

IMPROVING THE PROFESSIONAL SKILLS IN GREEN CONSTRUCTIONS  
THROUGH ONLINE TRAINING

Erasmus+ Strategic Partnership KA2  
Nr. 2017-1- LV01-KA202- 035483

02 – Final Report  
„Identification of topics”



Co-funded by the  
Erasmus+ Programme  
of the European Union



This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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## Content

1. Introduction .....	3
1.1 Aim of the intellectual outcome .....	3
1.2 The working process and results .....	3
2. The result of questionnaires .....	4
2.1 Questionnaire for construction workers .....	4
2.2 Questionnaire for construction companies .....	13
3. Analysis .....	24
4. Project basics .....	28



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## 1 Introduction

### 1.1 Aim of the Intellectual Outcome

Creating of questionnaires to determine the requirements of the construction industry for construction workers: competencies in green construction.

Needs analysis in green skills teaching providing from the traditional vocational training institutions.

Sending inquiry to construction workers and construction companies in each partner country.

Define the requirements of the construction industry for the necessary competencies of construction workers in the field of green building.

Analysis of the needs of green skills teaching by traditional vocational training institutions.

The questionnaires

For the realization of O2 production, 2 questionnaires were developed to collect data on the training needs of construction workers in Latvia, Bulgaria, Hungary and Germany.

One questionnaire was designed to collect data from construction workers in Latvia, Bulgaria, Hungary and Germany on their need to acquire competencies in the areas of green building.

The second questionnaire is aimed at collecting data from construction companies Latvia, Bulgaria, Hungary and Germany on the need for workers with specific competencies in the fields of green building.

The questionnaires were translated into the national language of the partner countries.

The survey questionnaires were distributed mainly by email. Some of the interviews were conducted face-to-face and others by telephone.

### 1.2 The working process and results

Needs analysis of the improving the professional skills in green construction.

Purpose and task of the survey:

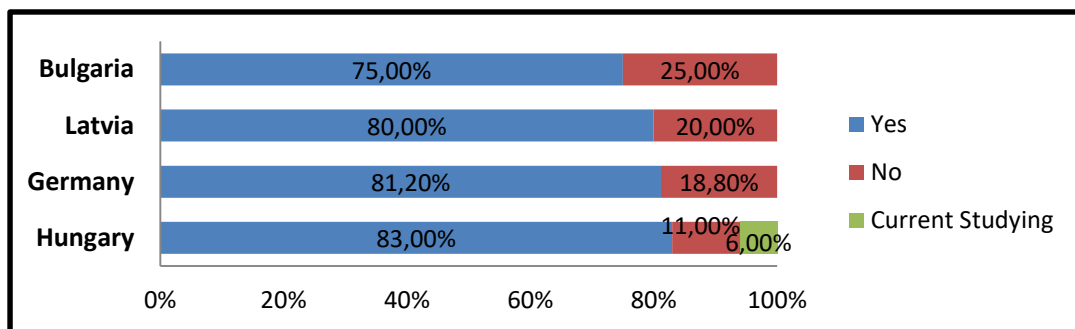
•The main objective of the survey is to establish the relevance of the curricula related to the acquisition of knowledge and skills of the trained persons in green construction

•The task of the initiation of the survey is to summarize and analyze the information received from the surveyed construction companies and construction workers.

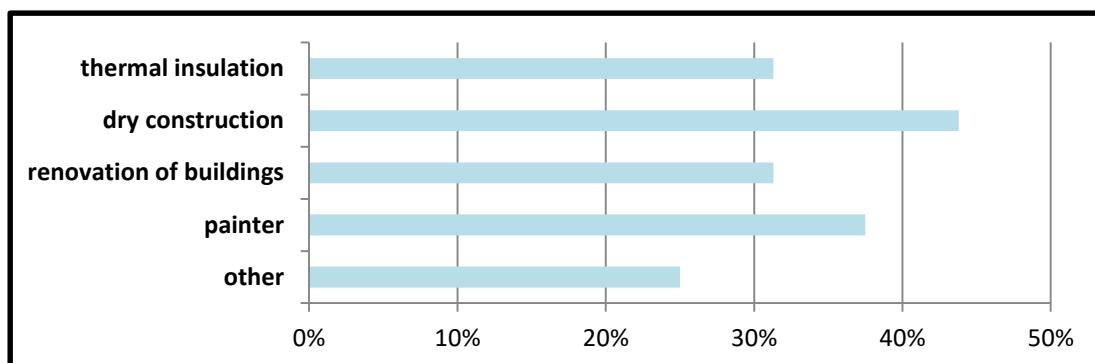
## 2 The result of questionnaires

### 2.1 Questionnaire for construction workers

1. Do you have a qualification class for your building profession?

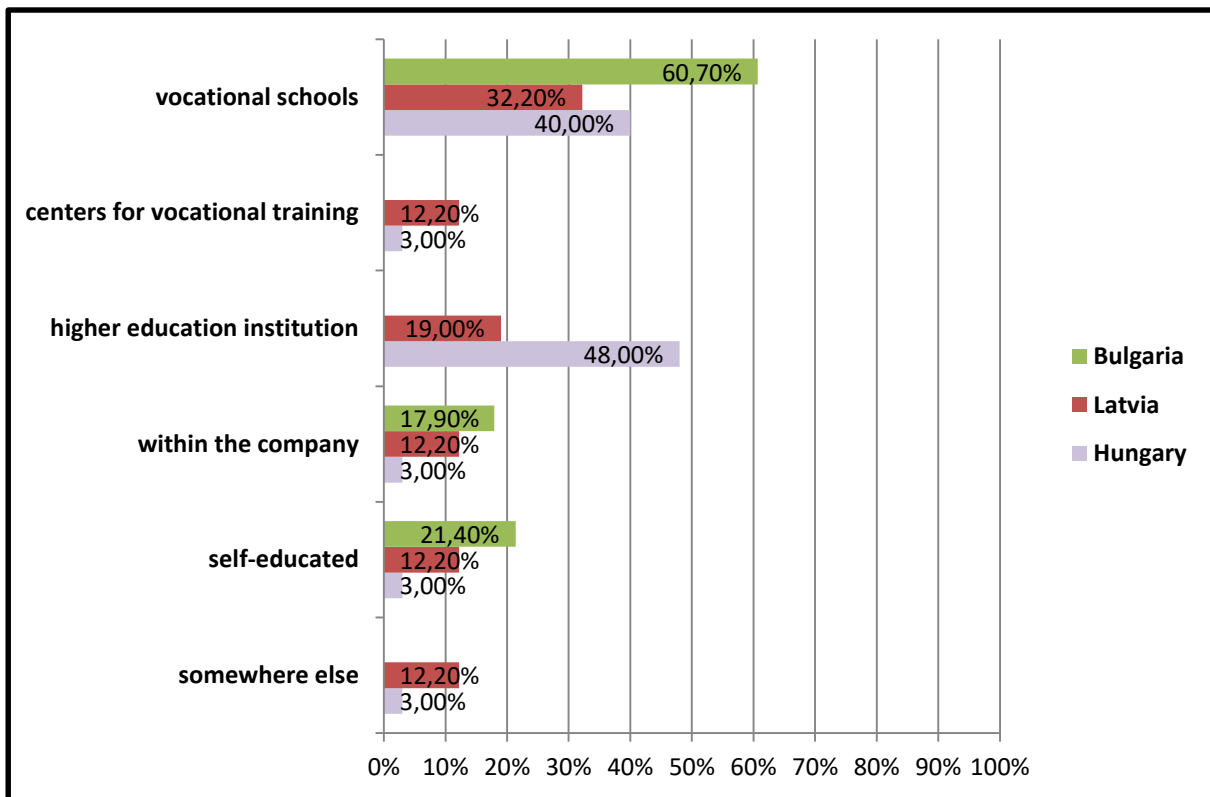


2. What are you currently working on?

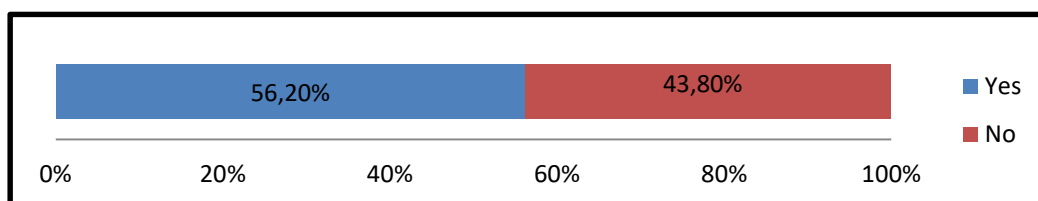


*This Diagram shows that the highest fraction are the group of dry constructor. With 37.5% the painters are on place 2nd. On the 3rd range are the thermal insulation and the renovation of buildings. The lowest group is the section others with a result from 25%.*

3. Where have you acquired that qualifications?



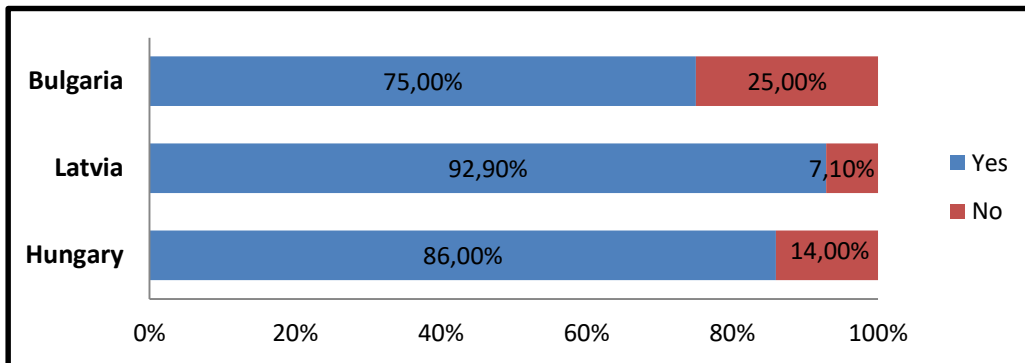
4. Do you think the level of your knowledge and competences corresponds to modern building technologies?



