professional training account for close to 50 per cent of workers at construction companies. It is much harder to broaden the knowledge of untrained workers in the field of energy efficiency than it is in the case of those with speciality training.
- Pressure favouring the migration of workforce to neighbouring countries with a higher wage level is continuing at the current pace, as convergence of wage levels is not realistic in the near future (1/3 of the workers who leave are headed abroad).
- The ratio of training provided to engineering and technical personnel vs. workers is not based on the companies' needs. Of the graduates from the construction and architecture specialities, 67% have acquired a worker-level qualification and 33% hold higher education. For construction companies, a sustainable situation would be a case where a company has 2.5-3 construction workers per engineering and technical staff. Companies will not be sufficiently efficient and the shortage of workforce will put pressure on them to hire people who lack specialist training.

**The following circumstances have the most influence on the workforce's awareness of energy efficiency:**

- Companies' readiness to refer construction workers to training in the field of energy efficiency in the years ahead is much lower (53% of companies that responded) than the wish to refer engineering and technical personnel to such training (83 per cent of respondents).<sup>31</sup>
- Of companies in the construction field, 95% are small and micro-enterprises, whose ability to send employees to training is low; above all in the case of workers, resources cannot be found for covering training costs and preserving wages.
- Close to 50 per cent of construction workers at construction companies have not received specialized training. As the number of new hires with specialized education is much lower than those leaving the employment market, the share of employees who lack construction education will likely increase, causing the largest share of the need for skills in the field.

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<sup>31</sup>Workforce-related situation of Estonian construction companies and prospective need for workforce. Estonian Institute of Economic Research. Tallinn, 2012.

## **6.2. Skill requirements for construction workforce**

Depending on the size of the company, one employee with master-level competence\* is required per 6-10 construction workers; this master level employee is of key importance to ensuring work quality and energy efficiency. The total number of employees in the construction sector is close to 47,000 employees, and of these 60 per cent are construction worker level employees. The total number of construction workers in constructing companies will remain on the footing of 28,000 employees, while the target group of the master's level training is 3,500 employees, who in turn can be classed as specialists in speciality fields. Annex 1 presents the existing training opportunities for raising the qualification level and areas of activity without training possibilities.

In the development of competences aimed at energy efficiency, the complementing of occupational standards in the construction field is of key importance, as these are the basis for updating the content of national curricula in vocational education as well as designing in-service trainings. In connection with the transition to the eight-level qualification framework, the existing standards will be updated, and new ones will be added. As the process is still on-going, this is a good opportunity to determine the need to treat, at various qualification levels, competences related to the energy efficiency of buildings and to make proposals for updating the occupational standards. The point of departure here is to what degree the given competence (knowledge, skills, attitudes) in the specific occupational standard may influence the energy efficiency of the building or of the construction process. The higher is the occupational qualification level, the more wide-ranging the energy efficiency-related competences will have to be.

### **6.2.1. Level III and IV qualifications for construction workers in the EstQF**

Considering that level III and IV construction workers do not take part in designing buildings, managing construction work and advising customers and contracting entities, their influence on building energy efficiency is manifested through quality performance of construction work using the proper technological process.

To ensure this, the necessary competences must be introduced into occupational standards and from there on, vocational training curricula must be provided with corresponding modules that deal with the selection of tolerances and technologies and techniques as well as the potential influence of construction faults on energy expenditure of the construction process and buildings' energy efficiency.

For instance, with regard to all of the most important components, occupational standards should direct both formal education and in-service training to treating the following topics:

- organisation of construction work;
- typical faults in construction work and their causes;
- primary manifestations of construction faults and the thermal physical impact on structures and buildings' energy efficiency;
- how the selection of construction work technologies influences the environment and the energy expenditure of the construction process.

It would be wise to use a simulation programme to demonstrate the impact of construction faults on buildings' basic structural elements.

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\*We consider master -level competences to be the skills of supervising construction workers with lower qualifications and of conveying professional skills and knowledge, and the readiness to take responsibility for organization of work, use of materials and outcome of work.

The energy efficiency related competences noted here level III and IV qualifications for construction worker need to be significantly refined in cooperation with representatives of target groups and members of occupational qualifications committees.

### **6.2.2. Level V qualifications for construction workers in the EstQF**

The level V construction worker qualification is a construction master level, which includes, in addition to construction worker know-how, certain management related competences. When managing construction processes in this extent, a construction master has greater opportunity to impact the energy efficiency of buildings.

In addition to the competences described in the level III and IV qualifications, the master of construction qualification should also include:

- general knowledge of energy sources and energy types and principles for selecting them;
- general knowledge of the combined effect of technical utility systems and building structural elements on building energy efficiency.

The energy efficiency related competences noted here for level V qualifications of construction worker need to be significantly refined in cooperation with representatives of target groups and members of occupational qualifications committees.

### **6.2.3. Construction manager (EstQF level V)\***

The holder of these qualifications is a mid-level manager who, in addition to the ability to manage certain construction processes, has project management competences for buildings of limited size and complexity. He/she can also perform supervision for the building owner. As the construction manager has a markedly greater scope of responsibility in the construction process than construction workers, he/she can impact the energy efficiency of the building or process much more. For this reason, the following energy efficiency related competences must be added to the occupational standard for construction manager:

- general knowledge of energy sources and energy types and principles for selecting them;
- general knowledge of the combined effect of technical utility systems and building structural elements on building energy efficiency;
- knowledge of legislative acts, regulations and standards pertaining to energy efficiency.

The energy efficiency related competences noted here for the construction manager qualifications need to be significantly refined in cooperation with representatives of target groups and members of occupational qualifications committees in the subsequent stages of the project BuildEst.

### **6.2.4. Engineering level qualifications (EstQF levels VI-VIII)**

For engineers, cross-disciplinary competences are important for achieving building energy efficiency, e.g.:

- thorough knowledge of the combined effect of technical utility systems and building structural elements on building energy efficiency;
- impact of building design on their energy efficiency; associations between design, construction and management based on energy efficiency.

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\* EstQF level V, which has been brought into conformity with the eight-level qualifications framework in the new occupational standards, is titled 'Construction Manager III' in the currently valid occupational standards.

The general approach to the construction engineer qualifications will be refined in cooperation with representatives of target groups and members of occupational qualifications committees. They must agree on how to describe skills pertaining to energy efficiency. The precise wording of the necessary skills is not the goal of the project; the sector skills councils deal with the more detailed definitions by each speciality in the course of updating the occupational standards.

### **6.3. Training the trainers**

The vocational educational institutions that teach construction specialities also serve as the providers of in-service training on the worker level (EstQF levels III and IV). The key question with regard to developing training capacity of vocational educational institution in the field of energy efficiency is training speciality teachers. The training target group size is an estimated 70 vocational teachers. It is a good idea to involve people from the private sector in the teaching, for instance as prospective co-lecturers.

Estonia does not have a central training institution in the field of energy efficiency. The situation that has developed in Estonia is that trainers in the field of energy efficiency are concentrated at institutions of higher education. In disseminating knowledge to construction workers, the role of a university or institution of professional higher education can be to train trainers, serve as a clearinghouse for international experience and develop textbooks and methodologies. Certainly the updating of knowledge and skills will also be supported by use of vocational teachers' internship opportunities backed by various projects.

