BuildOffsiteEU: Off-site industry-towards innovation in construction sector

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Research Methodology on WP4

Training path design

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1- WP4 Content

1.1 Title

Training path design

1.2 Aim

The main aims of WP4 will be:

- Know the training offer in each country and its adaptation to “new skills” demanded by the industrialised construction systems in line with the principles and objectives of EE&CE
- Analyse common and differential characteristics of these offers to fill competence gaps (EQF levels 3-4-5)
- Design a common framework for the training path and determine the elements to be included: contents, methodology, assessment, resources, trainer profile and so on
- Disseminate and publicise BuildOffsiteEU in all countries, especially in Italy (Info Day)

By working towards the above aims WP4 will contribute to the project goals in the following way:

- Knowing the current training offer and its adequacy to meet the need for “new skills” in the offsite environment helps VET centres to adjust their current training offer to the innovative environment of construction industry
- Analysis of common and differential characteristics in training offer aimed at profiles referenced at European level (EQF) allows the comparability of its elements and the adjustment to the competence demands of industrialised construction at European level, which strengthens an impact beyond the national or regional level
- Development of a common training path, validated and established with European criteria, ensures a successful implementation for workers skilling and re-skilling, a referenced planning of training actions (VET centres, trainers), and an adaptation to training needs of the offsite area
- Validation of contents included in the path by experts external to the BuildOffsiteEU partnership guarantees its adequacy to the needs of offsite construction at European level, becoming an innovative element within industrialised construction by offering answers to the demands of “new skills”
- Info Day in Italy provides an opportunity to showcase the analysis and validation methodology and the results obtained, which broadens the network of project stakeholders and its scope.

1.3 Activities and target

4.1. Analysis documentary sources

4.2. Experts' interviews (*3 per country*)

4.3. Elaboration of training path of "new skills" (*national versions*) DRAFT

4.4. Focus group (*1 event per country / 3 participants per group*)

4.5. Validation process (*1 event per country / 3 participants per group*)

4.6. Elaboration of training path of "new skills" (*national versions*) FINAL

Info Day in Italy (*20 / 30 attendees*)

1.4 Partners involved

Leading Organizations:

- **IIPLE -** Istituto per l'istrucione professionale dei lavoratori edili della provincia di Bologna (Italy)

Participating Organizations:

- **FLC** - Fundación Laboral de la Construcción (Spain).
- **K&S Skopje -** Knowledge and skills management center (Republic of North Macedonia).
- **PEDMEDE**- Panhellenic Association of Engineers Contractors of Public Works (Greece).
- **GZS**- Chamber of Commerce and Industry of Slovenia (Slovenia).
- **IIPLE -** Istituto per l'istrucione professionale dei lavoratori edili della provincia di Bologna (Italy)

1.5 Timeline of Activities

Start: **01-05-2024** End: **30-11-2024**

4.1.	Analysis documentary sources	**30.06.2024**
4.2.	Experts' interviews & report	**31.07.2024**
4.3.	Elaboration of training path of "new skills" *(national versions) DRAFT*	**20.09.2024**
4.4.	Focus group & report	**15.10.2024**
4.5.	Validation process & report	**30.10.2024**
4.6.	Elaboration of training path of "new skills" *(national versions) FINAL*	**30.11.2024**

WP 4 - Design of training path	Leader	PPs involved	mag-24	giu-24	lug-24	ago-24	set-24	ott-24	nov-24
			M18	M19	M20	M21	M22	M23	M24
Analysis of the national training offer in each country and its possibilities to cover the needs of the new competences									
4.1. Analysis documentary sources	**IIPLE**	**All**							
4.2. Experts' interviews (3/country)	**IIPLE**	**All**							
Development of a common training path.									
4.3. Elaboration of training path of "new skills" (national versions) DRAFT	**IIPLE**	**All**							
4.4.Focus group (1/country/3 participants per group)	**IIPLE**	**All**							
4.5. Validation process (1/country/3 participants per group)	**IIPLE**	**All**							
4.6. Elaboration of training path of "new skills" (national versions) FINAL	**IIPLE**	**All**							
Info Day in Italy (20/30 attendees)	**IIPLE**							**IT**	

