



SKILLS
INSTRUCT
INSTRUMENTS
CONSTRUCTION

Networking activities



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D5.4 “Networking activities”

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Glossary

Acronym	Full name
CA	Consortium Agreement
EC	European Commission
EASME	The Executive Agency for Small and Medium-sized Enterprises
GA	Grant Agreement
PC	Project Coordinator
WP	Work Package
TL	Task Leader
DoA	Description of Action
PSC	Project Steering Committee
SQM	Scientific and Quality Manager
DEC	Dissemination and Exploitation Committee
KOM	Kick-off meeting
ASM	ASM – Market Research and Analysis Centre
VTT	Technical Research Centre of Finland
LIST	Luxembourg Institute of Science and Technology
RIL	Finnish Association of Civil Engineers
CU	Cardiff University
R2M	Research to Market Solution France
DTTN	Distretto Tecnologico Trentino
ENEFFECT	Center for Energy Efficiency EnEffect
GER	General Exploitable Result
AB	Advisory Board
PM	Person month
M	Month
EE	Energy Efficiency

Table of contents

1. Introduction.....	7
1.1. Aims and objectives.....	7
1.2. Relations to other activities in the project.....	7
1.3. Report structure	7
1.4. Contribution of partners.....	7
2. Strategy meetings with sister projects.....	7
3. Energy skills repository.....	10
4. Topics of interest for joint activities.....	10
5. Main cluster workshops	10
6. Synergies with other H2020 funded projects.....	12
6.1. ARISE.....	12
6.2. BIM2TWIN	13
6.3. BIMEET.....	13
6.4. BIMzeED.....	14
6.5. BUSLeague	15
6.6. CraftEdu	16
6.7. HP4ALL.....	16
6.8. The nZEB Roadshow	17
6.9. nZEB Ready	18
6.10. PRO-Heritage	19
6.11. SEetheSkills.....	20
6.12. TRAIN4SUSTAIN	20
6.13. BUS-GoCircular	21
7. Synergies with nationally or regionally funded projects and networks.....	22
8. Synergies with other global initiatives	23
9. References.....	24
10. Appendices	25
10.1. Appendix 1: Example of two slides presented and/or shared during the strategic meeting with sister projects	25
10.2. Appendix 2: “Sustainable energy skills in the construction sector” proceedings publication; 12 January 2021 (M8), corresponding author: R2M	26

10.2. Appendix 3: “Sustainable energy skills in the construction sector 2.0” environmental sciences proceedings publication; 29 November 2021 (M18), corresponding author: R2M .. 31

Table of figures

Figure 1 Sustainable Energy Skills post SP2020 discussion meeting, 14.12.2020.....	8
Figure 2 Sustainable Energy Skills post SP2020 discussion meeting, 14.12.2020.....	8
Figure 3 Selection of joint activities meeting, 27.01.2021.....	8
Figure 4 Sustainable Energy Skills discussion on organisation of 1st webinar hosted by BUILD UP platform, 06.04.2021.....	9
Figure 5 Sustainable Energy Skills discussion on organisation of 1 st webinar hosted by BUILD UP platform, 06.04.2021.....	9
Figure 6 Figure 4 Selection of joint activities meeting, 27.01.2021.....	9
Figure 7 Sustainable Energy Skills SP2021 dry run session, 24.09.2021.....	9
Figure 8 Sustainable Energy Skills discussion on organisation of 1st webinar hosted by BUILD UP platform, 06.04.2021.....	9
Figure 9 Sustainable Energy Skills SP2022 planning, 06.05.2022.....	9
Figure 10 Sustainable Energy Skills post SP2021 discussion on future collaborations, 20.10.2021.....	9
Figure 11 Energy skills EU projects Sharepoint repository.....	10
Figure 12 Sister projects topics of interest Excel sheet.....	10
Figure 13 Examples of main cluster workshops and their corresponding agenda – banners and agenda designed by R2M.....	12

Executive summary

The European project “INSTRUCT” (<https://instructproject.eu>) started in June 2020 and ends in February 2023. It aims to act at a market level by providing an operational framework and set of services serving a new generation of skilled and certified workers and fitters and paving the way to legislative changes that overall will stimulate the demand for energy skills across lifecycle and supply chains.

This report in particular describes the work that has been done within Task 5.4: Co-operating and exchanging information with other national and European projects. This work consists of synergies put in place between INSTRUCT project and other H2020, national and global projects.

1. Introduction

1.1. Aims and objectives

This deliverable gives an overview of the synergies developed between the INSTRUCT project and other H2020, national and global projects, while further details about dissemination, communication and stakeholder engagement and exploitation and replication activities are already provided in other WP5 and WP6 deliverables.

This deliverable includes an overview of synergies established with other 13 H2020 EU funded projects, 3 synergies with nationally or regionally funded projects, and 2 with other global initiatives.

1.2. Relations to other activities in the project

This deliverable has strong relation with activities developed in WP5 and WP6, since a lot of the relations listed here have been initiated and then implemented in those WPs. In particular, readers are recommended to consult INSTRUCT Deliverable D5.1 which provides a summary of dissemination workshops that were organised during the INSTRUCT project; many of these workshops were run in cooperation with the projects referenced in this deliverable, and often links to a workshop report and/or workshop recording are provided.