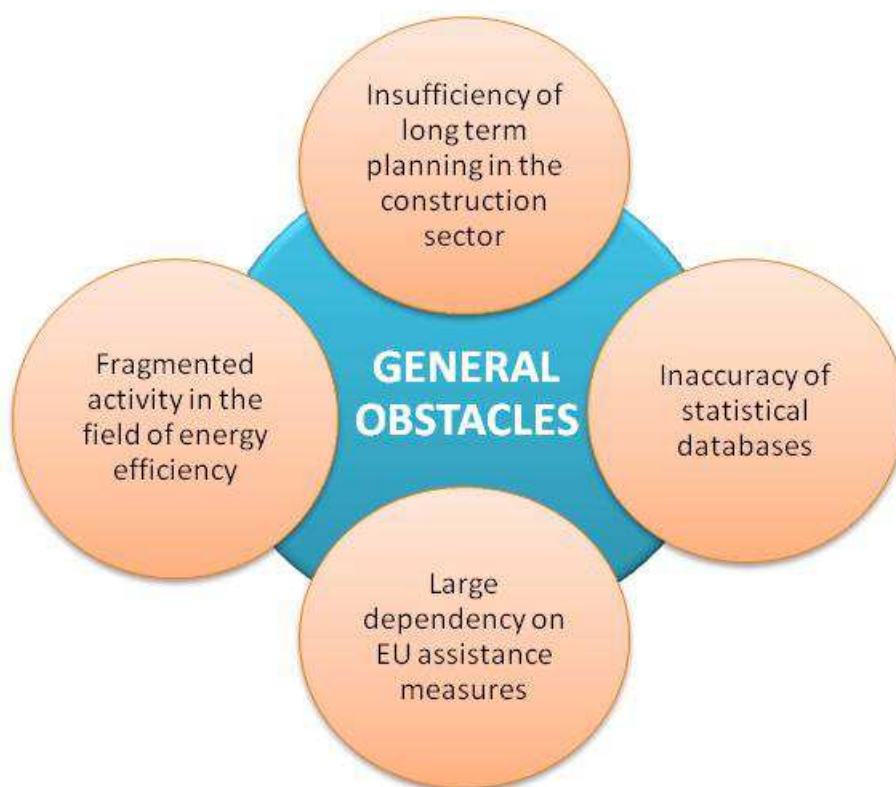


## 7. Obstacles to achieving the 2020 energy efficiency targets

To identify the obstacles in developing the energy efficiency field, the project working group analysed the situation at different levels and in the status quo report prepared in the first stage of the project, the general obstacles based on the construction sector, educational system and training activity were set forth.

### 7.1. General obstacles

Long-term planning of state energy resource management takes place, but only a limited amount of similar planning is seen in the construction sector with its variable market. Activities in the field of energy efficiency have become fragmented between different public sector institutions (Ministry of Economic Affairs and Communications, KredEx, Estonian Development Fund, Technical Surveillance Authority). It is difficult to standardize, for the purpose of drawing conclusions, the statistics gathered by different government departments, there is a lack of precise analysis and a database that is generally administered. In addition, the carrying out of energy efficiency activities is largely dependent on European Union assistance measures.

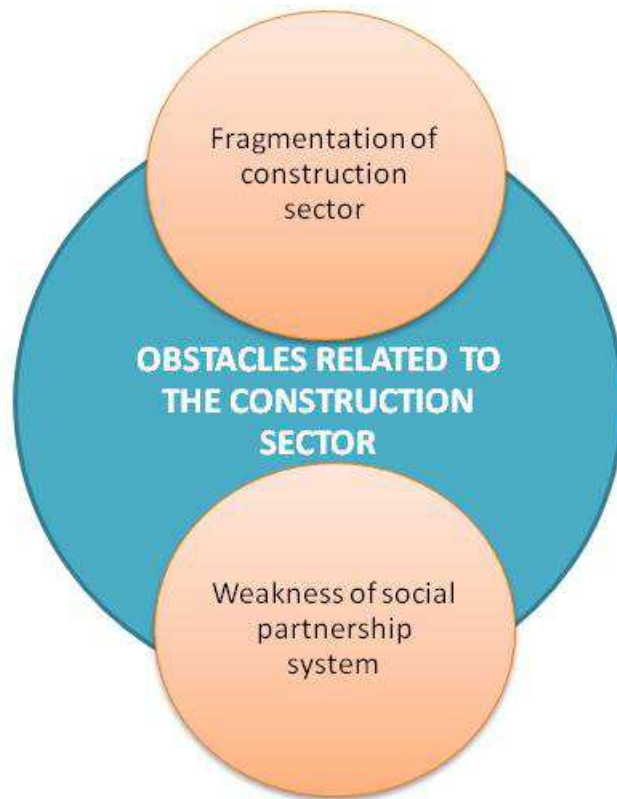


**Figure 7.1.** General obstacles in developing the energy efficiency sector

### 7.2. Obstacles related to the construction sector

Most workers are employed by small and very small companies that are not capable of developing their personnel in a systematic fashion. No strong small business climate has developed in the sector. Due to the lack of trade unions in the construction sector, professional associations have weak capability compared to

countries where the field is well-organized and information is disseminated through social partnership. A hindrance to founding trade unions may be fear of negative influence on the open economic system.

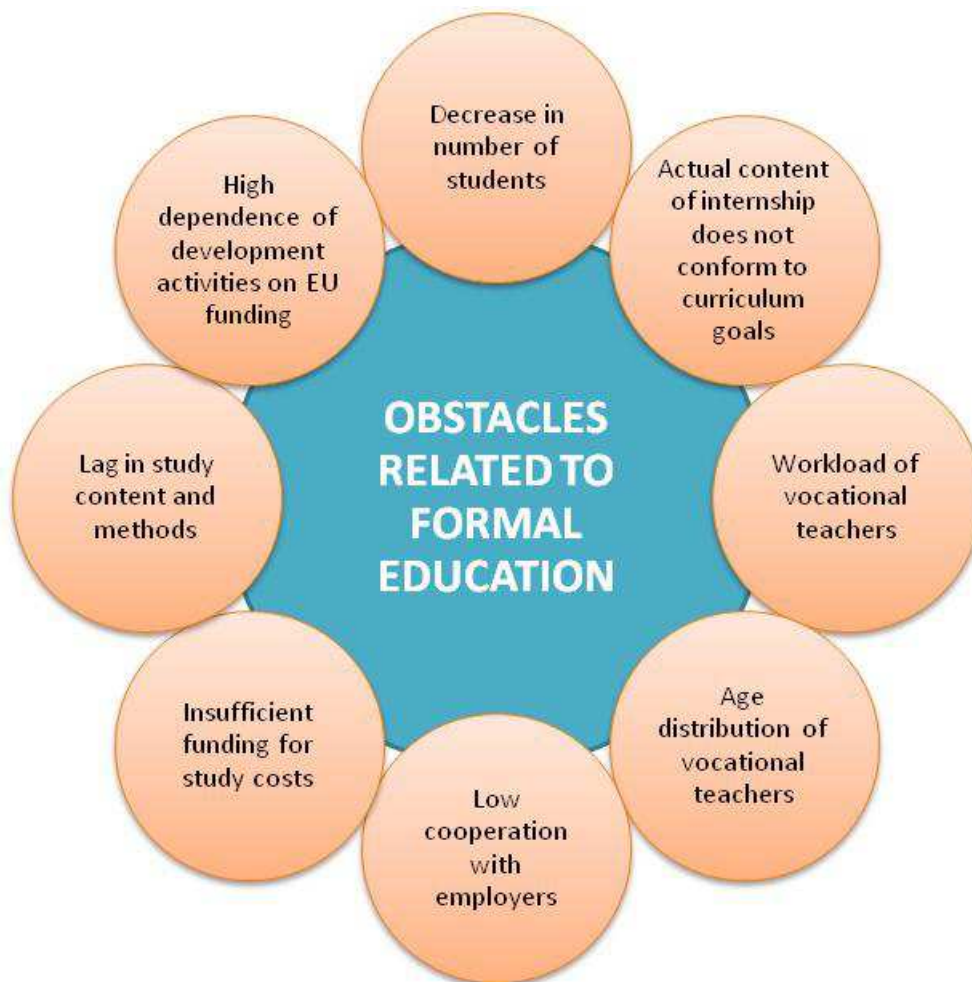


**Figure 7.2.** Obstacles in the construction sector in developing the field of energy efficiency

### **7.3. Obstacles related in formal education**

Due to the demographic situation, the number of students has decreased in recent years, and the popularity of construction specialities also depends on changes in economic climate. The vocational educational system both in formal education and in offering adults occupational courses is not flexible enough to allow to study while working. Most development activities take place with ERDF and ESF funding, which renders ensuring sustainability of activities problematic. Considering the share of practical instruction in the construction field and the high requirements for supply of materials and tools, the funds channelled into construction study are not enough to implement the first-level curriculum at the level expected by employers.