2 Research Methodology for WP4 activities

2.1 Analysis of the national training offer

2.1.1 Content/ Aim

Analysis of the training offer in each country and its adaptation to the "new skills" demanded by the industrialised construction systems in line with the principles and objectives of EE&CE. Analyse common and differential characteristics of these offers to fill competence gaps (EQF levels 3-4-5).

Methodology: desk research

2.1.2 Target Groups

- Experts and skills-based performance appraisers
- VET trainers in the construction sector
- Experts in design of training actions in the construction industry.

2.1.3 Guidelines

Guidelines for the <u>desk research</u>

To realise the desk research the following steps should be done:

- start from the major findings of WP3 - "New Skills" Map elaboration
- use the most relevant sources available in your country and the most updated researches on the field
- quote all the sources / researches used

The desk research will be implemented using the template here in annex and then will be sent to the selected experts via email to run the interview. Translation to partner's local language is optional, depending on what ensures higher understanding of interviewed.

2.1.4 Tools

Annex 1. Proposed structure of the desk research.

2.2 Experts' interviews

2.2.1 Content/ Aim

The scope of this activity is validation of key findings of the desk research. The validation will be conducted with national external experts to ensure their value and suitability of key findings for industrialized construction companies' requirements for needed skills of workforce. The validation will be conducted thorough a dedicated experts interviews in each country with the participation of relevant experts in the field.

Methodology: direct interview

N° of participants: 3 experts per country

2.2.2 Target Groups

- Employers /managers/employees of industrialized construction companies.
- Experts and skills-based performance appraisers.
- VET trainers in the construction sector
- Experts in energy efficiency and circular economy in the field of building.

2.2.3 Guidelines

Guidelines for the <u>experts' interviews</u>

To realise the experts' interviews the following steps should be done:

Estimated duration: up to 60 minutes

Data Protection issues: Respect the policies applied in your organization.

Prior to the Interview

The facilitator should read all the questions/ issues to be discussed thoroughly to ensure that he/she is familiar with the topics and the structure of the discussion.

During the Interview

Introduction Phase (5 minutes)

- Thank the participants for taking part in the project.
- Self-introduction of the facilitator and the institution.
- Explain, briefly, the scope of the project.
- Brief description of the purpose of the Interview.

- Explanation of how issues of confidentiality will be dealt with (e.g. anonymity); request permission to record the discussion; signing of the consent form and explanation of its purpose.
- Setting of the ground rules (e.g. duration; there are no right or wrong answers; respect towards the views of other participants etc.).

Main Phase (50 minutes)

- Initiate the discussion around the questions provided in Annex 4. Issues to be discussed with interviews' participants. Present each of the questions one by one. The order of the questions may change depending on the course of the interview. Nevertheless, it is important to collect answers to all questions.

Concluding Phase (5 minutes)

- Thank the participants for their contributions to the project.
- Ask the participant(s) if they have any questions, the use of the data and if they still give their consent for the use of their responses for research purposes.
- Inform the participant(s) that follow-up of the research results will be provided to them through disseminating the research reports.

After the Interview

After the completion of the Interview and while the discussion is still "fresh" in the facilitator's mind he/she should decode the open-ended questions from the recording device and write a brief report summarizing the key findings.

Extra tips:

- Make sure you start and finish on time. Timely completion of the interview shows to the participants that we respect the time they have allocated to take part in our research.
- Keep eye contact and maintain neutrality by neither verbally nor non-verbally approving or disapproving of opinions.
- If you are not satisfied with the completeness of the information provided in a question, use probe questions to elicit more information from the participant when necessary.