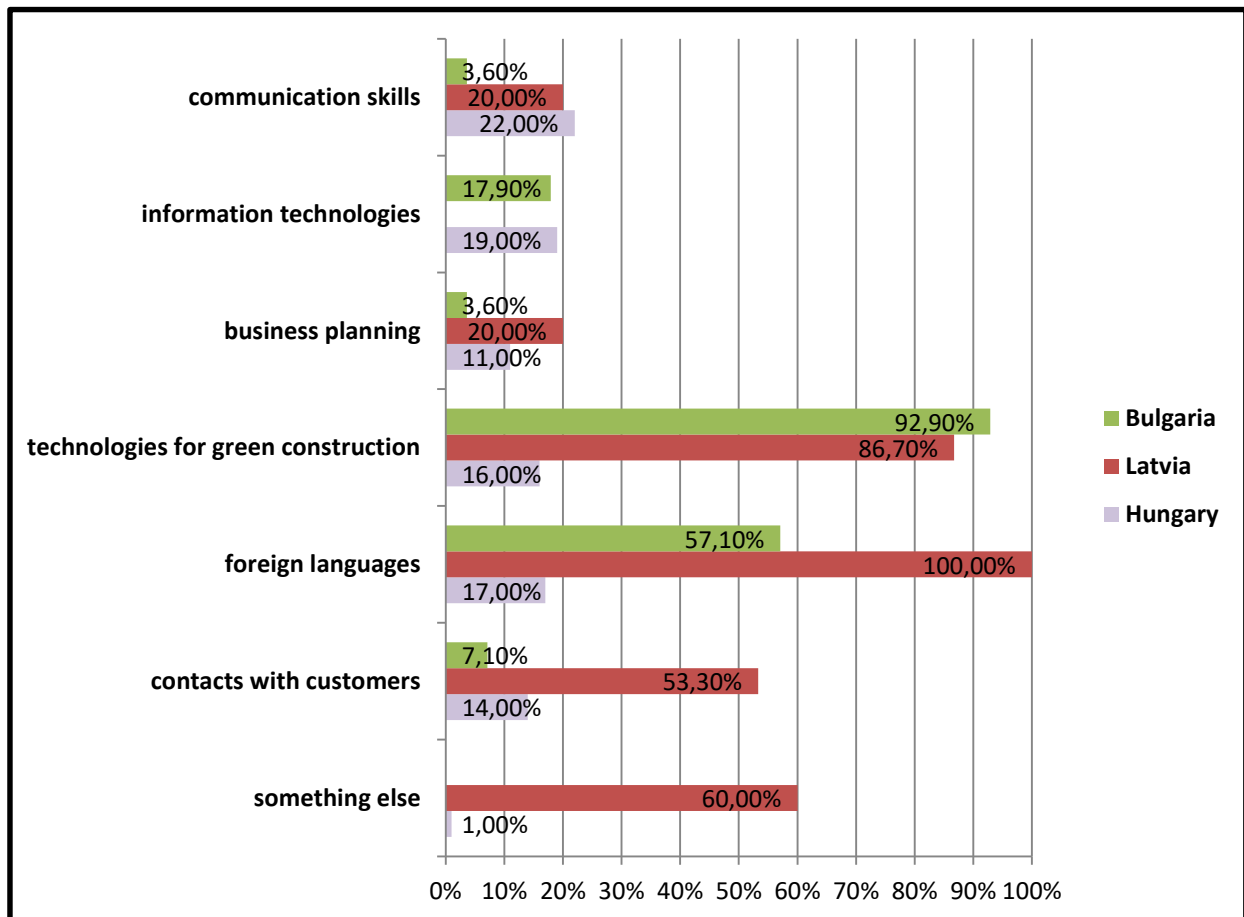
*The most of workers 56.2% are in property of knowledge and competences to modern building technologies. But 43.8% haven't got knowledge and competences in this section. So there is many to move on.*



5. In your job, are there any other skills necessary, different from the specific skills for your profession?



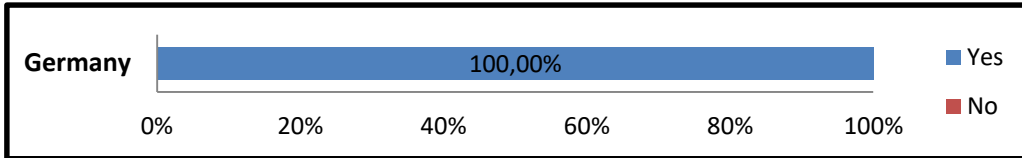
5.1. If "Yes", please indicate which of the following skills, you can choose more than one answer:



In Germany, workers respond that their skills are sufficient to fulfill their duties.

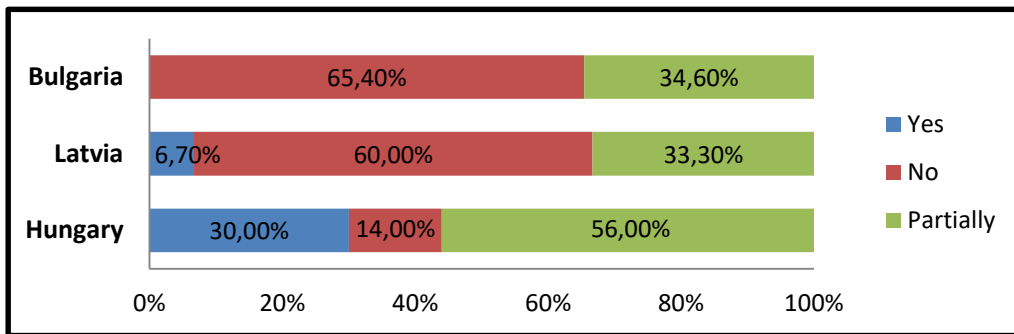


6. Would you like to increase your qualification in the field of Green Building?



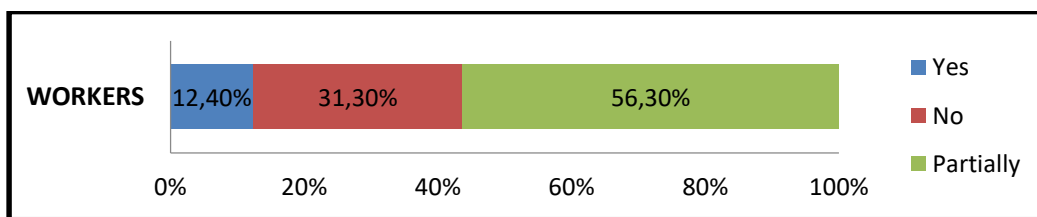
Many of the respondents are interested in upgrading their skills in green building. The most (100%) are interested to increase their qualifications in the fields of Green building. Such an interest is amazing to registered.

7. Are you familiar with the basic principles and requirements of "green" stuff?



In Germany they most often say that they are familiar "partially". They are aware of the need for more knowledge in the field of green building.

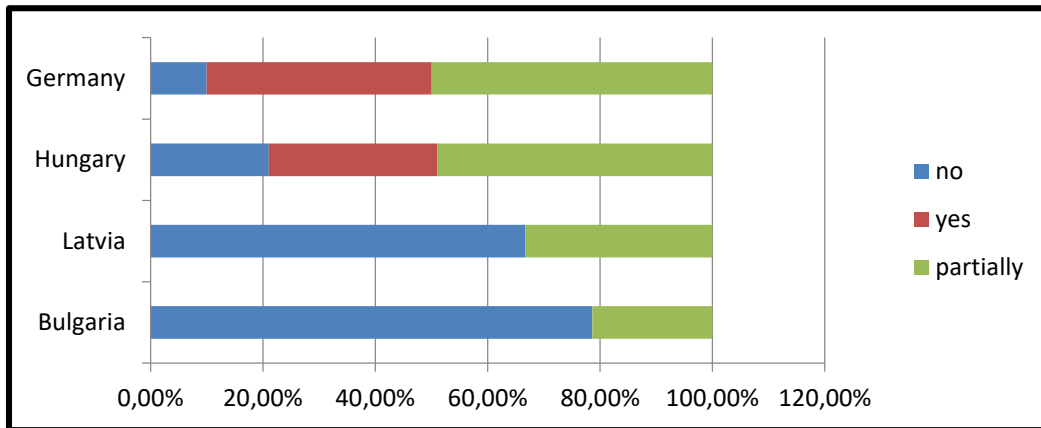
8. Are you familiar with the basic technologies used in Green Building?



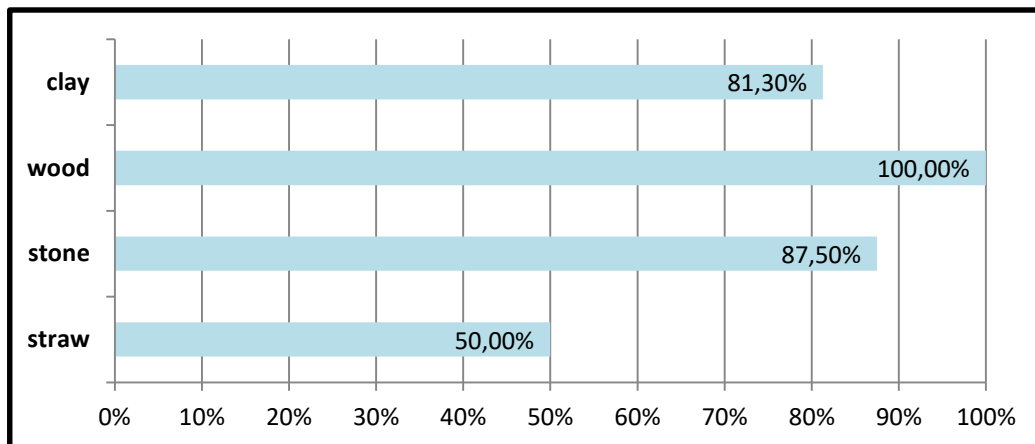
Only 12.4% are familiar with the basic technologies. So we have to change this, because Green Building is the future of building profession.