There is insufficient utilization of up-to-date study and evaluation methods in the studies, vocational teachers are not conversant enough with new technologies and materials. Cooperation with companies in the region for ensuring professional placement is insufficient, content of such practicum work does not ensure achievement of the expected study outcome. There is minimal involvement of specialists in the study process. The workload of vocational teachers as measured in academic hours is high or unevenly distributed and does not make it possible for them to take part in development activities. Training of new young teachers is low, jeopardizing sustainability of speciality training and the conformity of study to what the economy and labour market need.



**Figure 7.3.** Obstacles related to formal education in developing the field of energy efficiency

#### **7.4. Obstacles related to training activities**

Shortage of experts who are capable of training trainers at the expected level. The dearth of potential participants in trainer training is influenced by the insufficient number of vocational teachers and their advanced average age, and there are few motivated people among private sector specialists. There is a shortage of study materials and few publications that make independent study possible. Construction entrepreneurs have low interest in development activities and topics that offer a broader view. There are doubts as to whether local experts have enough new information to convey, yet no interest in the broader mind-set offered by international experts. Training and information offered at the vocation training level does not reach those who need it the most, i.e. employees of small and micro enterprises.



**Figure 7.4.** Obstacles related to training activity in developing the field of energy efficiency

## **8. Objectives, measures, activities**

This chapter describes – through two major targets – raising the quality of construction and increasing the share of qualified workforce – measures and specific activities how to reach the EU-set targets in the field of energy efficiency by 2020. In addition, the expected outcome, the implementer/person responsible for the activity and the timeframe for implementation are provided for each activity.

### **8.1. Increasing quality of construction for ensuring energy efficiency quality**

One of the greatest challenges for ensuring energy efficiency is construction quality. To increase it, it will be necessary to bring about a situation at the national level where energy efficient construction activity has been planned and coordinated. Key activities in this regard are systematic collection and analysis of energy efficiency-related information, supplementing the legislative framework, ensuring systematic planning, uniform coordinating of energy efficiency-related activities and raising the capacity of professional and specialized associations and undertaking in the construction field and strengthening social partnership.

**TARGET 1 INCREASING THE QUALITY OF CONSTRUCTION IN ORDER TO ENSURE ENERGY EFFICIENCY**

**MEASURE 1.1 ENERGY EFFICIENT CONSTRUCTION ACTIVITY HAS BEEN PLANNED AND COORDINATED**

ACTIVITIES	EXPECTED OUTCOME	RESPONSIBLE PARTY / EXECUTOR	TERM
<b>1.1.1 Gathering and analysing data for making coordination of national planning and activities more effective</b>			
1.1.1.1 Long-term planning of research related to the energy efficiency of the construction field, including of buildings	Agreement between social partners.  The necessary research fields have been described as terms of reference, the research timetable has been defined and agreements on unified research methods are in place. The agreement is renewed every 2 years.	<b>MKM, EAS, Development Fund, KIK, KredEx, EEEL, research partners (e.g. TTÜ, TÜ, EMÜ, TKTK, Institute of Economic Research )</b>	2014 2016 2018 2020
1.1.1.2 Regularly carrying out research related to the energy efficiency of buildings (including gathering and processing statistical data) <ul style="list-style-type: none"> <li>• Analysis of the basic components of the building's use of energy</li> <li>• Developing methods for energy calculations</li> </ul>	Research into the energy efficiency of buildings are carried out at 2-year intervals, and further activities are planned on the basis of the results <ul style="list-style-type: none"> <li>• Building use information necessary for refining/developing minimum requirements (use profiles, information about building use (use profiles, available heat values)</li> <li>• Developing methods based on relevant EU standards</li> </ul>	<b>MKM, EAS, Development Fund, KIK, KredEx, EEEL, Development Fund, research partners</b>	2014-2020
1.1.1.3 Harmonizing and implementing principles for gathering and processing statistical data on education	The information gathered is sufficient and reliable, clear and comprehensive reports have been compiled on its basis, which serve as input for planning activity on the	<b>MKM, HTM, SoM, EEEL, Institute of</b>	2013-2015

and workforce in the construction sector	state level. The MKM workforce market need forecast adequately reflects the need of employers in the construction sector for requirements to which the workforce and employees will be subject.	Economic research and other research partners	
1.1.1.4 Carrying out systematic research on workforce need in the construction sector	Regular carrying out of research (annual gathering of basic data) provides information at the state level for making of workforce and education decisions, and the making of personnel-related management decisions at the company level.  The design of developments in the occupational and educational system is based on research, analysis and other factual data. The research provides quantitative and qualitative input for <b>making decisions on the educational system and planning SCE.</b>	<b>EEEL, HTM, Unemployment Insurance Fund, Institute of Economic Research</b>	2014-2020
1.1.1.5 More effective gathering and use of information by social partners in shaping SCE for primary vocational study and adult occupational training	Agreement between social partners mapping out what information the parties need, the timetable for sending information and contact persons.  SCE for primary vocational education and adult occupational training conforms to the labour market's needs, it was prepared taking account social partners' positions and data issued by the Unemployment Insurance Fund and the Institute of Economic Research. The number of employees who have received occupational training in the construction sector increases and the employee replacement need is covered.	<b>HTM, MKM, EEEL, Unemployment Insurance Fund</b>	2014-2020
<b>1.1.2 Supplementing the legislative framework for ensuring energy efficiency</b>			
1.1.2.1 Harmonization of directives on energy efficiency	Directive 2012/27/EU of the European Parliament and	<b>MKM, EEEL,</b>	2014

and legislative amendments that support implementation of directive	of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC have been harmonized with the Estonian legislative framework; The directive is harmonized based on the Building Act and legislative and implementing acts in the field of energy.	social partners	
1.1.2.2 Establishing new domestic legal acts that support achievement of energy efficiency targets <ul style="list-style-type: none"> <li>Consolidation of legal acts governing the construction sector and systematizing them under one umbrella of construction standards</li> <li>Developing an energy efficiency control mechanism for verification of implementation of minimum requirements; drafting the relevant legal acts</li> <li>Drafting a regulation on the indoor climate of buildings</li> </ul>	<ul style="list-style-type: none"> <li>Those operating in the construction field (engineers, contractors, customers etc) come to have an overview of the tens and hundreds of legal acts governing the construction sector, of which a large part are not familiar due to the lack of a master list of construction standards</li> <li>Supplementing the building permit verification system with an inspection as part of the issue of an authorization for use for the building and audit of actual use of energy within 1-2 years of the commencement of use of the building</li> <li>Ensuring indoor climate is a pervasive term in legal acts, but this is not currently comprehensively defined at the level of a legal act</li> </ul>	<b>MKM</b> , TJA, EEEL, experts in the field, social partners	2014-2016
<b>1.1.3 Ensuring systematic planning</b>			
1.1.3.1 Developing and implementing national construction policy	National construction policy is set in place with a development view of 5, 10, 20 years	<b>MKM</b> , EEEL, Development Fund, social partners	2014-2020
1.1.3.2 Developing a national construction investment plan and defining long-term priorities	Investment decisions are balanced, overinvestment has been reduced, needs are mapped	<b>MKM</b> , RM, RKAS	2014-2020
1.1.3.3 Regular updating of national construction policy	Instability of the construction market will decrease.	<b>MKM</b> , RM,	2016