2.2.4 Tools

Annex 2. Template for Consent form

Annex 3. Templates for Attendance Lists

Annex 4. Issues to be discussed interviews' participants [TRAINING OFFER]

Annex 5*.* Synthesis of the findings for interviews in the National context [TRAINING OFFER]

2.3 Elaboration of training paths of "new skills" – 1st DRAFT

The scope of this activity is to design a common framework for the training path and determine the elements to be included: contents, methodology,[1] assessment, resources, trainer profile and so on. The development of a common training path,[2] validated and established with European criteria, ensures a successful implementation for workers skilling and re-skilling, a referenced planning of training actions (VET centres, trainers), and an adaptation to training needs of the offsite area.

According to the results of the previous activities IIPLE will draft the main structure for the document Training path of "new skill" to be then prepared by each single PP following all the findings and results of the previous analysis including the experts' interviews inputs. The draft will be then integrated by desk research and benchmark.

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2.4 Focus groups for the development of a common training path

2.4.1 Content/ Aim

The scope of this activity is to enrich / improve the key findings of the first draft of the Training path of "new skill". This 'upgrade' will be conducted with national external experts to ensure their value and suitability of key findings for industrialized construction companies' requirements for needed skills of workforce. The 'upgrade' will be conducted thorough a dedicated focus groups in each country with the participation of relevant experts in the field.

- Focus groups: 1 per country, 5 total
- No of participants: 3 people per group, 15 total.

2.4.2 Target Groups

- Employers /managers/employees of industrialized construction companies.

[1] As part of the final result we are going to be elaborated an e-trainer guide and this information will be included in it.

[2] A common training pathway(s) may be difficult to achieve due to differences between our countries, in terms of education and training system regulations and legislation. Eventually there will be a national version of the interactive map so the information will be collected as it is most useful in each of the countries

- Experts and skills-based performance appraisers.
- VET trainers in the construction sector
- Experts in energy efficiency and circular economy in the field of building.

2.4.3 Guidelines

Guidelines for the focus groups

- **Estimated duration:** 60 to 90 minutes.
- **Data Protection issues**: Respect the policies applied in your organization.

Prior to the Focus Group

Some days before the focus group take place the partner should send to the participants the PDF of the first draft of the Training path of "new skill". Then, before the focus groups take place, the facilitator should read all the questions/ issues to be discussed thoroughly to ensure that he/she is familiar with the topics and the structure of the discussion.

During the Focus Group

Introduction Phase (5 minutes)

- Thank the participants for taking part in the project.
- Self-introduction of the facilitator and the institution.
- Explain the scope of the project briefly.
- Brief description of the purpose of the focus group and how the results will be analysed and reported.
- Explanation of how issues of confidentiality will be dealt with (e.g. anonymity); request permission to record the discussion; signing of the consent form and explanation of its purpose.
- Setting of the ground rules (e.g. duration; there are no right or wrong answers; respect towards the views of other participants etc.).

Main Phase (50 - 80 minutes)

- Initiate the discussion around the questions provided in Annex 6. Issues to be discussed in focus group(s) [Dev. TRAINING PATH]. Present each of the questions one by one. The order of the questions may change depending on the course of the discussion. Nevertheless, it is important to collect answers to all questions.

Concluding Phase (5 minutes)

- Thank the participants for their contributions to the project.
- Ask the participants if they have any questions regarding the focus group, the use of the data and if they still give their consent for the use of their responses for research purposes.
- Inform the participants that follow-up of the research results will be provided to them, through the dissemination of the research reports.

After the Focus group

After the completion of the Focus group and while the discussion is still "fresh" in the facilitator's mind he/she should decode the open-ended questions and write a brief report summarizing the key findings.

Extra tips:

- Make sure you start and finish on time. Timely completion of the focus group shows to the participants that we respect the time they have allocated to take part in our research.
- Keep eye contact and maintain neutrality by neither verbally nor non-verbally approving or disapproving of opinions.
- If you are not satisfied with the completeness of the information provided in a question, use probe questions to elicit more information from the participant when necessary.