9. Does your company apply in its practice technologies of "green" construction?



10. Do you use environmentally friendly building materials in your work?



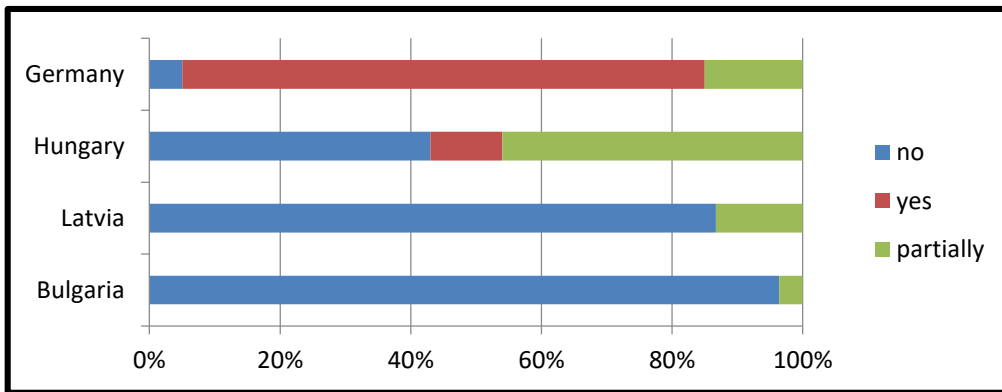
*There is a 100% use from wood in the building process from our participants.*

*There is also a high commitment from stone with 87.5%. Clay is on a high awareness level to 81.3% use it in their working process. Only 50% use straw. But there is to different the material with the groups. A painter has no possibility to use straw for build something.*

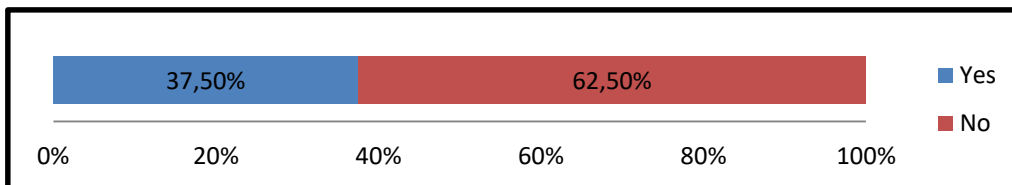




11. Does your company carry out training in the technologies of green building?



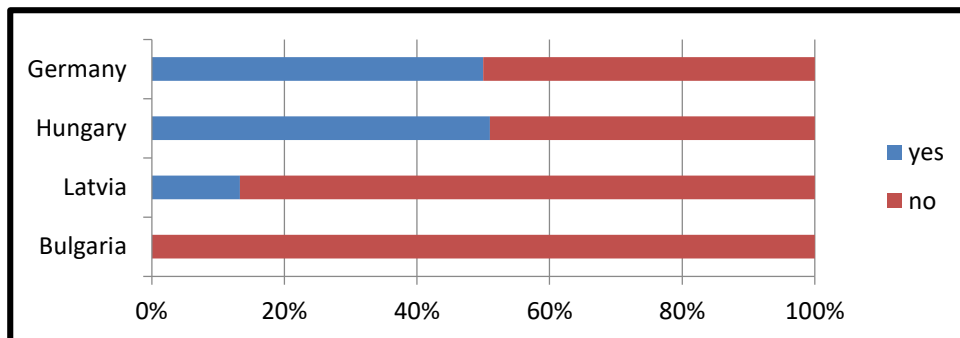
12. Do you want to go through green-related training in green building?



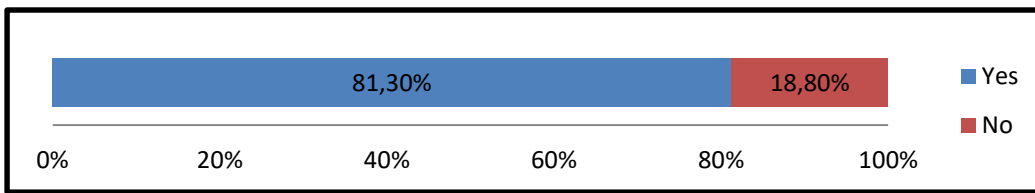
62.5% haven't visit some training in Green Building.

So the target is to change the diagram to 62.5% they have visit trainings.

13. Do you have own theoretical and practical knowledge related to process: The materials used in "green" buildings?

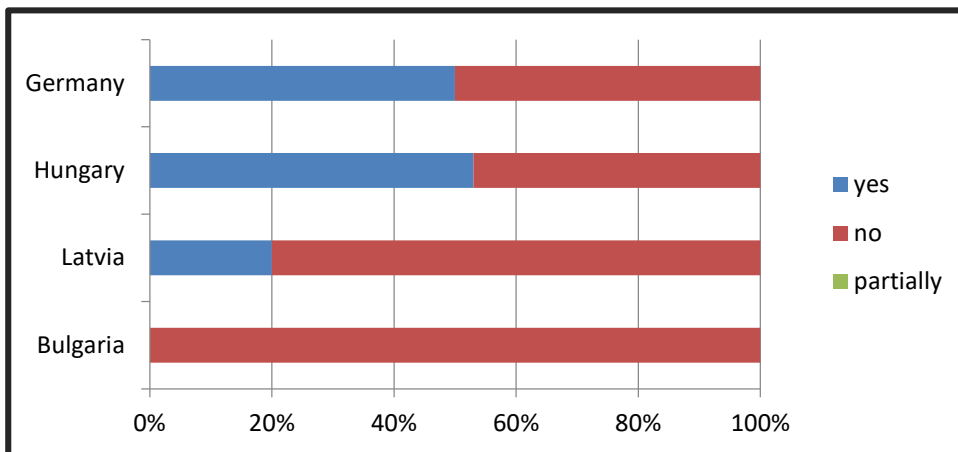


14. Do you think that improving your foreign language training will help you to improve your green skills (knowledge and skills)?

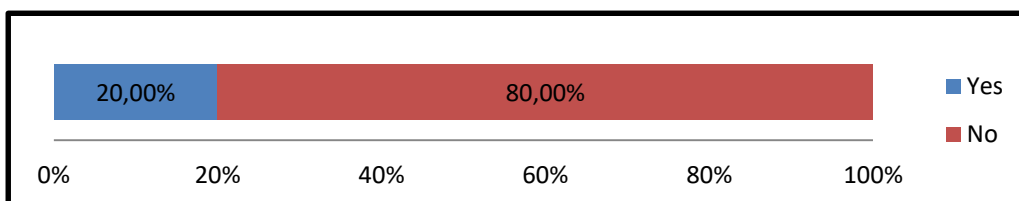


*To improve your foreign language training help you to improve your green skills.  
81.3% of the participants are thinking in this way.*

15. Do you have own theoretical and practical knowledge related to process: Energy efficiency applied in "green" building?



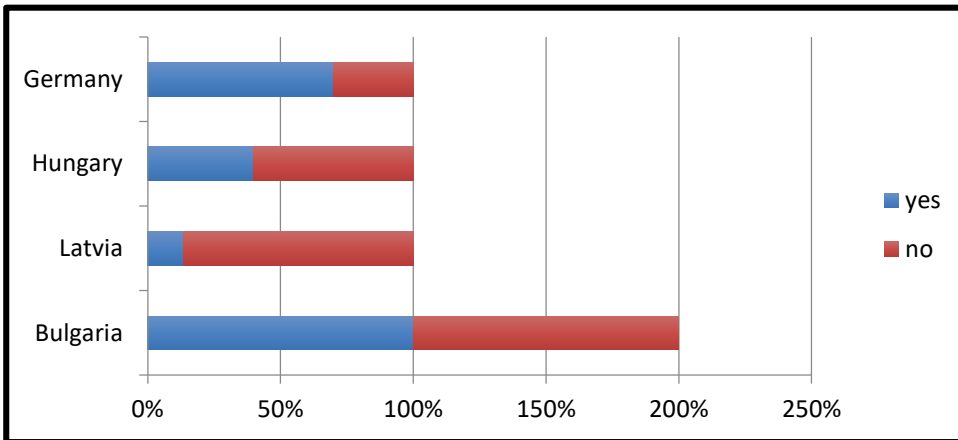
16. Do you want to get acquainted with the specific technologies involved in building the so-called passive houses?



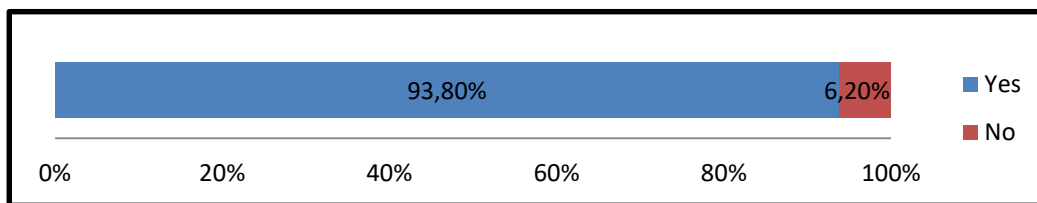
*80% haven't any acquainted with the specific technologies as to build a passive house. There is a lot of potential to get a change. Only 20% are involved with passive houses.*



17. Do you have own theoretical and practical knowledge related to process: Building and construction of the so-called "passive house"?

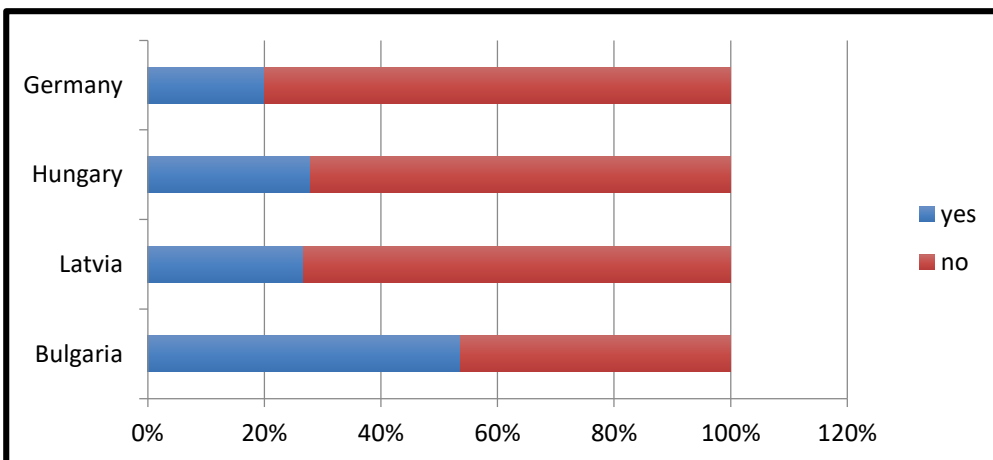


18. Do you think that in order to increase your qualification (knowledge, skills and competences) you need to go through green technology training?