and investment plan	Measures that allow the fluctuation of the construction market to be kept within limits that keep quality ensured and financing effective.	RKAS	2018 2020
1.1.3.4 Long-term planning of the development of vocational schools that offer vocational education in the construction sector and optimizing of the school network from the standpoint of the state as a whole	Forming a working group, preparing proposals with regard to the long-term development of vocational education in the construction sector and competence and training centres in the specialized fields and forecasting economic influences thereof. Provision of vocational education in the construction sector has become consolidated at a lower number of specialized vocational schools well-equipped with infrastructure and human resources. The resources allocated to vocational education have been used efficiently, and there are enough motivated employees and students for the specialities. These vocational schools develop into competence and training centres in the relevant speciality field.	<b>MKM</b> , HTM, EEEL	2014-2018
<b>1.1.4 Uniform coordination of energy efficiency related activities</b>			
1.1.4.1 Defining the area of responsibility of institutions related to coordination of energy efficiency-related activities	The roles and activities of different institutions have been mapped and the area of responsibility of each institution has been defined	<b>MKM</b> , Development Fund, TJA et al	2014
1.1.4.2 Making cooperation effective between institutions related to coordinating energy efficiency related activities	A cooperation agreement has been concluded in which the functions and means of exchanging information arising from the area of responsibility are set forth	<b>MKM</b> , Development Fund, TJA, et al	2014
1.1.4.3 Developing and implementing measures for increasing private sector investments in ensuring energy efficiency	Proposals, developed in cooperation with social partners for implementation of support measures and regulations that motivate private sector investments into buildings' energy efficiency.  Discussion on opportunities for implementing measures has been launched. The measures implemented have	<b>EEEL</b> , <b>MKM</b> , RM, social partners	2014-2016

	increased the private sector investments in ensuring buildings' energy efficiency.		
1.1.4.4 Developing economic measures to raise the share of construction workers with specialized training	Proposals developed regarding economic measures aimed at undertakings, helping to increase the share of construction workers with occupational certificate	EEEL, MKM, RM, social partners	2014-2016
<b>1.1.5 Increasing the capability of construction enterprises, professional and specialized associations in the construction sector, and strengthening social partnership</b>			
1.1.5.1 Mapping involvement models between MKM and construction sector companies, professional and specialized associations and other social partners	Social partners are efficaciously involved in the developing of regulations on the construction sector, high-quality input for the MKM is guaranteed, redundancy of information is reduced, balanced decision making process on the national level is ensured and the implementation of decisions is smooth.	MKM, social partners	2014-2020
1.1.5.2 Creating a system for recognizing companies' energy efficiency related practice in the construction sector	Evaluation methods have been developed and evaluation takes place regularly. Company can take part regularly in a self-evaluation and compare the company's result with companies operating in other sectors. Evaluation allows the results to be used a label of quality and the best companies can be recognized.	EEEL, enterprises	2014-2020
1.1.5.3 Creating a recognition system upon contributing to raising employees' qualifications in the construction sector	A recognition system for construction sector companies has been developed (evaluation methods and recognition format) for recognizing cooperation in the field of personnel development and raising the qualification of employees. The company can regularly take part in personnel development activities and compare the company's result with those of other companied operating in the sector. Evaluation allows the results to be used as a quality label. The best cooperation partners are recognized.	EEEL, enterprises	2014-2020

## **8.2. Increasing the share of qualified workforce**

A high-quality and energy efficiency building also requires qualified workforce with the relevant skills and knowledge. An employee with good professional training must have professional competences that conform to the needs of the job market. This will require the development of an occupational qualification system in the construction sector and also the creation of a monitoring system for identifying occupational skill requirements that conform to the needs of the job market.

The share of qualified workforce can be increased by ensuring and raising the quality of specialized training in the construction sector. For this purpose, it will be necessary to develop and update the content of vocational education as well as internship opportunities in specialities that are important from the standpoint of energy efficient construction, develop study materials that support learning of energy efficient construction competences and raise the specialized competences of vocational teachers (and those carrying out in-service trainings).

In addition to vocational studies, the in-service (including continuation education) system must continue to be developed to allow energy efficient construction related competences to be acquired. Possible activities in this regard include ensuring possibilities of taking part in in-service training for all interested, increasing the selection of occupational training and carrying out need-based, flexible study.

A key measure for increasing the share of qualified workforce is valuing energy efficient construction and related training in society in the broader sense. For this purpose, energy efficient construction related publicity must be tackled and information activities for increasing the number of students must be planned.

**TARGET 2 INCREASING THE SHARE OF QUALIFIED WORKFORCE**

**MEASURE 2.1 ENSURING CONFORMITY OF EMPLOYEES' OCCUPATIONAL COMPETENCE TO THE REQUIREMENTS OF THE LABOUR MARKET**

ACTIVITIES	EXPECTED OUTCOME	RESPONSIBLE PERSON/ EXECUTOR	TERM
<b>2.2.1 Developing the occupational qualification system in the construction sector</b>			
2.2.1.1 Describing the qualification system in the construction sector on the basis of EstQF levels III-VIII	The opportunities offered by the occupational qualification and educational system and their interrelated links have been described in full	<b>Estonian Qualifications Authority,</b> awarders of occupational qualification in the construction sector, Innove, institutions of higher education	2014-2020
2.2.1.2 Creating and developing a catalogue of occupational competences in the construction sector	An electronic catalogue of compulsory and selected competences has been created on the basis of occupational standards	<b>Estonian Qualifications Authority,</b> awarders of occupational qualification in the construction sector	2015
2.2.1.3 Integrating energy efficient construction related competences with occupational qualifications in the construction sector	Energy efficient construction competences are integrated into professional standards in the construction sector	<b>Estonian Qualifications Authority,</b> awarders of occupational	2014

		qualification	
2.2.1.4 Preparing occupational standards for new qualifications and supplementing existing competences and occupational standards pursuant to labour market needs	Occupational standards have been prepared and supplemented based on labour market needs	<b>Estonian Qualifications Authority</b> , awarders of occupational qualification, social partners	2014-2020
<b>2.2.2 Developing the system for awarding occupational qualification in the construction sector</b>			
2.2.2.1 Improving the quality of awarding occupational qualification in the construction sector	<p>Developing proposals for amending the Occupational Qualifications Act (aka Professions Act).</p> <p>National occupational qualification committees have been formed from representatives of schools, professional and specialized associations; common requirements for occupational qualification in the construction sector have been developed.</p>	<b>Estonian Qualifications Authority</b> , awarders of occupational qualification in the construction sector	2015
2.2.2.2 Creating capability for vocational schools and higher educational institutions in the construction sector for awarding primary occupational qualification on the basis of common principles	<p>A single set of rules have been established for awarding primary occupational qualification, which shall be applied by vocational schools and institutions of education upon awarding a first-level occupational qualification.</p> <p>Graduates of vocational schools and institutions of higher education shall receive first-level occupational qualification upon completing the curriculum in full.</p>	<b>Estonian Qualifications Authority, HTM</b> , awarders of occupational qualification	2017
2.2.2.3 Creating capacity for organizations that award occupational qualification in the construction sector to implement VÕTA-based awarding of occupational	Instructions have been prepared for the occupational qualification committees in the construction sector to more extensively take previous work experience into	<b>Awarders of occupational</b>	2015

qualification	<p>account in awarding occupational qualification.</p> <p>A skills passport system for the construction sector competences has been developed, which will simplify the certification and evaluation of the competences acquired.</p>	<p><b>qualification,</b></p> <p>Estonian Qualifications Authority</p>	
2.2.2.4 Developing methods for evaluating occupational competences in the construction sector, including evaluation standard(s)	<p>Methods for output-based evaluation of construction related competences have been developed on EstQF level III-IV.</p> <p>Evaluation standards have been described (for at least 11 professions in the construction sector), allowing making it possible to evaluate also how well the energy efficiency related competences have been acquired.</p>	<p><b>Awarders of occupational qualification,</b></p> <p>Estonian Qualifications Authority</p>	2015
2.2.2.5 Raising the competence of members of occupational qualification and evaluation committees for implementing output based evaluation methods	<p>The members of the occupational qualification and evaluation committees are trained to implement output based evaluation methods.</p> <p>At the professional examination, the competences acquired by the employee are evaluated (skills, knowledge and personal qualities required for performing work).</p>	<p><b>Awarders of occupational qualification,</b></p> <p>Estonian Qualifications Authority</p>	2016
<b>2.2.3 Creating a monitoring system for identifying the relevant occupational skill requirements conforming to labour market needs in the construction sector</b>			
2.2.3.1 Monitoring of competences required in the labour market in the construction sector	<p>Mechanisms have been developed for forecasting new qualifications and skills in the construction sector, regular studies are conducted at an interval of no more than 3 years to update occupational standards</p>	<p><b>Professional and specialized associations,</b></p> <p>Estonian Qualifications Authority</p>	2014-2020