1.3. Report structure

Chapter 6 of this deliverable presents all EU-funded projects identified during the project duration which have established synergies with INSTRUCT. Their main objective as well as their contact person are highlighted for each of them. Similarly, Chapter 7 presents the details on nationally or regionally funded projects with which synergies were established. Chapter 8 completes this report by presenting synergies with other global initiatives at international level, established through the participation of relevant INSTRUCT partners in those initiatives.

1.4. Contribution of partners

R2M is the main author of this report. Moreover, ASM has thoroughly reviewed the draft version and completed the list of synergies and any missing information. All INSTRUCT project partners have contributed to the implementation of networking activities according to this D&C plan.

2. Strategy meetings with sister projects

During the lifetime of INSTRUCT project R2M, supported by ASM, organised and hosted **9 strategy meetings with sister projects** where dissemination managers and workshop presenters from each project came together to brainstorm and plan future joint activities. 3 of these meetings were devoted to specific preparation for an upcoming joint workshop. See details and screenshots of these strategy meetings with sister projects below and in appendix 1.

1. Sustainable Energy Skills post SP2020 discussion meeting, 14.12.2020, 9.00 – 10.30 CET
2. Sustainable Energy Skills selection of joint activities meeting, 27.01.2021, 09.00 – 10.00 CET
3. Sustainable Energy Skills discussion on organisation of 1st webinar hosted by BUILD UP platform, 06.04.2021, 13.00 – 14.00 CET
4. Sustainable Energy Skills webinar dry run, 21.05.2021, 10.00 – 10.30 CET
5. Sustainable Energy Skills SP2021 preparation, topic selection, dissemination plan and format of presentation discussion, 07.07.2021, 10.00 – 11.00 CET
6. Sustainable Energy Skills SP2021 dry run session, 24.09.2021, 10.00 – 11.00 CET
7. Sustainable Energy Skills post SP2021 discussion on future collaborations, 20.10.2021, 15.00 – 16.00 CET
8. Sustainable Energy Skills EUSEW joint presentation planning, 28.02.2022, 12.15 – 13.15 CET
9. Sustainable Energy Skills SP2022 planning, 06.05.2022, 10.00 – 11.00 CET
- 10.

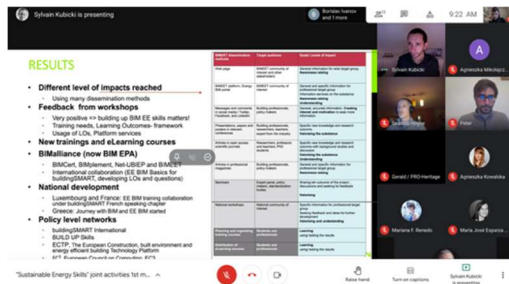


Figure 1 Sustainable Energy Skills post SP2020 discussion meeting, 14.12.2020



First joint meeting	
Title	First joint meeting
Date of meeting	14.12.2020, 09.00 – 10.30 CET
Venue	Teleconference/Google Meet

Participants

1. Agnieszka Kowalska, ASM INSTRUCT
2. Agnieszka Mikolajczyk, ASM INSTRUCT
3. Borislav Ivanov, EUEFECT, The Green Roadshow
4. Gerald Wagenhofer, IIBW / IIBW Heritage
5. Mariana Fernandes, Sustainable Innovations / IIP4ALL
6. Maria José Esparta, FIVE / IIBW Heritage
7. Mahabubul Haque, IIBW INSTRUCT
8. Peter Gyuris, Geonardo / TRAIN4SUSTAIN
9. Brian Deconinck, IIBW INSTRUCT
10. Szabolcs Horvath, IIBW INSTRUCT
11. Sylvain Kubicki, IIBW INSTRUCT
12. Ulf Jakob, HFT Stuttgart / TRAIN4SUSTAIN

Figure 2 Sustainable Energy Skills post SP2020 discussion meeting, 14.12.2020



Second joint meeting	
Title	Second joint meeting
Date of meeting	27.01.2021, 09.00 – 10.00 CET
Venue	Teleconference/Google Meet

Figure 3 Selection of joint activities meeting, 27.01.2021



Figure 4 Selection of joint activities meeting, 27.01.2021

1st Webinar suggested (May 2021)
 Best practice initiatives designed to increase skills in the energy sector: drivers & barriers for experts & end users (45min-1h30min)

<p>Objectives</p> <ul style="list-style-type: none"> Present the best practices initiatives to increase skills in energy sector, expose the fundamentals and how to increase the interest in trainings for energy efficiency <p>Target audience</p> <ul style="list-style-type: none"> Designers, architects, engineers, building managers, technicians, installers, blue collar workers including apprentices, other building professionals and general public. 	<p>Speakers</p> <ul style="list-style-type: none"> BUSLeague, INSTRUCT, HP4ALL, PRO Heritage, TRAIN4SUSTAIN, The i-CEER Roadshow <p>Tentative agenda</p> <ul style="list-style-type: none"> Introduction Presentation of best practices in energy sector Increase interest in trainings Cooperation on EE-Skills qualification BIM Skills and training Heat Pump market
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Figure 5 Sustainable Energy Skills discussion on organisation of 1st webinar hosted by BUILD UP platform, 06.04.2021

1st Webinar suggested (May 2021)
 Best practice initiatives designed to increase skills in the energy sector (45min-1h30min)

Figure 6 Sustainable Energy Skills discussion on organisation of 1st webinar hosted by BUILD UP platform, 06.04.2021