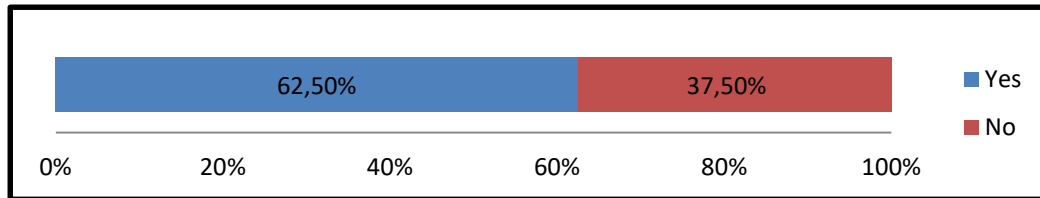


*There is a high demand to increase the qualifications for green building. So you can see that 93.8% are interested in green building.*

19. Do you have own theoretical and practical knowledge related to process: "Green" industry (the "green" economy)?

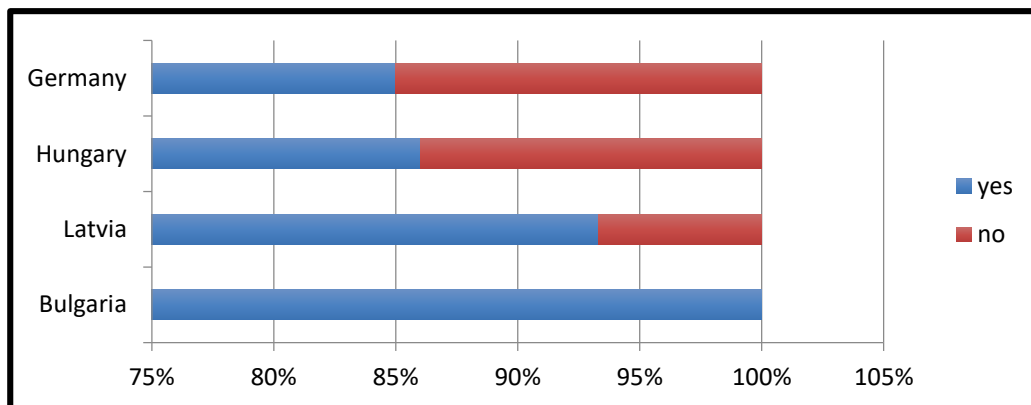


20. Is it necessary for the profession of a construction worker acquire knowledge in the field of the green economy?



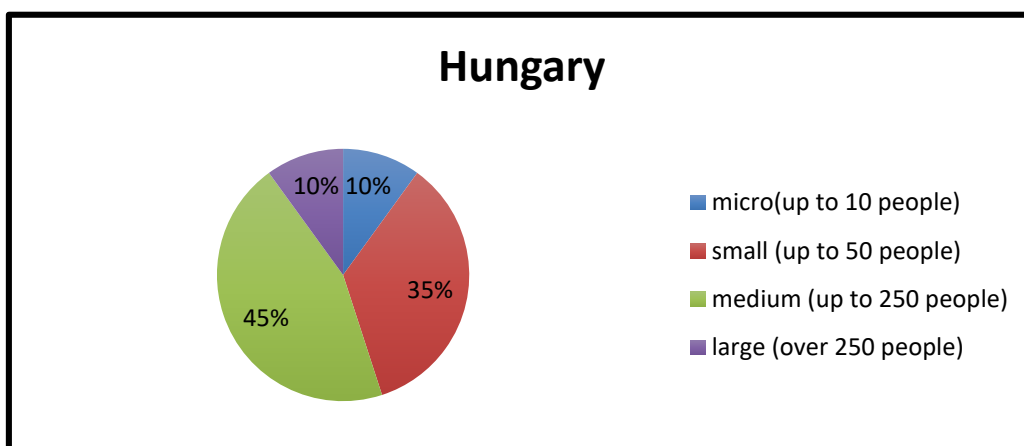
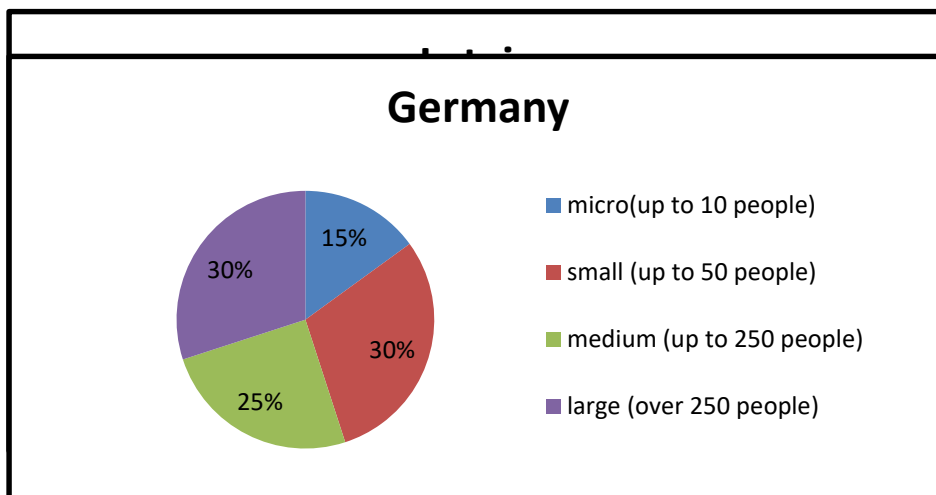
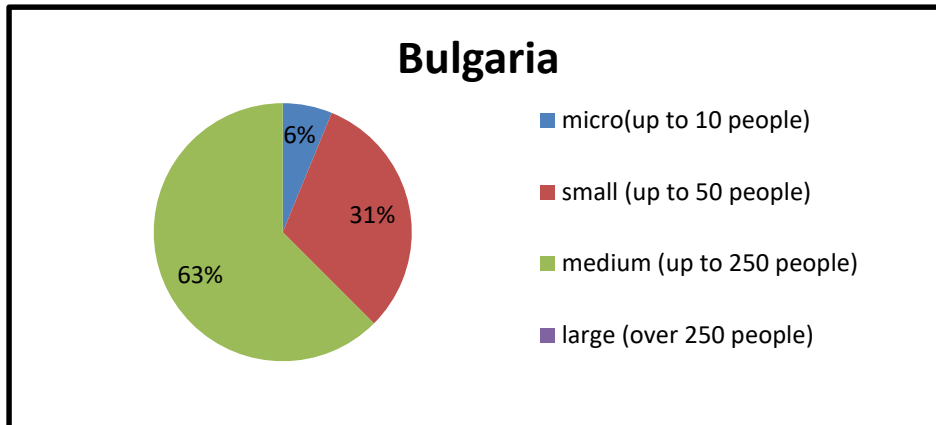
*There are a share from 62.5% of the members thinks that is necessary for the profession of construction worker. It is to be important in matters of the building development.*

21. Would you like acquire knowledge and skills in the field of "green" construction?



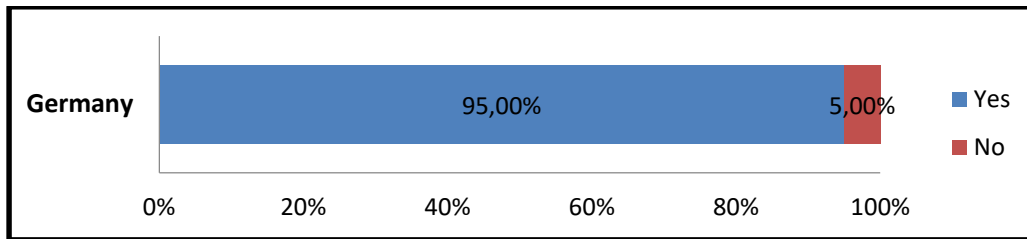
## 2.2 Questionnaire for construction companies

1. What is the average staff number of the enterprise/ company?



Companies of different sizes have been surveyed, which gives us more scope for the survey.

2. Do you apply in your Company innovations related to green technology in construction?

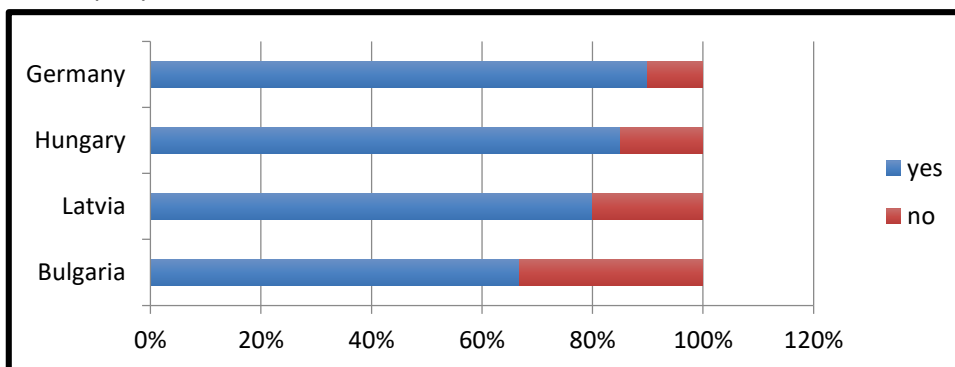


95% advertise for green technology construction. In matters of the inquiry from the workers only 12.5% are familiar with the basic technologies used in green building.

So the workers have to be trained in this task.

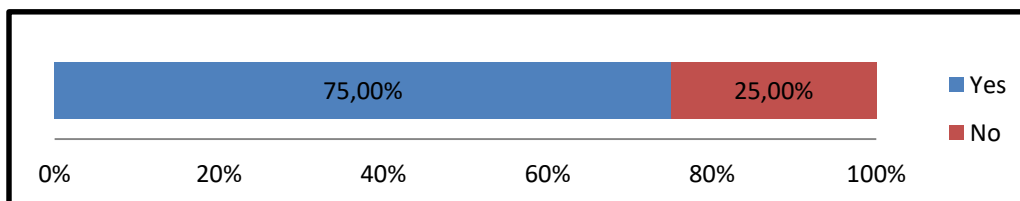
Green building innovations are most widely applied in more developed countries (as can be seen in the graph), as they have regulatory requirements in place. For the other partner countries, this percentage is much lower, but if green building training is available, the result will be more favorable.