2.2.3.2 Defining the role of professional and specialized associations and specifying activities	The role of professional and specialized associations has been defined and activities have been specified both for developing new professions and determining occupational qualification levels as well as in curricular development and evaluating academic quality	<b>HTM,</b> Professional and specialized associations, Estonian Qualifications Authority	2014
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## MEASURE 2.2 ENSURING AND RAISING QUALITY OF SPECIALIZED TRAINING IN THE CONSTRUCTION SECTOR

ACTIVITY	EXPECTED OUTCOME	RESPONSIBLE PERSON / EXECUTOR	TERM
<b>2.2.1 Developing and updating the content of vocational education in fields important for energy efficient construction</b>			
2.2.1.1 Transforming the curriculum system to one based on study outputs	The curriculum system in the construction sector is based on study outputs and is integrated with Estonia's new 8-level qualification framework	<b>HTM, INNOVE,</b> vocational educational institutions	2013-2014
2.2.1.2 Bringing the national curriculum into conformity with competence-based professional standards	The new output-based national curriculum for construction specialities conforms to labour market requirements and allows the competences necessary for applying for primary occupational qualification to be acquired at EstQF level IV	<b>INNOVE, EEEL,</b> vocational educational institutions	2013-2014 Takes place in 3 stages, supported by ESF, ready in 2014
2.2.1.3 Developing of new curricula taking into account energy efficient construction competences	The modules for the new EstQF level III-IV curricula have been prepared and supplemented and conform to	<b>Vocational educational institutions,</b>	Dec 2014

	labour market requirements	INNOVE, EEEL	
2.2.1.4 Making the existing curricula compatible with the Estonian qualification framework and supplementing them with energy efficient construction competences	The curricula for specialities important from the standpoint of energy efficient construction are compatible with the EstQF, and their modules have been supplemented with energy efficient construction related competences	INNOVE, institutions of higher education, vocational educational institutions, EEEL	Sept 2013
2.2.1.5 Developing proposals for changing the financing model for curricula in the construction sector	Forming a working group, the current financing model has been analysed from the standpoint of training quality and ensuring sustainability;  Proposals have been developed to change the financing model for specialized training in the construction sector	HTM, EEEL, Innove, business partners	2013- 2014
<b>2.2.2 Developing study materials that support acquiring energy efficient construction related competences</b>			
2.2.2.1 Mapping (study) materials that are publicly available and support acquiring energy efficient construction related competences	(Study) materials that are publicly available and support acquiring energy efficient construction related competence have been mapped.  The need for preparation of additional (study) materials has been identified.	INNOVE, Institutions of higher education, EEEL	2015
2.2.2.2 Adapting existing study and methodological materials for a new audience	Study materials at the higher education level in the energy efficiency field have been adapted for use in vocational educational institutions and are available to parties	Institutions of higher education, vocational educational institutions	2015



2.2.2.3 Preparation of methodological materials for those responsible for leading teaching of energy efficient construction related competences	<p>Methodological materials for vocational teachers and training implementers (manuals, exercises etc) are available for carrying out, in a high quality manner, academic work in support of acquiring energy efficient construction related competences.</p> <p>In cooperation with representatives of companies, methodological manual for conveying energy efficiency related knowledge through workplace based instruction has been developed (on the basis of the skills specified in the competence standard).</p>	Institutions of higher education, vocational educational institutions, business partners	2015-2016
2.2.2.4 Preparation of additional specialized (study) materials which support acquiring energy efficient construction related competences	<p>Specialized (study) materials have been prepared in synergy between previous activities, for the purpose of acquiring energy efficient construction related competences.</p> <p>The study materials are available for the parties.</p>	Institutions of higher education, vocational educational institutions	2015-2020
<b>2.2.3 Developing internship opportunities in vocational education in specialities oriented at energy efficiency</b>			
2.2.3.1 Analysis of the internship system for vocational educational institutions and preparing proposals for improving it	The internship system in construction sector specialities and the share of internships has been analysed from the standpoint of energy efficiency. Development needs have been mapped and readiness on the part of undertakings exists for cooperation with vocational educational institutions.	EEEL, INNOVE, vocational educational institutions, business partners	2015
2.2.3.2 Recognition of and support for companies in participating internship related cooperation and providing opportunities for internship sites	Adding the quality of cooperation with vocational educational institutions and carrying out of workplace based study and operating as an internship site into the criteria for entry into the list of recognized companies		2015-2020

<b>2.2.4 Developing specialized competences of vocational teachers (and those carrying out in-service trainings)</b>			
2.2.4.1 Specialized in-service for teachers in the construction sector	The specialized competence of teachers in the construction sector has risen; the quality of study will rise in specialities important from the standpoint of energy efficient construction.	<b>Innove</b> , vocational educational institutions	2014-2018
2.2.4.2 Development of opportunities for speciality internships by vocational teachers and workplace-based in-service training	The obligation of teachers to do internships and pursue in-service training has been expressed and mechanisms for ensuring this have been developed The quality of study has risen in specialities important from the standpoint of energy efficient construction.	<b>HTM</b> , vocational educational institutions	2014

**MEASURE 2.3 DEVELOPING AN IN-SERVICE TRAINING (INCLUDING CONTINUING EDUCATION) SYSTEM FOR ACQUIRING ENERGY EFFICIENT CONSTRUCTION RELATED COMPETENCES**

<b>ACTIVITY</b>	<b>EXPECTED OUTCOME</b>	<b>RESPONSIBLE PERSON / EXECUTOR</b>	<b>TERM</b>
<b>2.3.1 Ensuring that all those interested have opportunities to take part in in-service training</b>			
2.3.1.1 In-service training (and continuing education) strategy is updated based on developments in the occupational qualification system	An in-service training (and continuing education) strategy for the construction sector has been developed for EstQF level IV-V.  Requirements have been developed for preparation of in-service training curricula (including curriculum form, bases and principles for preparation, consensual amounts of study for acquiring competence, component of occupational qualification, full	<b>HTM, professional and specialized associations</b> , institutions of higher education, vocational educational institutions,	2015

	occupational qualification).	trainers	
2.3.1.2 Continuing education curricula for EstQF level V will be developed, which will support acquisition of energy efficiency related competences	<p>5 output based curricula at the level of master-foreman have been prepared (EstQF level V) for carrying out study.</p> <p>The share of qualified specialists on the labour market will increase.</p>	<b>Vocational educational institutions, institutions of higher education, professional and specialized associations</b>	2015-2016
2.3.1.3 Implementation of the strategy in carrying out in-service training (including continuing education)	The share of qualified specialists on the labour market will increase, opportunities will become expanded for raising occupational qualification level and/or supplement occupational skills at the same occupational qualification level	<b>Vocational educational institutions, institutions of higher education</b>	2015-2020
<b>2.3.2 Increasing the supply of occupational training</b>			
2.3.2.1 Broader implementation of the workplace based study format (apprenticeship)	<p>Training providers and employers will implement the workplace based study format more extensively to raise the employees' occupational qualification. Study opportunities will expand and the number of employees who have completed specialized training will increase. There will be expanded opportunities to utilize the speciality in carrying out academic work with top-level specialists and to use companies' infrastructure in training for acquiring specific occupational skills.</p>	<b>Vocational educational institutions, training providers, employers</b>	2018
2.3.2.2 Creating flexible access to study opportunities in construction fields for the unemployed and carrying out needs-based education	Cooperation between the Unemployment Insurance Fund and vocational educational institutions/training centres has improved in offering the unemployed trainings geared at retraining and the acquisition of a component occupational qualification or full occupational qualification. The possibilities of formal	<b>Unemployment Insurance Fund, vocational educational institutions, institutions of</b>	2020