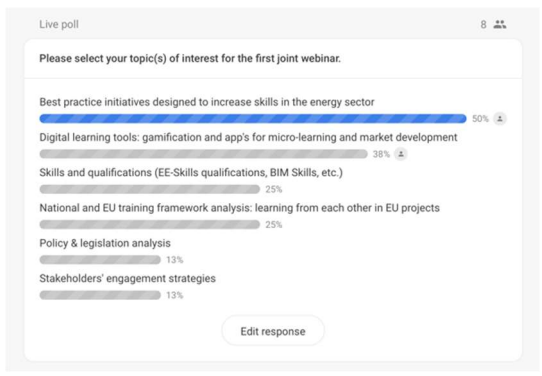


Figure 7 Sustainable Energy Skills discussion on organisation of 1st webinar hosted by BUILD UP platform, 06.04.2021

Author rehearsal for Sustainable Places 2021
 The 8th annual edition of Sustainable Places (SP2021) is a hybrid event, from 28th September to 1st October, with the opportunity to be hosted in Rome, Italy. SP2021 is a gathering house for 100 European projects representing 4000 million in R&D and 1000 research performing organisations.

Figure 8 Sustainable Energy Skills SP2021 dry run session, 24.09.2021



Figure 9 Sustainable Energy Skills post SP2021 discussion on future collaborations, 20.10.2021

"Sustainable Energy Skills in Construction Sector"
 joint activities meeting with sister projects
 7th joint meeting - 06.05.2021, 10.00 - 11.00 CET

SUSTAINABLE PLACES 2022
 6th September - 9th September
 Nice, Centre Universitaire Méditerranéen

Figure 10 Sustainable Energy Skills SP2022 planning, 06.05.2022

3. Energy skills repository

To facilitate communication between sister projects involved in the strategy meetings organised by INSTRUCT (see chapter 2), a distribution list was created. This list involves each project’s key dissemination managers and other relevant contacts.

In order to collect useful documents and projects descriptions in a single folder, an [“Energy skills EU projects” Sharepoint repository](#) was created by ASM and R2M in February 2021. All members of the mailing list were given access to this shared space.

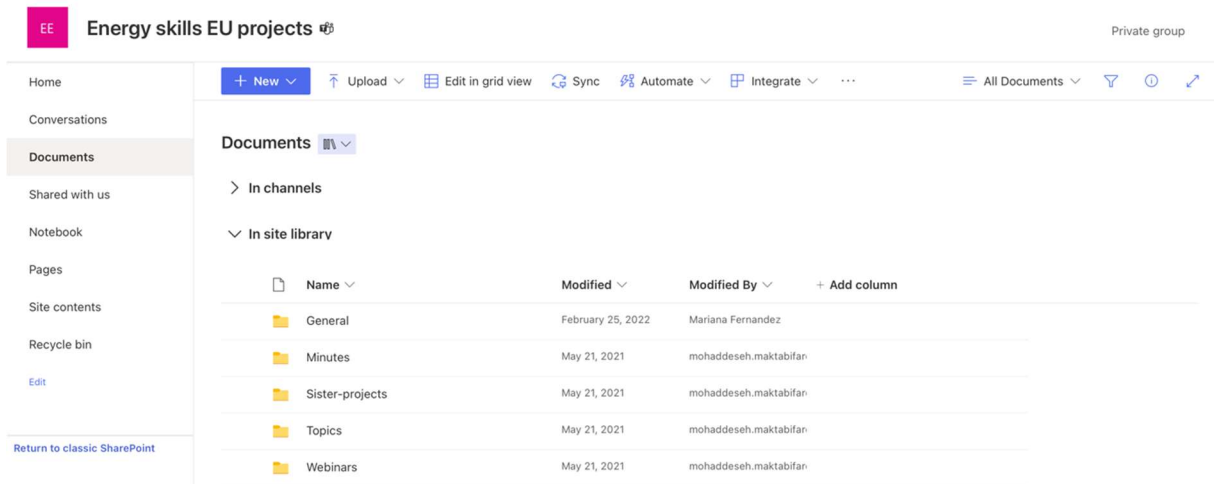


Figure 4 Energy skills EU projects Sharepoint repository

4. Topics of interest for joint activities

As a result of the 3rd joint strategy meeting, a live slido poll was run to capture sister projects’ topics of interest for the joint webinars to be organised. An [Excel sheet](#) was then developed, gathering these same topics, and allowing members to record and further elaborate on their projects’ interests for future joint activities.