3. Are there criteria "Requirements for professional training" when you select personnel for your company?



In most countries, there are specialized approaches to staff selection, but in many of them there are no organized trainings and trainings in the field of green building.

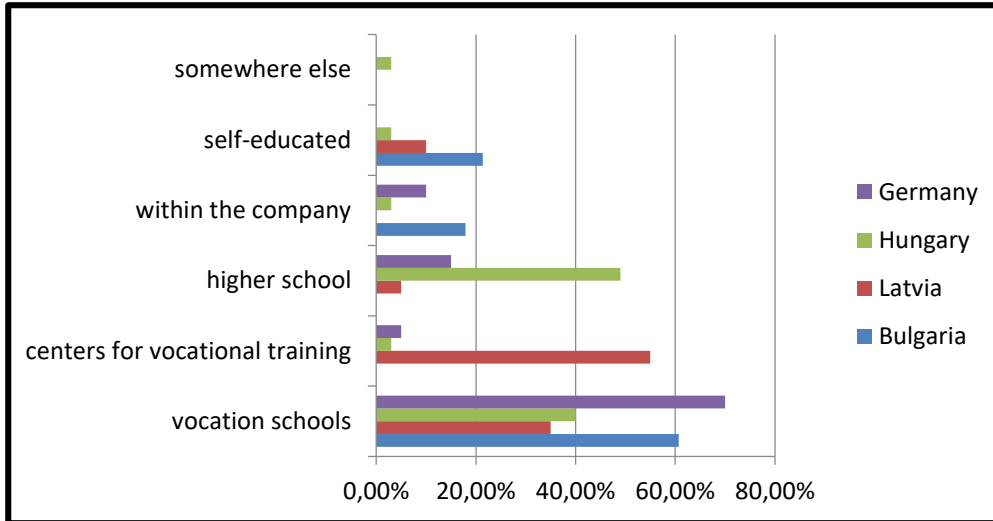
4. Do your building workers have knowledge and skills in the field of environmental construction?



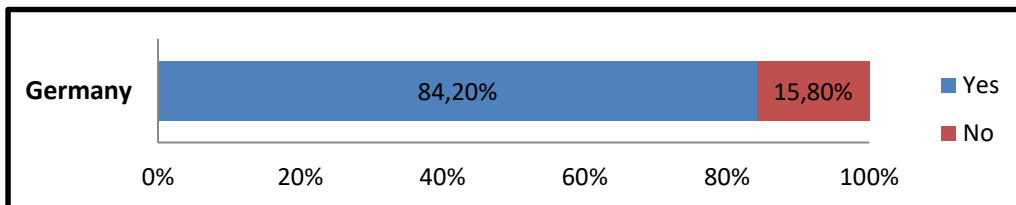
75% of the firms are in property of knowledge and skills in the field of environmental construction.

A large number of employers believe that their workers have the necessary knowledge in the field of green building. But this cannot be certain without having been trained in this field.

5. Where were the employees trained in your company (enterprise)?



6. Do you plan to train your construction workers in the field of green building?

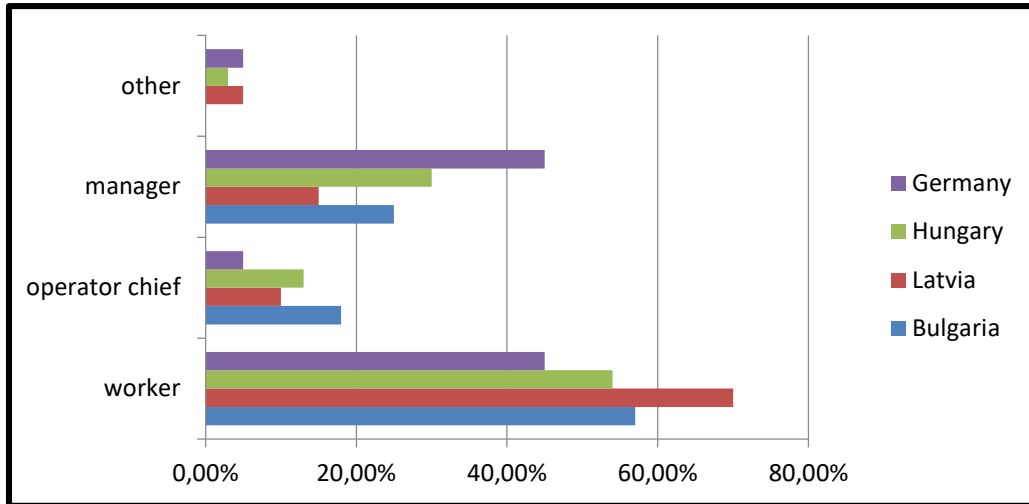


84.2% of the companies plan to train their construction workers in green building.

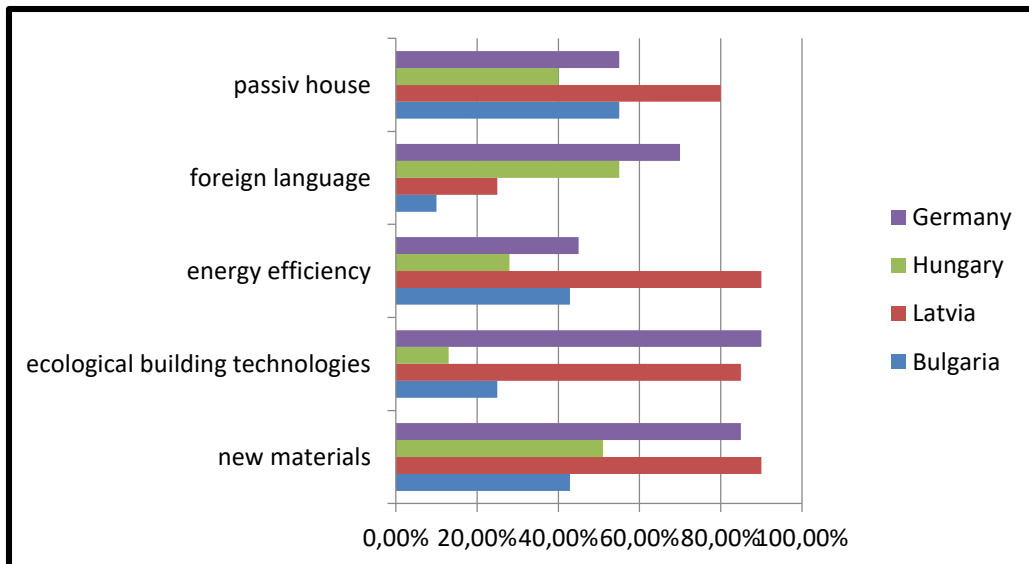
The highest percentage of planned green building training is observed in more developed countries (Germany). Other partner countries have a small percentage of applicants, but this is due to the lack of sufficient training organizations in the field of green building.

7. What posts in your company are people with professional qualification - expert assessment employed for?

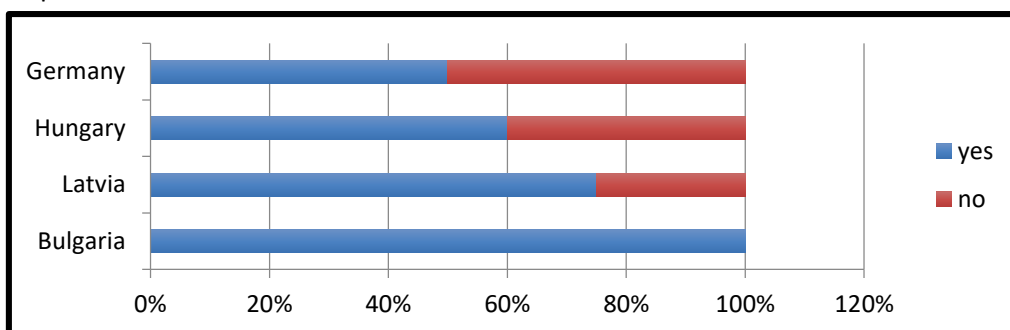




8. In what areas of green construction would you like your construction workers to be trained?



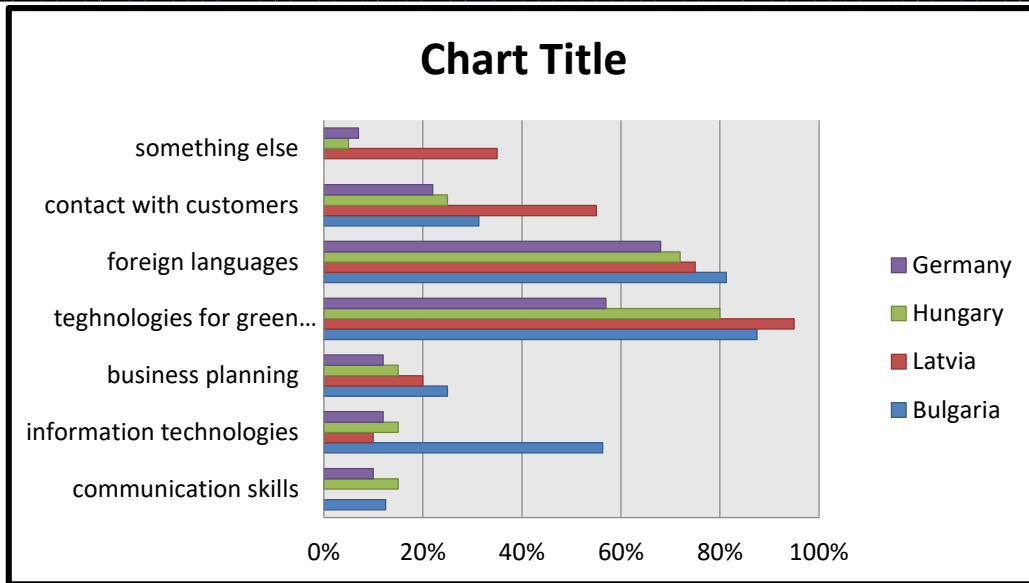
9. Do your employees have to possess other skills, apart from the specific ones to practice the profession?