	<p>education and in-service training will be integrated for this purpose.</p> <p>The share of qualified employees on the labour market will increase.</p>	<b>higher education</b>	
2.3.2.3 Offering employees broader study opportunities and more suitable study formats and methods for acquiring occupational qualification in the construction sector	The share of employees on the workforce market with occupational and specialized qualification will increase, the possibilities of modular education have been utilized	<b>Unemployment Insurance Fund, vocational educational institutions, private sector trainers</b>	2017
2.3.2.4 Ensuring the availability of support and advisory services	Reducing the number of dropouts among those studying in construction specialties important from the standpoint of energy efficient construction, smoother utilization of graduates on the labour market; continuing study for the purpose of acquiring additional competences or raising qualifications in continuing education	<b>Vocational educational institutions, institutions of higher education</b>	2015
2.3.2.5 Use of VÖTA at vocational educational institutions upon organizing specialized training	Recognition of qualifications is flexible and promotes professional mobility, the share of employees on the workforce market who have completed specialized training will increase. Implementation of the work passport will simplify consideration of previous employment at vocational educational institutions.	<b>Innove, EEEL, vocational educational institutions, trainers</b>	2017
2.3.2.6 Allowing those working and studying simultaneously but who lack specialized education to enjoy additional benefits	Forming a working group and developing a support scheme, submitting proposals. Awarding employees a different occupational qualification or raising the occupational qualification of employees through formal education is in wide use.	<b>SoM, EEEL, HTM, business partners</b>	2020

<b>2.3.3 Carrying out needs-based and flexible education</b>			
2.3.3.1 Increasing the flexibility of adult training using different study formats and methods (evening or weekend study, academic system that takes into account the seasonality of construction work etc)	<p>Study opportunities for those already working but whose participation in everyday study is rendered hampered will broaden; the share of qualified employees on the workforce market will increase. The flexibility of the educational system will reduce the time necessary for educate and train qualified workforce and this permit faster response to changes in the economy.</p> <p>Cooperation between employers in the construction sector and vocational schools is functional and effective, information on the need for flexible academic systems and regarding suitable study times for the sector and target group reaches schools in a timely manner.</p>	<b>Vocational educational institutions,</b> institutions of higher education, EEEL, business partners	2014-2018
2.3.3.2 Identifying the channels for movement of information on adult training opportunities	<p>There is a map document of how and via what channels information reaches employees at the worker level employed in the construction sector.</p> <p>Measures have been developed to make movement of information more effective.</p>	<b>EEEL,</b> vocational educational institutions, business partners	2013-2014
2.3.3.3 Developing the internal organizational system at vocational educational institutions in order to improve attention to labour market needs.	<p>Flexible academic system based on the target group's needs is in place (study time suitable for adult students and working students; studying outside working hours; study time compatible with seasonality of the work, study of one competence/module at a time).</p> <p>Consideration of prior and experiential learning (VÕTA) is in wide used, including recognition of skills acquired in non-formal, informal study.</p>	<b>Vocational educational institutions,</b> EEEL, business partners	2014-2018

## MEASURE 2.4 INCREASING THE PERCEIVED VALUE IN SOCIETY OF ENERGY EFFICIENT CONSTRUCTION AND OF TRAINING IN THIS FIELD

<b>2.4.1 Dissemination of information on energy efficient construction</b>			
2.4.1.1 Familiarization of undertakings and, more broadly, social partners with energy efficient construction competences.	Regional information days are held regularly at least once a year, cooperation between social partners in the field is effective	<b>MKM</b> , KredEx, EEEL	2013-2020
2.4.1.2 The public is kept apprised of opportunities for building energy efficient buildings and the corresponding support measures	A media campaign has been carried out (positive examples, highlighting of success stories). Information on opportunities for construction of energy efficient buildings and relevant support measures is available to all interested parties.	<b>MKM</b> , EEEL, KredEx, social partners	2013-2020
2.4.1.3 Consultation in the field of energy efficiency and carrying out relevant trainings for public sector entities	Consultation is provided for apartment associations and local governments in the planning of renovation work aimed at ensuring energy efficiency. Energy efficiency related trainings have been carried out for contracting entities for renovation work. The awareness on the part of public sector contracting authorities has risen.	<b>MKM</b> , EEEL, KredEx, social partners	2013-2020
<b>2.4.2 Publicity activities for increasing the number of students</b>			
2.4.2.1 Regular consolidation and distribution of vocational education information	Information on study opportunities in construction specialities the vocational educational system is available to all interested parties	HTM, Innove, vocational educational institutions	2013-2020
2.4.2.2 Preparing and publishing of information materials (including electronic and video materials) and introducing study opportunities	Information on study opportunities in curriculum-based study opportunities is available to all those interested	HTM, Innove, vocational educational institutions	2014-2016 2018, 2020

## 9. Conclusions

Besides the project partners, feedback and input for the preparation of this action plan has also come from vocational educational institutions, professional associations and training providers in the construction sector, construction companies and other such institutions. In addition, the project objectives and outcomes have been introduced at a number of public events, open houses and training days organized for this purpose. As a result it is to be hoped that the action plan produced is sufficiently broad-based and that it takes into account the expectations of all major interest groups in planning further possible activities.

The table on action plan measures (chapter 8) lists all parties whose contribution for further implementation of the activities described is undoubtedly necessary. In the course of the project activities, it emerged that besides the interest groups mapped, it will definitely be important in the near future to involve such institutions as the Unemployment Insurance Fund, Ministry of Finance, Ministry of Social Affairs. At the level of executor and implementer, key partners also include the Ministry of Education and Research, vocational educational institutions and training providers.

The key institutions in compiling, updating and implementing the 'Action plan for training workforce in the Estonian construction sector up to 2020' at the state level are the Ministry of Economic Affairs and Communications and, on the basis of the sector, the Estonian Association of Construction Entrepreneurs. The implementation of the action plan will draw on the Ministry of Education and Research, the Ministry of Social Affairs, the Foundation Estonian Qualifications Authority, Foundation Innove, vocational educational institutions, social partners, and, if necessary, other institutions. The existing action plan may be updated in future if a significant need arises during actual implementation to change the existing objectives and measure or set forth new ones.