2.4.4 Tools

Annex 2. Template for Consent form

Annex 3. Templates for Attendance Lists

Annex 6. Issues to be discussed in focus group(s) [Dev. TRAINING PATH]

Annex 7. Synthesis of the findings for focus groups in the National context [Dev. TRAINING PATH]

2.5 Validation process

2.5.1 Content/ Aim

The scope of this activity is validation of key findings of the focus groups on the development of common training paths. The validation will be conducted with national/international external experts to ensure their value and suitability of key findings for industrialized construction companies' requirements for needed skills of workforce.

The validation will be conducted with the filling of an online validation questionnaire. The overall scope of the online survey is to validate the findings of both the experts' interviews and the focus groups.

The online validation questionnaire will be sent via email in the target group of experts.

- No. of expert's participants: 3 experts/country, 15 total.

2.5.2 Target Groups

- Employers /managers/employees of industrialized construction companies.
- Experts and skills-based performance appraisers.
- VET trainers in the construction sector
- Experts in energy efficiency and circular economy in the field of building.

2.5.3 Guidelines

Guidelines for the online validation questionnaire

All partners should send the findings of the focus groups on the development of common training paths before sending the validation questionnaire to experts, so that experts can read them (*Annex 7*) and then respond to the questionnaire to verify the results. The validation will focus on "assessing" the reliability and usefulness of the common training pathway designed at national level.

The online questionnaire will be drafted in Google Forms and sent to potential responders. The questionnaire should be sent from each partner to corresponding experts via email. Email to the responders should contain an attachments of Annexes 5 & 7 in National context and project factsheet (web page of the project).

Each partner should save a copy of the online survey link, without changing the order of questions.

Translation to partner's local language is optional, depending on what ensures higher understanding of respondents.

Data Protection issues: Respect the policies applied in your organization.

2.5.4 Tools

Annex 8. Online validation questionnaire

Annex 9. Report from validation in National context

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2.6 Elaboration of training paths of “new skills”- FINAL

The scope of this activity is to design a common framework for the training path and determine the elements to be included: contents, methodology, assessment, resources, trainer profile and so on. The development of a common training path, validated and established with European criteria, ensures a successful implementation for workers skilling and re-skilling, a referenced planning of training actions (VET centres, trainers), and an adaptation to training needs of the offsite area.

The FINAL version of the Training path of “new skill” will be prepared by IIPLE as a result of the collection and processing of the PPs’ previous inputs and the validation survey as performed in the previous task.

3 Annexes

Annex 1. Proposed structure of the desk research

Executive summary

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Cap 1 – Major findings from the "New Skills" Map elaboration

This first chapter will summarise the major results of the Map (*including the detailed chart*) and will explain the reasons for the selection of only the "critical" and "important" skills to be processed in Chapter 2.

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Cap 2 – Matching the Map with the national offer

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Cap 3 – Key conclusions

CAP 2 – MATCHING THE MAP WITH THE NATIONAL OFFER

<to be tuned with the list agreed on in TPM3>

Occupation	Required skills	Training available Y/N	Title	Duration	Brief description
Electrical installer	Use BIM models				
	Install smart devices				
	Interpret 2D and 3D digital plans				
	Install automation components				
	Calculate solar panel orientation				
	Mount photovoltaic panels				
	Use diagnostic tools for electronic repairs				
	Follow health and safety procedures in construction and working at heights				
	Assemble sensors				
	Assemble electrical and mechatronic components and units				
	Work in a construction team				
	Calculate needs for construction supplies				
	Check compatibility of materials				
	Write inspection reports				
	Use precision tools				
	Test and resolve equipment malfunctions				