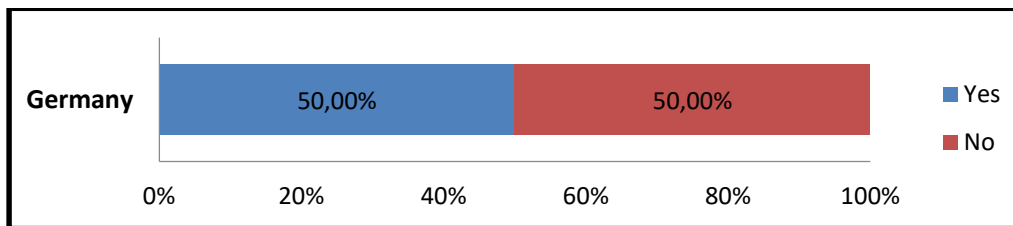
9.1. If yes, please, point out which ones (more than one item is possible):







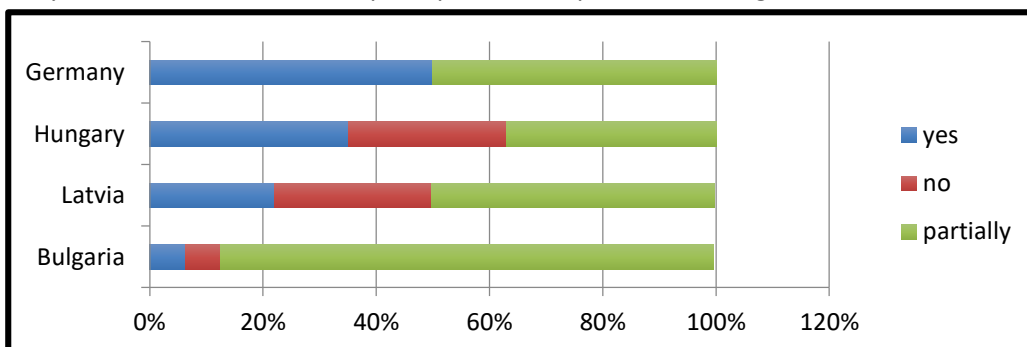
10. Have your construction workers participated in Green Skills training in recent years?



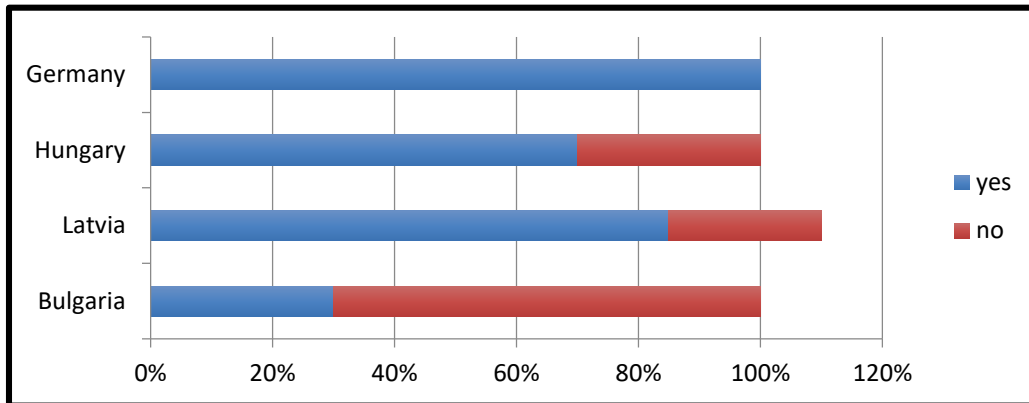
*This diagram shows balance in referring to the Green Skill training.*

*The highest percentage of planned green building training is observed in Germany - 50%. In the other project partner countries, the training is very little or nonexistent. This will change be change after companies are offered an easily accessible and effective way of training in green building.*

11. Are you familiar with the basic principles and requirements of "green" stuff?

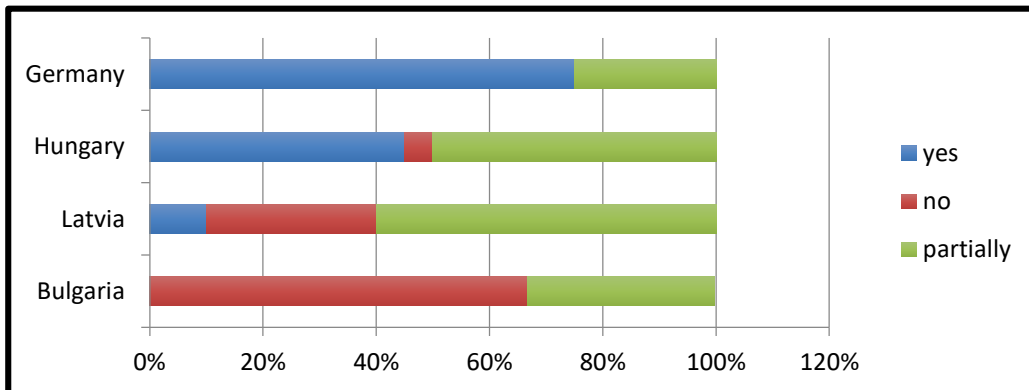


12. Is it necessary for your workers to go through a training module related to applying new materials to green building?

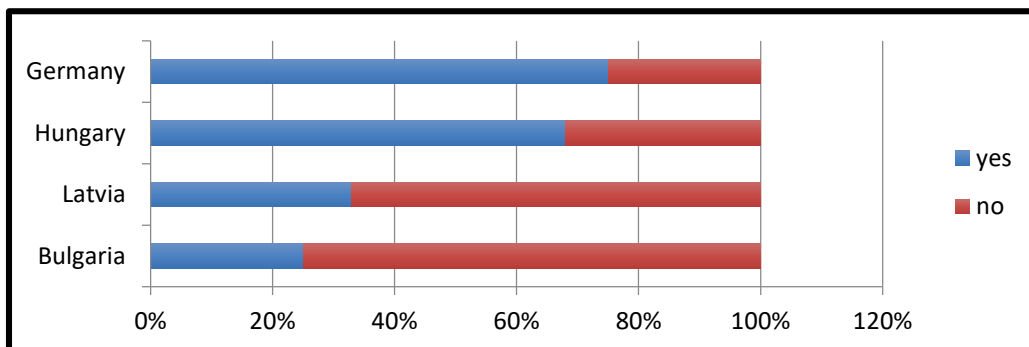


*In Germany 100% thinks that it is necessary to go through a training module.*

13. Does your company apply technologies of "green" construction in its practice?



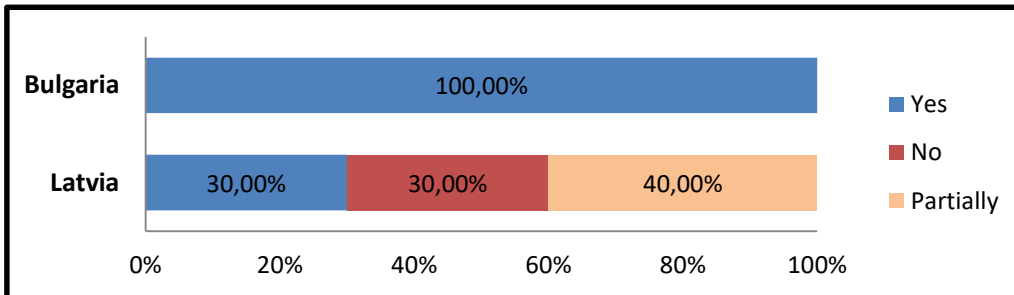
14. Does your company work with foreign suppliers of materials and technologies for green building?



*The best result is in Germany - 75% works with foreign suppliers. Only a quarter works with local suppliers.*

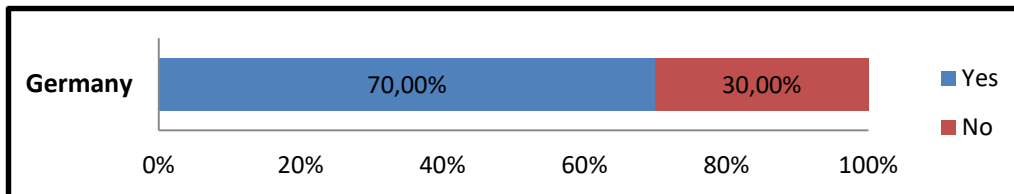


15. Are you interested to learn about "Green" Building technologies?



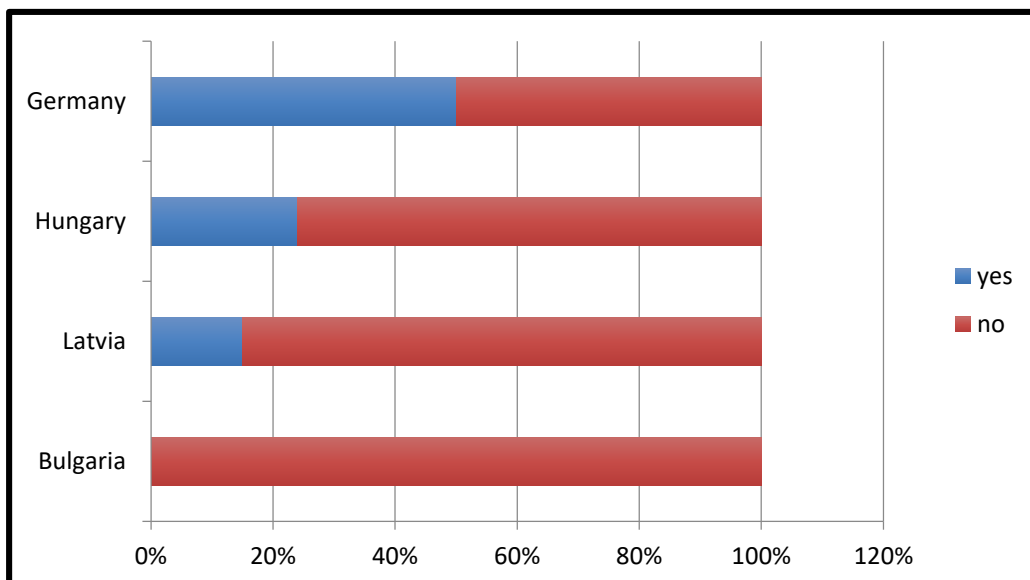
Among the surveyed companies, many of them are eager to learn something new in the field of green technology.