TOPIC OF INTEREST FOR JOINT WEBINARS AND OTHER ACTIVITIES						INSTRUCTIONS:	
NO.	PROJECTS	WEBINAR 1 - APRIL 2021	WEBINAR 2 - OCTOBER 2021	WEBINAR 3 - APRIL 2022	GENERAL AREAS OF INTEREST FOR OTHER JOINT ACTIVITIES	NOTES	
1	bimeet	1. e.g. Energy transition within built environment					Please enter few of your topics of interest for "WEBINAR 1 - APRIL 2021", "WEBINAR 2 - OCTOBER 2021" and "WEBINAR 3 - APRIL 2022". Consider your project's achieved results and submitted deliverables submitted by each date. Add extra row(s) if you want to propose more than 4 topics.
2	BUS	1. Cooperation on EU skills qualifications (from H2020 to Horizon and Trans-European)	1. April for micro-learning	1. How National implementation plans stimulate learning from each other in EU projects	Strong expertise on methods and frameworks to develop general and easy to follow skills qualifications and learning outcomes		
3	WIND4EU	1. Best practice initiatives designed to increase skills in the energy sector	1. Digital means for personal recognition	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		Please enter your general topics of interest for other joint activities under "GENERAL AREAS OF INTEREST FOR OTHER JOINT ACTIVITIES" tab. Add extra row(s) if you want to propose more than 4 topics.
4	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
5	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		If you are interested in any topic proposed by another project, vote for it by putting a symbol in front of that topic under "VOTE" tab.
6	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
7	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		Add your notes/concerns about your topics of interest, proposed webinar dates, etc. under "NOTES" tab.
8	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
9	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		We are organizing our project conferences between 2024 and 2025 (Oct 2024) and therefore, we are not available then!
10	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
11	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		We are organizing our project conferences between 2024 and 2025 (Oct 2024) and therefore, we are not available then!
12	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
13	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		We are organizing our project conferences between 2024 and 2025 (Oct 2024) and therefore, we are not available then!
14	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
15	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		We are organizing our project conferences between 2024 and 2025 (Oct 2024) and therefore, we are not available then!
16	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
17	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		We are organizing our project conferences between 2024 and 2025 (Oct 2024) and therefore, we are not available then!
18	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		
19	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		We are organizing our project conferences between 2024 and 2025 (Oct 2024) and therefore, we are not available then!
20	INTEACT	1. Best practice initiatives designed to increase skills in the energy sector	1. National and European Union training dissemination activities	1. Best practice initiatives designed to increase skills in the energy sector	Strong expertise on connecting digital learning tools in order to make learning more interactive		

Figure 5 Sister projects topics of interest Excel sheet

5. Main cluster workshops

Since the creation of Energy skills cluster and mailing list, dissemination partners of INSTRUCT (R2M and ASM) either organised the below events (4 events) or supported the participation of sister projects in an event (1 event).

October 27-30, 2020
Digital Event

SUSTAINABLE PLACES 2020

Workshop on Sustainable energy skills in the construction sector

Horizon 2020 European Union Funding for Research & Innovation

Market Research and Analysis Centre | REM SOLUTION | INSTRUCT | bimeet

LIST | HPA | BALL | TRAIN4SUSTAIN | BUS LEAGUE

BUILD UP The European Portal For Energy Efficiency In Buildings

SUSTAINABLE ENERGY SKILLS IN THE CONSTRUCTION SECTOR

27 MAY 2021 13.00 – 14.30 CEST 1st webinar

REGISTER HERE

SUSTAINABLE ENERGY SKILLS IN THE CONSTRUCTION SECTOR WEBINAR SERIES

27 MAY 2021 13.00 – 14.30 CEST 1st webinar

REGISTER HERE

- BEST PRACTICES INITIATIVES DESIGNED TO INCREASE SKILLS IN THE CONSTRUCTION SECTOR
- DIGITAL LEARNING TOOLS FOR MICRO-LEARNING AND MARKET DEVELOPMENT

BUILD UP | BUS LEAGUE | TRAIN4SUSTAIN | HP4ALL | INSTRUCT | nZEB Roadshow | PRO-Heritage | CraftEdu

Part 1	13.00 – 13.10	Introduction Welcome statement and webinar overview Camilo Pariz, BUILD UP
	13.10 – 13.45	Overview on the status and perspectives of BUILD UP Skills Luca Angelino, Project Advisor, European Commission - European Climate, Infrastructure and Environment Executive Agency (CINEA)
Part 2	13.10 – 13.45	Session 1 Best practices initiatives designed to increase skills in the construction sector. 20 min + 15 min Q&A - Methods and best practices utilized to evaluate, report on the competence of building professionals in the project (TRAIN4SUSTAIN) Peter Gyuris, Geonardo - Best practice initiatives designed to increase skills in the Heat Pump sector (HP4ALL) Seamus Hejny, LIT - The correlation between training and energy efficiency, community learning approach - the energy BIM platform (INSTRUCT) Ioan Petri, Cardiff University - Development of mobile equipment for on-site training and demonstration: the "nZEB" project in Croatia (The nZEB Roadshow) Bijan Mikanovic, Unizg Q&A
	13.45 – 14.15	Session 2 Digital learning tools: gamification/apps for micro-learning and market development. 15 min + 15 min Q&A - Co-creation and use of the BUILD UP Skills advisor-app (BUSLeague) Jan Gornjalk, ISSD - Certification and validation of PRO-Heritage competencies by using digital tools - e-learning and exam portal (PRO-Heritage) Gerald Wagenhofer, URW - CraftEdu's e-learning platform: an operational approach to continuous upskilling and mutual recognition of competences for construction workers in Central Europe (CraftEdu) Jiri Karsner, SEVEN Q&A
	14.15 – 14.30	Conclusions and end of session Camilo Pariz, BUILD UP

SUSTAINABLE PLACES 2021

SEP. 28 – OCT. 1, 2021 ROME, ITALY

Sustainable energy skills in the construction sector Joint Workshop 2.0

Logos: BUILD UP, BUS LEAGUE, TRAIN4SUSTAIN, HP4ALL, INSTRUCT, nZEB Roadshow, PRO-Heritage, CraftEdu, SEVEN, BIMEED, ARISE

Agenda

- 15:30 Opening .Workshop overview
Manfredsson Mascafortes
R2M Solution
- 15:35 Welcome statement
Amandine De Coster-Lacourt
European Commission
- 15:40 INSTRUCT
Ioan Petri
Cardiff University
- 15:45 BUSLeague
Majken Jørgensen
HP4 Green Building Council
- 15:50 TRAIN4SUSTAIN
Li Jiansuo
ISSD
- 15:55 HP4ALL
Gerald Wagenhofer
URW
- 16:00 The nZEB Roadshow
Sana Dapic
Custler Ph nZEB