	Install inverters				
HVAC engineering technician	Interpret 2D and 3D digital plans				
	Install and maintain home automation systems				
	Lead a team perform maintenance on installed equipment				
	Install geothermal heat pump				
	Ensure compliance with environmental legislation				
	Drain hazardous liquids				
	Monitor utility equipment and use testing equipment				
	Apply health and safety standards				
	Advise on fitted ventilation systems				
	Resolve equipment malfunctions				
	Arrange equipment repairs				
	Install heating pump				
	Handle refrigerant transfer pumps				
	Perform refrigerant leak checks				
	Install heating, ventilation, air conditioning and refrigeration ducts				
Roof labourer	Interpret 2D and 3D digital plans				
	Establish green roof				
	Program a CNC controller				

	Prepare the roof for solar system (PV and solar thermal system)				
	Follow safety procedures when working at heights				
	Assess conservation needs				
	Sort waste and demolition materials				
	Inspect construction supplies and calculate needs for construction supplies				
	Follow health and safety procedures in construction				
	Install connections of modular roof elements				
	Install lightning protection system				
	Use measurement instruments				
	Apply restoration techniques				
	Construct roof structure with construction profiles				
Building construction labourer	Interpret 2D and 3D digital plans				
	Work ergonomically				
	Interpret plans for modular construction				
	Sort waste and demolition materials				
	Recognize impact of materials lifetime for maintenance and demolition				
	Calculate needs for construction supplies				

	Follow safety procedures when working at heights				
	Prepare the envelope for PV walls				
	Install connections of modular building elements				
	Use building materials and components reuse				
	Follow health and safety procedures in construction				
	Inspect construction supplies and calculate needs for construction supplies				
	Use measurement instruments				
	Apply restoration techniques				
	Recognize dry construction methods				

Annex 2. Template for Consent form

CONSENT FORM

BuildOffsiteEU | Off-site industry towards innovation in construction sector

I, _____, hereby declare that:

1. I have been informed about the BuildOffsiteEU project and I have understood what the project is about and what it aims to achieve.

2. I have accepted to take part in this research as my personal experience will contribute much to the understanding of the issues under study.

3. I may choose not to answer anyone or more of the questions that I will be asked and may stop participating in the focus group session at any time I wish. During the focus group, or at its end, I can ask to modify or remove some of my remarks.

4. My name will not be published or communicated to anyone outside the research team, the project Consortium and the Spanish National Agency for Erasmus+.

5. The information I will provide will only be used for this study.

6. My participation is entirely voluntary and I can withdraw from the study at any time.

I consent to participate in this study.

Place & Date:

Signature:

Annex 3. Template for Attendance Lists

ATTENDANCE LIST FOR INTERVIEWS[3]

BuildOffsiteEU | Off-site industry towards innovation in construction sector

Organized by:

Place:

Date:

Name:	
Organisation:	
Occupation	
Age	
Gender	
Email	

Signature:

[3] In case the interview is conducted in an online format, a recording of it would be desirable as evidence.

ATTENDANCE LIST FOR FOCUS GROUPS

BuildOffsiteEU| Off-site industry towards innovation in construction sector

Organized by:

Place:

Date:

	Name	Organisation	Occupation	Email	Signature
1					
2					
3					
4					
5					

Annex 4. Issues to be discussed with interviews' participants - [TRAINING OFFER]

1. Which are the main discrepancies on the Map which matches the skills map with the national offer detected?

2. According to your knowledge are there any other courses available for the proposed skills?

3. The following Task of the project is to design a common framework for the training path and determine the elements to be included: contents, methodology, assessment, resources, trainer profile and so on. The development of a common training path, validated and established with European criteria, ensures a successful implementation for workers skilling and re-skilling, a referenced planning of training actions (VET centres, trainers), and an adaptation to training needs of the offsite area. Do you maybe have some ideas on new contents, methodology, assessment, resources, trainer profile, … to suggest us?