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## **Abbreviations**

**EAS** – Enterprise Estonia

**EEEL** - Estonian Association of Construction Entrepreneurs

**EHIS** – Estonian Education Information System

**EstQF** – Estonian Qualification Framework

**EU** – European Union

**EMTAK** – Classification of Economic Activities

**EMÜ** - Estonian University of Life Sciences

**ERDF** – European Regional Development Fund

**ESF** – European Social Fund

**HTM** - Ministry of Education and Research

**ISCED** – International Standard Classification of Education

**ITP** – engineering and technical personnel

**KIK** – Environmental Investments Centre

**KOV** – local government

**KÕA** – vocational educational institution

**KÕS** – Vocational Educational Institutions Act

**MKM** - Ministry of Economic Affairs and Communications

**RE** – state budget

**RKAS** – State Real Estate Ltd

**SCE** – state-commissioned education

**RM** – Ministry of Finance

**SA Innove** – Foundation Innove

**SA KredEx** – Foundation KredEx

**GDP** – Gross domestic product

**SoM** – Ministry of Social Affairs

**TJA** – Technical Surveillance Authority

**TKTK** - Tallinn University of Applied Sciences

**TTÜ** - Tallinn University of Technology

**TÜ** – University of Tartu

**VÕTA** – accreditation for prior and experiential learning

## Annex 1

### Training opportunities for acquiring higher qualifications

Vocation	Qualification level III	Qualification level IV	Qualification level V
<b>Construction manager</b>	None	None	General in-service training programme (64 hours) in the field of construction management
<b>Concrete worker</b>	It is possible to acquire professional skills, by passing the construction finishing speciality curriculum at the vocational training level. Course load at vocational educational institution 40–80 weeks of study* depending on previous educational level	Opportunities for formal education as at previous level, in-service training programmes with a load of 50-320 hours	With regard to qualifications level V of construction master, basic training being developed for construction work master level, ca 80 hours
<b>Bricklayer</b>	It is possible to acquire professional skills, by passing the construction finishing speciality curriculum at the vocational training level. Course load at vocational educational institution 40–80 weeks of study depending on previous educational level	Opportunities for formal education as at previous level, in-service training programmes with a load of 50-95 hours	
<b>Assembler</b>	No separate curriculum for vocational education, no in-service training plans, currently training on the job	No in-service training opportunities, training on the job	
<b>Mortarar</b>	It is possible to acquire professional skills, by passing the construction finishing speciality curriculum at the vocational training level. Course load 80 weeks of study	Opportunities for formal education as at previous level, in-service training programmes with a load of 60-120 hours	With regard to qualifications level V of finishing master, a management basic training is being developed for the master's level of construction work with a load of about 80 hours
<b>Painter</b>			
<b>Tile installer</b>			
<b>Roll floor material installer</b>	In addition, painter, tile installer component skill curricula with a course load of 40 weeks	No in-service training opportunities, training on the job	

\*One week of study is 40 hours of work done in any form by the student.

	of study		
<b>Carpenter</b>	It is possible to acquire professional skills, by passing the construction finishing speciality curriculum at the vocational training level. Course load 80 weeks of study	Opportunities for formal education as at previous level, in-service training programmes with a load of 60-160 hours	With regard to qualifications level V for master carpenter, basic training being developed for construction work master level, ca 80 hours
<b>Flat roofer</b>	No separate curriculum at vocational education level, no in-service training curricula, training on the job	No in-service training opportunities, training on the job	None
<b>Sheet metal worker</b>	No separate curriculum at vocational education level, some small in-service training curricula, training mainly on the job	Some in-service training curricula with a load of 56–100 hours, training on the job	None
<b>Potter</b>	No separate curriculum, covered as a component skill in bricklayer curricula, several in-service training programmes with a load of 60–360 hours	Several in-service training programmes with a load of 60–360 hours	No opportunity for in-service training for acquiring qualifications level V in potter
<b>Electric welder</b>	No independent curriculum, module in the plumber curriculum with a load of 3 weeks of study, need to add it as an elective to other construction specialities' curricula	In-service training programmes with a load of 120 hours exist	None
<b>Heating system technician</b>	It is possible to acquire professional skills, by passing the construction finishing speciality curriculum at the vocational training level. Course load 80 weeks of study	Formal education possibilities as on the previous level, some in-service training programmes with a load of 40 hours	With regard to qualifications level V of plumber, a management basic training is being developed for the master's level of construction work with a load of about 80 hours
<b>Water works and sewerage technician**</b>			
<b>Ventilation technician</b>			

\*\*The name of the vocation for the public water supply and sewerage technician has yet to be finalized.

## Annex 2

# Sample competence standard

## Energy efficient construction, EstQF level IV

The competence standard is a document describing the competence requirements necessary for successful work.

Name of competence	EstQF level
<i>Energy efficient construction</i>	<b>4</b>

### Part A

### DESCRIPTION OF THE COMPETENCE

<b>A.1 Description of the work</b>
<p>This energy efficient construction competence standard describes the skills, knowledge and attitudes in the field of energy efficient construction required by all skilled workers operating in general construction and construction of heating, cooling and ventilation systems.</p> <p>The standard describes, from the standpoint of energy efficiency, the selection of suitable materials, the right techniques, and the basis for quality assurance and behavioural norms.</p> <p>This competence standard is meant for use both as a basis for national curricula in vocational education as well as for evaluation of occupational qualification applicants' professional competence.</p>
<b>A.2 Working environment and particularities of the work</b>
<p>The environment and conditions of the work depend on the specifics of each employee's primary occupational qualification.</p>
<b>A.4 Work equipment</b>
<p>Various power and manual tools and measurement instruments used in construction work, plus, depending on the primary occupational qualification, work equipment for specific occupational qualification-specific duties.</p>
<b>A.5 Personal traits and mental and physical abilities that support the work</b>
<p>Logical thinking and analytical skills</p>
<b>A.6 Occupational training</b>
<p>The competence in energy efficient construction is acquired upon completing the relevant vocational secondary education in a vocational educational institution or upon completing the relevant in-service training, if the subject is an applicant for occupational qualification referred from the labour market. The notation regarding that the competence has been acquired is entered onto the student's results report upon completing the curriculum or on the certificate of completion of in-service training. Competence in energy efficient construction is acquired in the following professions:</p> <ol style="list-style-type: none"><li>1. Assembler</li><li>2. Concrete worker</li><li>3. Bricklayer</li></ol>

4. Carpenter 5. Painter 6. Mortarier 7. Tile installer 8. Floor installer 9. Plumber Specializing in Water supply work; Ventilation work; Heating and cooling work

## Part B

### COMPETENCE REQUIREMENTS

B.1 Competence	
<b>B.2.1 Energy efficient construction</b>	<b>EstQF level 4</b>
<u>Activity indicators:</u>	
1) Before starting the work, the workplace shall be prepared pursuant to the requirements, in light of principles of energy conservation. 2) Performs all segments of the work in his or her profession, applying the necessary basic knowledge in the field of energy efficient. 3) Takes into account, in fulfilling his or her duties, the energy expenditure of the construction and uses the necessary energy sources (electricity, water, lighting, hot air blowers, etc) in a purposeful, efficient manner. 4) Selects appropriate materials (construction materials, fasteners, other supplies etc) given energy efficient requirements, the specifics of his or her job and the authority granted to him or her). 5) Selects the right technology and appropriate techniques in light of the energy efficient requirements and the specifics of the speciality. 6) Applies, where necessary in performing construction work in his or her profession, the appropriate modular measurement systems to ensure quality and cost effectiveness (material measurements, frame increment etc) 7) Performs necessary work within the limits of his or her profession in order to improve energy efficient.	
<u>Knowledge:</u>	
1) General concepts of energy efficient and their significance. Factors that impact energy efficient; 2) Primary energy sources in Estonia (including renewable energy sources); 3) Construction quality requirements and their influence on energy efficiency; 4) The heat conductivity of shell and factors that impact energy consumption (including construction material and construction product properties); 5) Various technical utility systems, the impact of these choices on the building energy efficiency; 6) Ways of improving buildings' energy efficiency; 7) Influence of professional culture on the energy expenditure of construction activity; 8) The impact of different weather conditions on the external shell of buildings; 9) Influence of behavioural habits on energy expended in use of building.	
<u>Evaluation method(s):</u>	