16. Do your construction workers need to increase their specialized foreign language competencies in the field of green building?

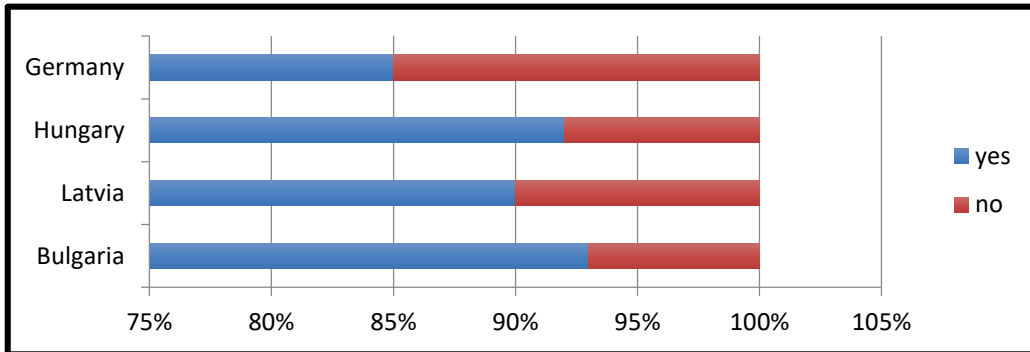


*The greatest desire is expressed by the workers in Germany - 70% would like to train their personal in the specialized foreign language in the field of green building.*

17. Do the persons you employ possess theoretical or practical knowledge related to the materials used in "green" buildings?

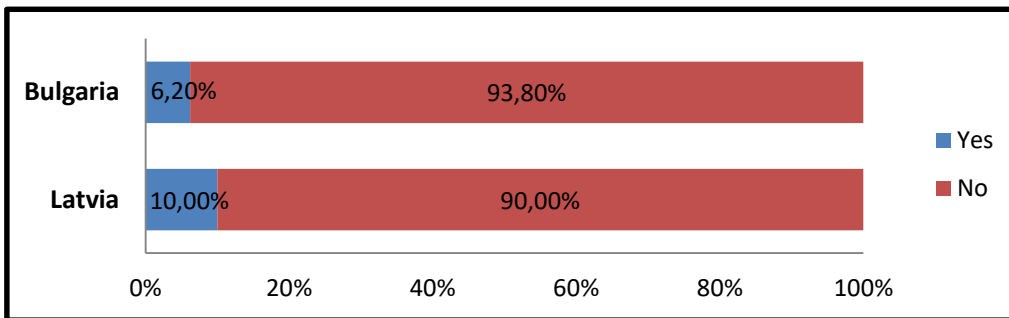


18. Would you include your construction workers in green building technology training?



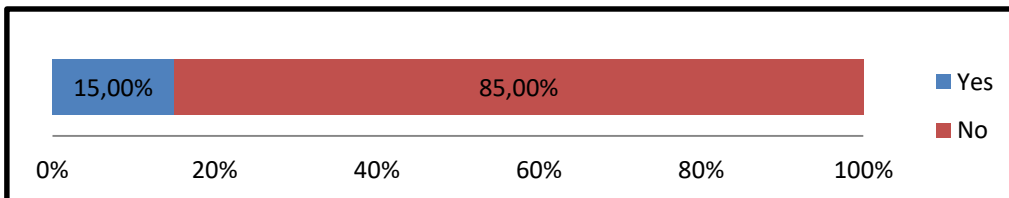
*There is a high demand for green building technology training.*

19. Do the persons you employ possess theoretical or practical knowledge related to the energy efficiency applied in "green" buildings?



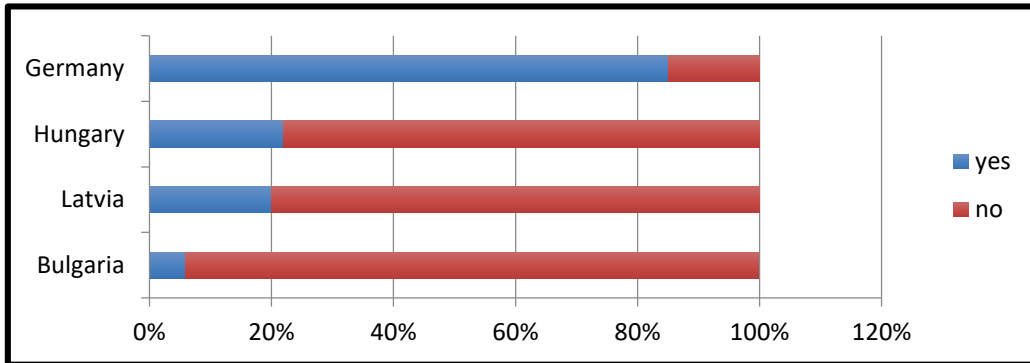
*The lack of practical and theoretical knowledge and skills related to energy efficiency is mainly observed in Latvia and Bulgaria (visible from the graph). This shows the need to develop training programs in this field.*

20. Are your workers aware of the technologies associated with building „passive houses“?

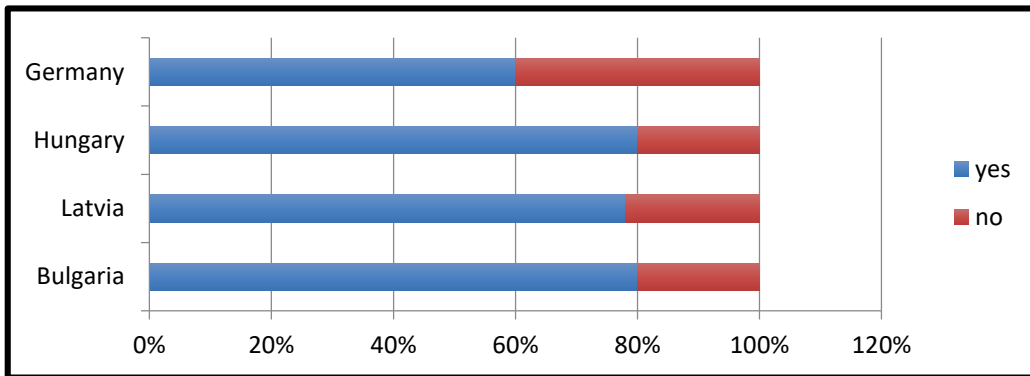


*The most (85%) of the workers haven't got enough knowledge to built a passive house.*

21. Do the persons you employ possess theoretical or practical knowledge related to the building and construction of the so-called "passive house"?

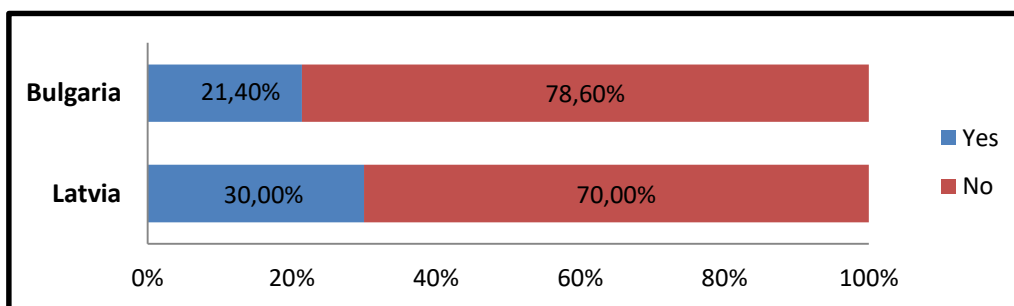


22. Do your construction workers need to have knowledge and competencies in the Green Economy?



*The most think that it is preferable to have knowledge and competences in the green economy.*

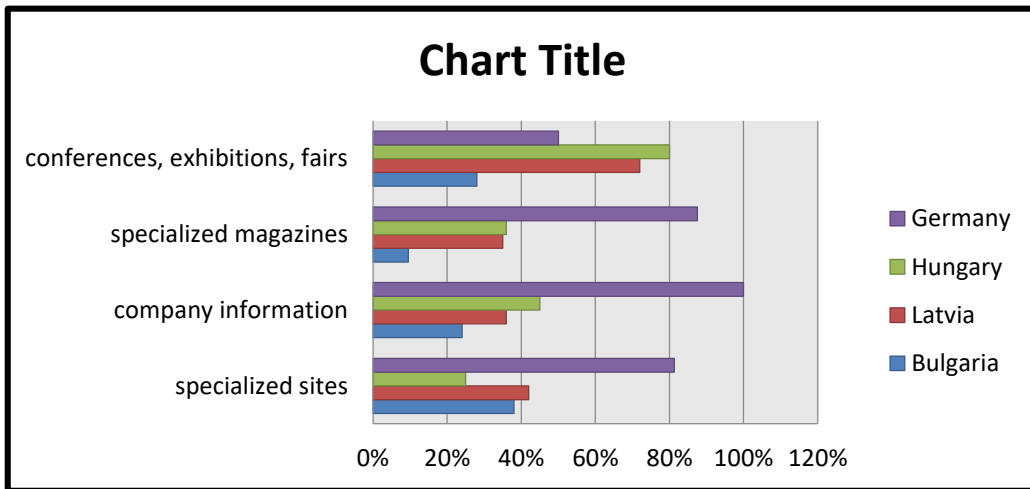
23. Do the persons you employ possess theoretical or practical knowledge related to the "Green" industry (the 'green' economy)?



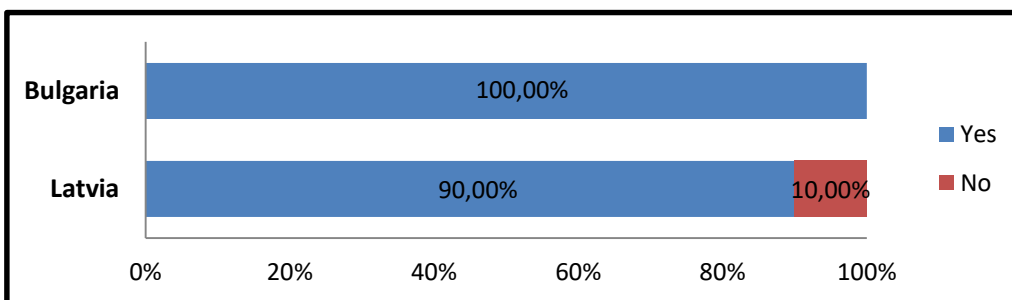
The lack of practical and theoretical knowledge and skills related to the green economy is mainly observed in Latvia and Bulgaria (visible from the graph). This shows the need to develop training programs in this field.