Annex 5. Synthesis of the findings for interviews in National context- [TRAINING OFFER]

Synthesis

(max 2 pages)

A short synthesis of the major feedbacks / inputs from the expert interview with details of the major deviations in the following box

Matches between the current training offer and the Map of Competences

(make reference to the proposed Map)

Major deviations of the current training offer from the Skills Map

(make reference to the proposed Map)

Annex 6. Issues to be discussed with focus group(s)- [Dev. TRAINING PATH]

1. The aim of this task is to design a common framework for the training path and determine the elements to be included: contents, methodology, assessment, resources, trainer profile and so on. The development of a common training path, validated and established with European criteria, ensures a successful implementation for workers skilling and re-skilling, a referenced planning of training actions (VET centres, trainers), and an adaptation to training needs of the offsite area. What do you think of the first draft which we have already elaborated?

2. According to your knowledge are there any other inputs to add in terms of contents, methodology, assessment, resources, trainer profile and so on?

3. And in general, what would you suggest to VET centres / trainers for possible paths to ensure a successful implementation for workers skilling and re-skilling and an adaptation to training needs of the offsite area?

Annex 7. Synthesis of the findings for focus groups in National context- [Dev. TRAINING PATH]

Synthesis

(max 2 pages)

A short synthesis of the major feedbacks / inputs from the expert interview with details of the major deviations in the following box

Evidence of the major deviations with the current Map of the national offer

(make reference to the proposed Map)

Annex 8. Online validation questionnaire

Dear respondent,

We kindly invite you to participate in the research conducted as part of the "BuildOffsiteEU: Off-site industry-towards innovation in construction sector" project, which is co-funded by the European Commission under the framework of Erasmus+ Programme and is implemented in the following EU countries: Spain, Greece, Slovenia, Italy, North Macedonia. The current research survey is addressed to rich information for the skills to be upgraded of workers to do industrialized construction, improving energy efficiency and circular economy, recommendation. This will produce the activities for developing new training schemes and curricula for workers in building sector.

The collected information will be used to validate key findings of the project regarding industrialized building systems to bridging skills gaps between traditional occupations and upgrade occupations of industrialized construction.

Please mind that the survey is anonymous, and all collected information will be used only for the research purposes of the BuildOffsiteEU project.

We kindly ask you to answer 10 days after receiving of the questionnaire.

We thank you in advance for your participation!

Questionnaire for Experts

BuildOffsiteEU | Off-site industry towards innovation in construction sector

The aim of the questionnaire for experts is to validate the results of both the experts' interviews and the focus groups on the development of common training on skills of workforce needed for industrialized construction improving energy efficiency and circular economy and what skills are needed to upgrade.

Organisation
Occupation
Sector:

- Construction Sector (NACE F - 42)
- Building sector (NACE F- 41, 43)
- Energy efficient sector (M 71.-consultancy)
- Environmental sector (M 71.-consultancy)

Working position:

- Employer/manager/employee of industrialised companies.
- Expert.
- Competence-based performance appraiser.
- VET trainer in the construction sector.
- Student.

Gender:

- Male
- Female
- other

Age:

- 18-25
- 26-35
- 36-46
- + 47

I hereby declare that:

- I have been informed about the BuildOffsiteEU project and I have understood what the project is about and what it aims to achieve.
- I have accepted to take part in this research as my personal experience will contribute much to the understanding of the issues under study.
- My name will not be published or communicated to anyone outside the research team, the project consortium and the Spanish National Agency for Erasmus+.
- The information I will provide will only be used for this study.
- My participation is entirely voluntary and I can withdraw from the study at any time.

I consent to participate in this study.

<T.B.D.> according to the major findings

Annex 9. Report from validation in National context

The report is narrative, approximately one page, consisting of findings of national survey, regarding industrialized building systems to bridging skills gaps between traditional occupations and upgrade occupations of industrialized construction.

Is the validation respondents' indication about relevance of training paths designed towards skills for Offsite construction is in line with results from national survey?