## Part C

### GENERAL INFORMATION AND ANNEXES

<b>C.1 Information on preparation and approval of the competence standard and the occupational qualification awarder and reference to location of competence standard in classifications</b>	
1. Competence standard code in Occupational Qualifications Register	
2. Compilers of competence standard:	Buildest project working group consisting of: Indrek Peterson – Estonian Association of Construction Entrepreneurs Kevin Vaher- Ministry of Economic Affairs and Communications Reet Linnas – Tallinn University of Technology Aulika Riisenberg – Foundation Innove Liina Henning – Tallinn University of Technology Enn Veesalu – Pärnu County Vocational Educational Centre Triin Väljataga – Foundation KredEx
3. Approver of competence standard	Construction, Real Estate and Geomatics Professional Skills Council
4. Professional Skills Council decision number	
5. Professional Skills Council decision date	
6. Competence standard valid until (date)	
7. Competence standard version number (1-n)	
8. Reference to European Qualification Framework (EQF)	4
<b>C.2 Name of competence in languages other than Estonian</b>	
In English – energy efficient building	
<b>C.3 Annexes</b>	

## Annex 3

### Sample

#### CONSTRUCTION MANAGER, COMPETENCES PERVASIVE THROUGHOUT QUALIFICATION LEVEL V

<b>B.2.8 Energy efficient construction</b>	<b>EstQF level V</b>
<p><u>Activity indicators:</u></p> <ol style="list-style-type: none"> <li>1) Before starting work at construction site, prepares a work execution project in light of energy conservation principles (expenses that will be incurred during construction on electricity, water, waste handling etc)</li> <li>2) Utilizes, if possible, energy conservation technologies in managing construction work</li> <li>3) Involves, if necessary, competent specialists to evaluate conformity to energy efficiency requirements</li> <li>4) Ensures during construction an indoor climate pursuant to technological requirements</li> <li>5) Ensures during work compliance with quality requirements that impact the energy efficiency of the building's external shell</li> <li>6) Ensures conformity of the building's technical utility systems' (ventilation, heating, water) to the building design documentation and energy efficient interoperation of technical utility systems</li> <li>7) Estimates the projected cost of the construction oriented at improving the building's energy efficient.</li> </ol>	
<p><u>Knowledge:</u></p> <ol style="list-style-type: none"> <li>a) General concepts of energy efficiency and their significance. Factors that influence energy efficiency;</li> <li>b) Primary energy sources in Estonia (including renewable ones);</li> <li>c) Simplified requirements for certifying the energy efficiency limit for total heat losses from external shell of homes;</li> <li>d) Construction quality requirements and their influence on energy efficiency;</li> <li>e) Factors that influence the heat conductivity of the shell and building energy consumption (including properties of construction materials and construction products);</li> <li>f) Various technical utility systems, impact on building energy efficiency;</li> <li>g) Possibilities for improving buildings' energy efficiency;</li> <li>h) Impact of professional culture on energy expenditure of construction;</li> <li>i) Planning and organization of employees' activity and other resources;</li> <li>j) Impact of various weather conditions on external shell of buildings;</li> <li>k) Impact of behavioural habits on energy expenditure upon utilization of building.</li> </ol>	
<b>B.2.9 Pervasive competence</b>	<b>EstQF level V</b>
<p><u>Activity indicators:</u></p>	
<b>B.2.10 Pervasive competence</b>	<b>EstQF level V</b>
<p><u>Activity indicators:</u></p>	



## ANNEX 4

### WORK PASSPORT SAMPLE (MORTARER, EstQF III)

#### What is a work passport?

A work passport is prepared for recognizing acquired study outputs/competences. This enables the contractor to develop the necessary professional skills and the employer to evaluate mastery. **Upon applying for an occupational qualification, the work passport allows the existence of required competences to be certified.**

#### Use

If you are certain you are able to independently execute a specific work task described in the work passport, present the work passport to the employer and ask that you be assigned a task to be tested accordingly. The result of the test is to be marked by the employer in the work passport. Additional tasks can also be recorded in the empty spaces in the passport.

#### Evaluation

The following scale is to be used to evaluate employee competence:

A – the student is able to work independently

B – the student can cope independently with the work but requires follow-up supervision

C – the student can cope independently with the work but requires occasional supervision and follow-up supervision

<b>Name of work</b>	<b>Object of work and task performed</b>	<b>Work site (name and address of company, time)</b>	<b>Result of the evaluation</b>	<b>Person receiving the work: name, position signature</b>
COMPULSORY COMPONENTS OF THE WORK				
<b>1. Work planning</b>				
1.1 Measuring surfaces, material expenditure and calculation of work time				
1.2 Evaluation of surfaces and materials and conformity to quality				
1.3 Selection of tools and techniques based on the surface and project				
1.4 Preparation of work plan				
<b>2. Preparing and organizing the workstation</b>				
2.1 Preparing materials				
2.2 Installing platform				
2.3 Creating as-required work environment				
2.4 Storage of materials and sorting of waste				
2.5 Maintenance of tools, equipment and protective gear				
<b>3. Mortaring the interior and exterior surfaces of buildings and civil engineering works</b>				
3.1 Preparing the surfaces to be mortared and protecting the surfaces that are not to be mortared				
3.2 Mortaring surfaces				
3.3 Repairing mortar surfaces				
<b>4. Installing dry mortar panel</b>				

4.1 Levelling surfaces				
4.2 Building wood or metal framework				
4.3 Installing dry mortar panel				
4.4 Applying plaster to dry mortar panel				
<b>5. Installation of insulation composite systems</b>				
5.1 Evaluating the situation of surfaces to be covered with insulation composite systems, preparing surfaces and protecting non-mortared surfaces				
5.2 Installation of insulation panels				
5.3 Installation of accessories				
5.4 Installation of reinforcements				
5.5 Preparing finishing mortar and applying it to the surface				
<b>ELECTIVE WORK COMPONENTS</b>				
<b>6. Repairing ornamental wall and lintel details</b>				
6.1 Evaluation of the condition of components and surfaces				
6.2 Selection of technology, materials and tools				
6.3 Preparing surfaces				
6.4 Restoring original form of details				
<b>7. Executing hydro insulation work</b>				
7.1 Evaluating condition of surfaces				
7.2 Selecting technology and materials				
7.3 Preparing surfaces				
7.4 Installing hydro insulation material and verifying conformity to quality requirements				

<b>8. Installing sheet metal details to parapet and façade</b>				
8.1 Processing sheet metal details				
8.2 Preparing the surface for installation of sheet metal details				
8.3 Installation, fastening and sealing of sheet metal details				
8.4 Protecting the installed sheet metal details				

## **ANNEX 5**

### **Letters of Endorsement**

## **BACK COVER**

### **BUILD UP Skills – Estonia**

#### **The EU Sustainable Building Workforce Initiative in the field of energy efficiency and renewable energy**

BUILD UP Skills is a strategic initiative under the Intelligent Energy Europe (IEE) programme to boost continuing or further education and training of craftsmen and other on-site construction workers and systems installers in the building sector. The final aim is to increase the number of qualified workers across Europe to deliver renovations offering a high energy performance as well as new, nearly zero-energy buildings. The initiative addresses skills in relation to energy efficiency and renewable energy in all types of buildings.

BUILD UP Skills has two phases:

- I. First, the objective is to set up national qualification platforms and roadmaps to successfully train the building workforce in order to meet the targets for 2020 and beyond.
- II. Based on these roadmaps, the second step is to facilitate the introduction of new and/or the upgrading of existing qualification and training schemes.

Throughout the whole duration of the initiative, regular exchange activities are organised at EU level to underline the European dimension of this important initiative and to foster the learning among countries.

The BUILD UP Skills Initiative contributes to the objectives of two flagship initiatives of the Commission's 'Europe 2020' strategy — 'Resource-efficient Europe' and 'An Agenda for new skills and jobs'. It is part of the Commission's Energy Efficiency Action Plan 2011. It will also enhance interactions with the existing structures and funding instruments like the European Social Fund (ESF) and the Lifelong Learning Programme and will be based on the European Qualification Framework (EQF) and its learning outcome approach.