SUSTAINABLE PLACES 2022

ENERGY SKILLS IN CONSTRUCTION
"Sustainable Energy Skills in the Construction Sector 3.0"
SEP. 6TH – SEP 9TH, 2022; NICE, FRANCE

Logos: nZEB ready, PRO-Heritage, BUS LEAGUE, TRAIN4SUSTAIN, INSTRUCT, ARISE

Logos: REM SOLUTION, I3e nice, UNIVERSITÉ CÔTE D'AZUR, MÉTROPOLE NICE CÔTE D'AZUR, VILLE DE NICE

Agenda

- 16:05 PRO-Heritage
Gerald Wagenhofer
URW
- 16:10 CraftEdu
Jiri Karsner
SEVEN
- 16:15 BIMEED
Stjep Lucic
STC
- 16:20 ARISE
Paul McCormack
BIMEED
- 16:25 SEetheSkills
Ljiljana Stojanovska-Georgievska
nZEB
- 16:30 Q&A
All the projects
- 16:50 Conclusion
Amandine De Coster-Lacourt
European Commission
- 16:55 Close
Manfredsson Mascafortes
R2M Solution



Figure 6 Examples of main cluster workshops and their corresponding agenda – banners and agenda designed by R2M

6. Synergies with other H2020 funded projects

6.1. ARISE

Website: <https://www.ariseproject.eu/>

Project lifetime: 1 September 2021 – 29 February 2024

Duration of cooperation: 18 months

Number of joint activities: 5

Project description: Europe's transition to a greener economy has sparked growth of the renewable energy sector, requiring a workforce equipped with skills in sustainable energy. The EU-funded ARISE project will develop a recognition scheme of digital energy efficient Building Information Modelling (BIM) construction skills. An innovative system of universal learner focused stackable micro-credentials for micro module units of learning will be supported by a blockchain-based micro-credentialling system. It will revolutionise the learning process with a system based on skills recognition rather than accreditation, and will monetise the skills and learning exchange: CERTcoin, an innovative currency of skills and learning of the construction sector, will be the reward for acquiring a competence at a certain level.

Contact person: Paul McCormack (BELFAST MET)

Synergies: Paul McCormack (BELFAST MET) was a panelist at the Sustainable Energy Skills in the Construction Sector 2.0 and 3.0 workshops at Sustainable Places 2021 and 2022. Moreover, he was one of the speakers at the EUSEW2022 extended programme Leveraging digitalisation and construction skills toward 2030 energy goals on behalf of the Energy skills sister projects. ARISE also participated to the publication of the writing of the workshop proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “ [Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M
- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- “Sustainable Energy Skills in the Construction Sector 3.0” [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))
- [Leveraging digitalisation and construction skills toward 2030 energy goals](#) at [EUSEW2022](#) extended programme (see recording, agenda and presentations [here](#)), Organised by Sustainable Innovations, R2M, ASM

6.2. BIM2TWIN

Website: <https://bim2twin.eu/>

Project lifetime: 1 November 2020 – 30 April 2024

Duration of cooperation: 14 months

Number of joint activities: 1

Project description: The use of advanced technology is essential for improving the construction industry by allowing for more efficient management, increased productivity, and reduction of operational waste and carbon footprint. The EU-funded BIM2TWIN project will create a Digital Building Twin (DBT) platform for construction site management using artificial intelligence (AI) and semantic linked data techniques. The platform will provide full situational insight on the as-built product and as-performed processes, which will be used and compared to the as-designed product and as-planned processes through an extensible set of construction management applications to implement a closed-loop Plan-Do-Check-Act process. The full process will rely on multiple onsite sensors for data acquisition and cross-domain analysis, and complex AI-based event processing. The DBT will offer an application programming interface allowing construction management applications to interoperate with its data/information/knowledge bases.

Contact person: Rafael Sacks (Israel Institute of Technology)

Synergies: Rafael Sacks (Israel Institute of Technology) was a panelist at BIM Skills Workshop at The Joint Conference CIB in Luxembourg. (see details on joint activities below):

- “[BIM Skills Workshop](#)” at [The Joint Conference CIB W78 – LDAC 2021](#), 14 October, Luxembourg (see agenda [here](#)), Organised by LIST

6.3. BIMEET

Website: <https://www.energy-bim.com>

Project lifetime: 1 September 2017 – 29 February 2020

Duration of cooperation: 5 months

Number of joint activities: 2

Project description: The European Construction sector is facing unprecedented challenges to achieve ambitious energy efficiency objectives (with the aim to generalize Near-Zero Energy Buildings), in an economic crisis context dominated by reduced investments, search for cost effectiveness and high productivity. Moreover the industry is experiencing its digital revolution, with Building Information Modeling (BIM) approach gaining significant interest across Europe. Member states implement very different approaches through regulations and maturity targets, which always face the traditional low-tech and informal practices of construction businesses (a fragmented sector, dominated by SMEs). BIMEET project aims to leverage the take-up of ICT and BIM through a significant upgrade of the skills and capacities of the EU construction workforce. This Coordination and Support Action project is built around a strong consortium relying on educational and research expertise, robust experience of accrediting and labelling bodies, training supply chain and a wide engagement of industry led best practice (already committed in an EU-wide expert panel).