24. From what sources do you get information about the developments in the field of green building?



25. Would you like training in the basic modules in "green" construction: The materials used in "green" building:



The highest desire among the surveyed partner countries is observed in Bulgaria and Latvia (see table).

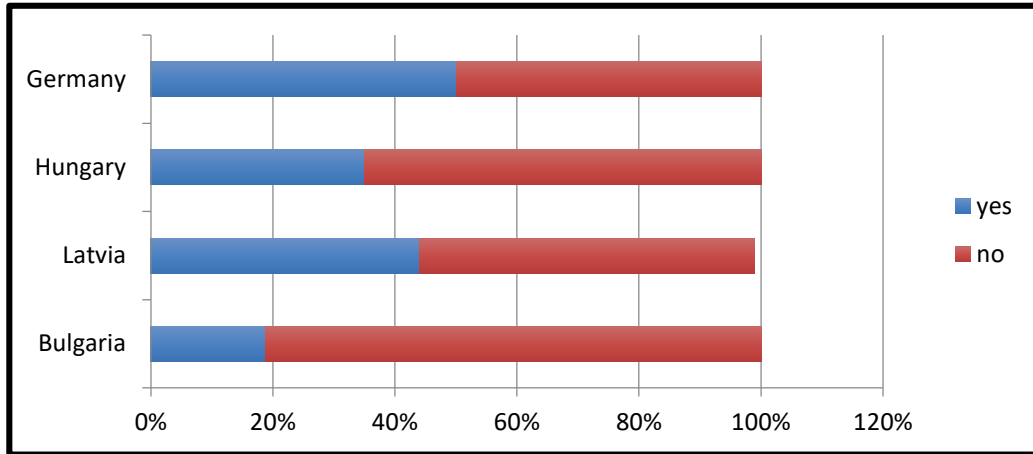
26. Would you like training in the basic modules in "green" construction: The energy efficiency applied in "green" building:



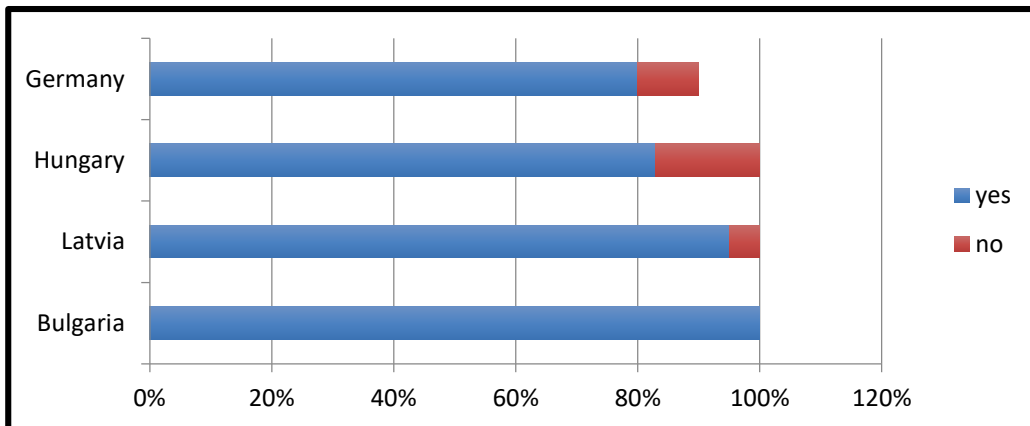
There is an increased interest, especially among underdeveloped countries. This shows us the urgent need to offer training in energy efficiency.



27. Would you like training in the basic modules in "green" construction: The "green" industry (the 'green' economy):



28. Would you like training in the basic modules in "green" construction: The building and construction of the so-called "passive house":



### 3 Analysis

Aim and purpose of the study:

- The main purpose of the study is to identify the importance of curricula related to the acquisition of knowledge and skills of trained people in environmental construction.
- The task of starting the survey is to summarize and analyze the information received from the surveyed construction companies and construction workers.

The survey involved about 100 construction companies, of which:

- 6% (Bulgaria) - 35% (Latvia) - micro (up to 10 people),
- 30% (Germany) - 40% (Latvia) - representatives of small enterprises up to 50 people,
- 15% (Latvia) - 63% (Bulgaria) medium-sized enterprises,
- 10% (Hungary) - 30% (Germany) - large (over 250 people).

Companies of different sizes have been surveyed, which gives us more scope for the survey.

95% advertise for green technology construction. In matters of the inquiry from the workers only 12.5% are familiar with the basic technologies used in green building. So the workers have to be trained in this task.

Green building innovations are most widely applied in more developed countries, as they have regulatory requirements in place. For the other partner countries, this percentage is much lower, but if green building training is available, the result will be more favorable.

Between 75%-83% of the surveyed workers have the necessary qualifications for the professions they are pursuing.

The highest fraction are the group of dry constructor. With 37.5% the painters are on place 2nd. On the 3rd range are the thermal insulation and the renovation of buildings. The lowest group is the section others with a result from 25%.

The most of workers 56.2% are in property of knowledge and competences to modern building technologies. But 43.8% haven't got knowledge and competences in this section. So there is many to move on.

Many of the respondents are interested in upgrading their skills in green building. The most (100%) are interested to increase their qualifications in the fields of Green building.

Such an interest is amazing to registered.



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Only 12.4% are familiar with the basic technologies. So we have to change this, because Green Building is the future of building profession. There is a 100% use from wood in the building process from our participants. There is also a high commitment from stone with 87.5%. Clay is on a high awareness level to 81.3% use it in their working process. Only 50% use straw. But there is to different the material with the groups. A painter has no possibility to use straw for build something. To improve your foreign language training help you to improve your green skills.

There is a high demand to increase the qualifications for green building. So you can see that 93.8% are interested in green building. There are a share from 62.5% of the members thinks that is necessary for the profession of construction worker. It is to be important in matters of the building development.

The respondents state that the level of their knowledge and competences corresponds to the modern building technologies.

The questionnaire for employers seeks answers to the question of whether green technology is being applied - one part of the companies use innovations related to green technology in construction (95% in Germany), but in most it is partially applied.

In most countries, there are specialized approaches to staff selection, but in many of them there are no organized trainings and trainings in the field of green building.

75% of the firms are in property of knowledge and skills in the field of environmental construction.

A large number of employers believe that their workers have the necessary knowledge in the field of green building. But this cannot be certain without having been trained in this field.

Many of employers doesn't organize training for their workers in the field of green building. Some of them plan to do this, especially in developed countries (Germany - 84%).

Preferred learning themes:

- Energy efficiency;
- Ecological materials;
- Passive house;



- 
- Green industry (the "green" economy);
  - Glossary in all languages.

100% of business executives are of the opinion that training is required for workers in such a modules.

Construction workers wish to undergo training related to the application of environmental materials and to increase their green technology application skills.

Specialized foreign language competencies

- Representatives of the company are still not involved in the construction of materials and technology, but 90% consider that workers need to know their special knowledge and know-how in areas of green building.
- However, 10% respondents did not consider such competence to be necessary.
- 95% of the designers wish to make their own knowledge of the knowledge and skills they need to improve their knowledge and skills in areas of green building.

The highest percentage of planned green building training is observed in Germany - 50%. In the other project partner countries, the training is very little or nonexistent. This will change be change after companies are offered an easily accessible and effective way of training in green building

Among the surveyed companies, many of them are eager to learn something new in the field of green technology.

The greatest desire is expressed by the workers in Germany - 70% would like to train their personal in the specialized foreign language in the field of green building.

The lack of practical and theoretical knowledge and skills related to energy efficiency is mainly observed in Latvia and Bulgaria. This shows the need to develop training programs in this field.

Companies are getting information on green developments through:

- Specialized sites –87% (the highest percentage is in Germany);
- Specialized magazines – 81% (the highest percentage is in Germany);
- Company information – 100% (the highest percentage is in Germany) ;
- Conferences, exhibitions, fairs – 80% (the highest percentage is in Hungary).

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Construction companies partially apply green building technology to their jobs , but acknowledge that they need training in this area.

### **Conclusions.**

After processing the answers from the survey we can draw the following conclusions:

- It is necessary to update the curricula for the "builder" profession, by developing curricula related to the acquisition of green building knowledge and skills in the section "Advanced Elective Preparation";
- According to the wishes of employers and construction workers, it is necessary to develop training programs for the following modules:
  - Materials / Materials Used in Green Building /
  - Passive house / technologies related to building "passive houses" /
  - Energy efficiency.

Project partners after analysis of current situation in the field of e-learning unanimously agreed on the choice of Moodle open-source electronic distance learning solution.



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## 4 Project basics

- Acronym: Green construction
- Grant agreement no.: Nr. 2017-1- LV01-KA202- 035483
- Title: IMPROVING THE PROFESSIONAL SKILLS IN GREEN CONSTRUCTIONS THROUGH ONLINE TRAINING
- Duration: 1 September 2017 – 31 August 2019
- Action type: KA2
- Programme: ERASMUS+
- Participating countries: Latvia, Bulgaria, Germany, Hungary

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### OBJECTIVES

The project proposal aims through the creation of transnational partnerships to develop training product with innovative multimedia modules to meet the identified needs of the European construction sector of green skills of low-qualified workers and young people who have a choice of profession. The project team will study and analyze the existing trainings in the field of energy-efficient construction in partner countries it takes the identified needs of the European construction sector, into account, and it will develop, test and validate the modules for continuing professional education, in the field of green construction.

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### TARGET GROUPS

- **Primary target group: Construction companies**
- **Secondary target group: Construction workers**

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### PARTNERS

- Rezekne Academy of Technologies, Latvia
- Veda Consult, Bulgaria
- Schnellkraft Personal management GmbH, Germany
- European Center for Education, Science and Innovation, Bulgaria
- iTStudy Hungary Számítástechnikai Oktató- és Kutatóközpont Kft., Hungary

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