Contact person: Dr. Sylvain Kubicki (LIST)

Synergies: BIMEET platform acted as the basis of the INSTRUCT Energy-Education platform – the ‘one-stop-shop’ solution to access BIM for energy, training and education, knowledge, expertise, best practice and associated services-.

Dr. Sylvain Kubicki (LIST) was a panelist at the Sustainable Energy Skills in the Construction Sector 1.0 Workshop at Sustainable Places 2020. Moreover, BIMEET participated to the publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 1.0 Workshop](#) at [Sustainable Places 2020](#) digital event; 27-30 October 2020 (M5), Organised by R2M, ASM, (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector](#)” proceedings publication; 12 January 2021 (M8), R2M, ASM

6.4. BIMzeED

Website: <https://bimzeed.eu>

Project lifetime: 1 November 2018 – 30 November 2021

Duration of cooperation: 2 months

Number of joint activities: 3

Project description: The BIMzeED project focuses on the training needs for the current and future construction industry with the main purpose to encourage 1) better employability 2) low-carbon growth, 3) green and NZEB skills 4) increase in youth employment. The challenge of the BIMzeED project is to overcome skills mismatching and improve employability in the current European construction market by improving and extending the existing skills of Trainers, SMEs, site managers, craftworkers and other experienced operatives.

Contact person: Jose Lucas (ITEC), Gloria Callinan (LIT), Larissa Derosso (ACE-CAE), Veronika Schropfer (ACE-CAE), Srećko Vrčak (REGEA)

Synergies: Jose Lucas (ITEC) was a panelist at the Sustainable Energy Skills in the Construction Sector 2.0 workshop at Sustainable Places 2021. Moreover, BIMzeED participated to the publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “ [Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), Organised by R2M
- “[BIM Skills Workshop](#)” at [The Joint Conference CIB W78 – LDAC 2021](#), 14 October, Luxembourg (see agenda [here](#)), Organised by LIST

6.5. BUSLeague

Website: <https://busleague.eu/>

Project lifetime: 1 September 2020 – 28 February 2023

Duration of cooperation: 28 months

Number of joint activities: 9

Project description: With many sectors turning towards sustainable energy use, the construction industry demands a skilled workforce and experienced capacity building. The EU-funded BUSLeague project will address and control the challenges created by the rise in demand for energy-skilled and experienced workers for the building planning, operation and support value chain. The project will develop and apply European recognition of energy skills in conjunction with improving training methods and techniques already demonstrated by EU and national initiatives such as BUILD UP Skills and Construction Skills. BUSLeague will focus on a combination of mutual recognition of energy skills, awareness raising, capacity building and legislative changes. SMEs will be involved by engaging local and regional workforces.

Contact person: Pepa Esparza Arbona (IVE), Jan Cromwijk (ISSO), Marion Jammet (IGBC)

Synergies: Jan Cromwijk (ISSO) was a panelist at the Sustainable Energy Skills in the Construction Sector 1.0 and 3.0 workshop at Sustainable Places 2020 and 2022 and Jose Lucas (ITEC) was a panelist at the 2nd edition of the same workshop. Moreover, BUSLeague participated to the below events and publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 1.0 Workshop](#) at [Sustainable Places 2020](#) digital event; 27-30 October 2020 (M5), Organised by R2M, ASM (see recording, agenda and presentations [here](#))
- “ [Sustainable Energy Skills in the Construction Sector](#)” proceedings publication; 12 January 2021 (M8), Organised by R2M, ASM
- [Presence of INSTRUCT](#) and BUSLeague at the [12th BUILD UP Skills European Exchange Meeting](#)
- [Sustainable Energy Skills in the Construction Sector EU BUILD UP webinar](#), with a special focus on Best practice initiatives designed to increase skills in the Heat Pump sector and digital learning tools for micro-learning and market development, 27 May 2021, Organised by R2M, ASM
- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “ [Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M

- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- “Sustainable Energy Skills in the Construction Sector 3.0” [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))
- [Leveraging digitalisation and construction skills toward 2030 energy goals](#) at [EUSEW2022](#) extended programme (see recording, agenda and presentations [here](#)), Organised by Sustainable Innovations, R2M, ASM

6.6. CraftEdu

Website: <https://www.craftedu.eu>

Project lifetime: 1 June 2018 – 30 November 202A

Duration of cooperation: 6 months

Number of joint activities: 3

Project description: CraftEdu set up the national qualification and training scheme for craftsmen and on-site workers in the field of energy efficiency and use of renewable energy sources in buildings. It also developed the training offer delivered via Slovak national scheme STAVEDU.

Contact person: Jiri Karasek (SEVEn)

Synergies: Jiri Karasek (SEVEn) was a panelist at the Sustainable Energy Skills in the Construction Sector 2.0 workshop at Sustainable Places 2021. Moreover, CraftEdu was presented in the EU BUILDUP webinar and contributed to the publication of the writing of the proceedings (see **details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector EU BUILD UP webinar](#), with a special focus on Best practice initiatives designed to increase skills in the Heat Pump sector and digital learning tools for micro-learning and market development, 27 May 2021, Organised by R2M, ASM
- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “ [Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M

6.7. HP4ALL

Website: <https://hp4all.eu>

Project lifetime: 1 September 2020 – 28 February 2023

Duration of cooperation: 12 months

Number of joint activities: 6

Project description: Heat pump (HP) technology is considered to be an energy-saving technology and as such calls for efficiency and skills development within the HP sector. The EU-funded HP4All project aims to allow improvement of capacity and skills within the HP industry and secure the energy efficiency benefits that HP technology offers. The project brings

together a wide range of actors from the supply and the demand sides to increase, develop and promote the desired skills for high-quality HP and to optimise HP installations within residential and non-residential buildings. It will develop a package of different instruments and resources, including an HP Competency Framework to facilitate mutual recognition of HP skills and, from an end-user perspective, an HP Knowledge Hub to deliver support, instructions and tools.

Contact person: Mariana Fernandez (Sustainable Innovations), Padraic O'reilly (LIT), Seamus Hoyne (LIT)

Synergies: Seamus Hoyne (LIT) was a panelist at the Sustainable Energy Skills in the Construction Sector 1.0 at Sustainable Places 2020 and Padraic O'reilly (LIT) was a panelist at the 2nd edition of the same workshop. Moreover, HP4ALL participated to the below events and publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 1.0 Workshop](#) at [Sustainable Places 2020](#) digital event; 27-30 October 2020 (M5), Organised by R2M, ASM (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector](#)” proceedings publication; 12 January 2021 (M8), R2M, ASM
- [Sustainable Energy Skills in the Construction Sector EU BUILD UP webinar](#), with a special focus on Best practice initiatives designed to increase skills in the Heat Pump sector and digital learning tools for micro-learning and market development, 27 May 2021, Organised by R2M, ASM
- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M
- [Leveraging digitalisation and construction skills toward 2030 energy goals](#) at [EUSEW2022](#) extended programme (see recording, agenda and presentations [here](#)), Organised by Sustainable Innovations, R2M, ASM

6.8. The nZEB Roadshow

Website: <https://www.nzebroadshow.eu>

Project lifetime: 1 June 2020 – 31 May 2023

Duration of cooperation: 25 months

Number of joint activities: 7

Project description: Based on EU environmental requirements, all new buildings from 2021 (public buildings from 2019) must be nearly-zero-energy buildings (nZEBs), which means a building with very high energy performance. The EU-funded nZEB Roadshow project will perform national-level marketing and communication promotions in five EU countries, organising nZEB weeks in selected cities in each of the participant countries. The action consists of a wide range of events including construction products, real estate exhibitions, practical demonstration and real-time construction, training for both designers and workers, career orientation and job centres focusing on the local SME construction sector. Prefabricated modular mobile buildings will be used as information centres to raise awareness of the benefits of nZEBs.

Contact person: Dragomir Tzanev (ENEFFECT), Horia Petran (NIRD URBAN-INCERC), Sonia Raetchi (Cluster Pro nZEB)

Synergies: Dragomir Tzanev (ENEFFECT), Sonia Raetchi (Cluster Pro nZEB) and Horia Petran (NIRD URBAN-INCERC) were panelists at the 3 editions of the Sustainable Energy Skills workshop at Sustainable Places conference. Moreover, The nZEB Roadshow participated in the below events and publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 1.0 Workshop](#) at [Sustainable Places 2020](#) digital event; 27-30 October 2020 (M5), Organised by R2M, ASM (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector](#)” proceedings publication; 12 January 2021 (M8), R2M, ASM
- [Sustainable Energy Skills in the Construction Sector EU BUILD UP webinar](#), with a special focus on Best practice initiatives designed to increase skills in the Heat Pump sector and digital learning tools for micro-learning and market development, 27 May 2021, Organised by R2M, ASM
- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M
- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- “Sustainable Energy Skills in the Construction Sector 3.0” [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))

6.9. nZEB Ready

Website: <https://nzebready.eu>

Project lifetime: 1 September 2021 – 31 August 2024

Duration of cooperation: 6 months

Number of joint activities: 3

Project description: To promote improved energy performance of buildings, the EU’s Energy Performance of Buildings Directive requires all new buildings to be nearly zero-energy buildings (nZEB). However, the large-scale uptake of nZEB construction of new buildings and renovation towards nZEB levels is a challenge. Many EU Member States have not yet fully embraced nZEB due to the high costs and the skills gaps in the building sector. The EU-funded nZEB Ready project will increase market readiness for an effective nZEB implementation. It will address the main barriers in Bulgaria, Croatia, Portugal, Poland and Romania and support skills enhancement with a mutual recognition training and certification scheme. The project will also raise awareness about nZEB benefits.

Contact person: Horia Petran (NIRD URBAN-INCERC)

Synergies: Horia Petran (NIRD URBAN-INCERC) was a panelist at the Sustainable Energy Skills in the Construction Sector 3.0 workshop at Sustainable Places 2022. Moreover, nZEB Ready

participated to the below events and publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- “Sustainable Energy Skills in the Construction Sector 3.0” [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))
- [Leveraging digitalisation and construction skills toward 2030 energy goals](#) at [EUSEW2022](#) extended programme (see recording, agenda and presentations [here](#)), Organised by Sustainable Innovations, R2M, ASM

6.10. PRO-Heritage

Website: <https://www.pro-heritage.eu/>

Project lifetime: 1 February 2019 – 31 July 2022

Duration of cooperation: 5 months

Number of joint activities: 6

Project description: There are many historical buildings in Europe that need frequent quality conservation. They should be also adapted to meet European requirements for reduction of climate change impact and energy consumption. In most cases, this involves sophisticated strategies of ‘soft maintenance’ developed for traditional buildings, based on traditional skills of craftsmen and still reducing their energy consumption by 20 % and increasing renewables to 50 %. Unfortunately, today, there are few craftsmen with appropriate skills and competences. To solve this, the EU-funded PRO-Heritage project will establish a permanent education resource for professionals and craftsmen providing excellent competences and skills for built heritage and support the exchange of those competences and skills across Europe.

Contact person: Gerald Wagenhofer (UBW)

Synergies: Gerald Wagenhofer (UBW) was a panelist at the Sustainable Energy Skills in the Construction Sector 2.0 and 3.0 workshop at Sustainable Places 2021 and 2022. Moreover, PRO-Heritage participated to the below events and publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector EU BUILD UP webinar](#), with a special focus on Best practice initiatives designed to increase skills in the Heat Pump sector and digital learning tools for micro-learning and market development, 27 May 2021, Organised by R2M, ASM
- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M
- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- “Sustainable Energy Skills in the Construction Sector 3.0” [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))

- [Leveraging digitalisation and construction skills toward 2030 energy goals](#) at [EUSEW2022](#) extended programme (see recording, agenda and presentations [here](#)), Organised by Sustainable Innovations, R2M, ASM

6.11. SEetheSkills

Website: <https://seetheskills.eu>

Project lifetime: 1 June 2021 – 31 May 2024

Duration of cooperation: 17 months

Number of joint activities: 6

Project description: The built environment – our homes, places of work, schools, hospitals, recreation centres and public buildings – is the single largest energy consumer in the EU. It is also one of the largest carbon dioxide emitters. Collectively, buildings in the EU are responsible for 40 % of our energy consumption and 36 % of greenhouse gas emissions. In this context, the EU-funded SEetheSkills project will collect best practices from five countries (North Macedonia, Slovakia, Slovenia, Spain and the Netherlands) in meeting needs for energy efficiency in the building sector. Specifically, the project will promote the visibility of sustainable energy skills in the construction of new and renovation of existing buildings stocks by creating an online repository. It will also enable the validation of energy skills to raise their value.

Contact person: Lihnida Stojanovska-Georgievska (UKIM)

Synergies: Lihnida Stojanovska-Georgievska (UKIM) was a panelist at the Sustainable Energy Skills in the Construction Sector 2.0 and 3.0 workshop at Sustainable Places 2021 and 2022. Moreover, SEetheSkills participated to the below events and publication of the writing of the proceedings (see details on joint activities below):

- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “ [Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M
- “[BIM Skills Workshop](#)” at [The Joint Conference CIB W78 – LDAC 2021](#), 14 October, Luxembourg (see agenda [here](#)), Organised by LIST
- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- “Sustainable Energy Skills in the Construction Sector 3.0” [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))
- [Leveraging digitalisation and construction skills toward 2030 energy goals](#) at [EUSEW2022](#) extended programme (see recording, agenda and presentations [here](#)), Organised by Sustainable Innovations, R2M, ASM

6.12. TRAIN4SUSTAIN

Website: <https://train4sustain.eu>

Project lifetime: 1 May 2020 – 31 October 2022

Duration of cooperation: 28 months

Number of joint activities: 8

Project description: The dynamic environment and evolving demands of construction require the constant training and upskilling of relevant staff and labourers. The EU-funded TRAIN4SUSTAIN project will establish future-oriented training and qualification quality standards. The aim is to foster a broad uptake of sustainable energy skills in the European construction sector. The project will also address the issue of mutual recognition as a way to ensure that training accredited in one country is recognised easier in another country. Overall, it will build on the newly developed EU framework for energy and resource efficient buildings, as well as on European frameworks to expand energy skill qualifications across borders. To this end, it will promote a competence quality standard, a European Skills Registry and a Skills Passport.

Contact person: Dr. Uli Jakob (drjakobenergyresearch), Peter Gyuris (GEONARDO), Evdokia Bairampa (GEONARDO)

Synergies: Peter Gyuris (GEONARDO) was a panelist at the Sustainable Energy Skills in the Construction Sector 1.0 workshop at Sustainable Places 2020 and Dr. Uli Jakob (drjakobenergyresearch) was a panelist at the 2nd and 3rd edition of the same workshop. Moreover, TRAIN4SUSTAIN participated to the below events and publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 1.0 Workshop](#) at [Sustainable Places 2020](#) digital event; 27-30 October 2020 (M5), Organised by R2M, ASM, (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector](#)” proceedings publication; 12 January 2021 (M8), R2M, ASM
- [Sustainable Energy Skills in the Construction Sector EU BUILD UP webinar](#), with a special focus on Best practice initiatives designed to increase skills in the Heat Pump sector and digital learning tools for micro-learning and market development, 27 May 2021, Organised by R2M, ASM
- [Sustainable Energy Skills in the Construction Sector 2.0 Workshop](#) at [Sustainable Places 2021](#) hybrid event; 28 September - 1 October 2021, Rome, Italy (M16), Organised by R2M (see recording, agenda and presentations [here](#))
- “[Sustainable Energy Skills in the Construction Sector 2.0](#)” environmental sciences proceedings publication; 29 November 2021 (M18), R2M
- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- “Sustainable Energy Skills in the Construction Sector 3.0” [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))
- [Leveraging digitalisation and construction skills toward 2030 energy goals](#) at [EUSEW2022](#) extended programme (see recording, agenda and presentations [here](#)), Organised by Sustainable Innovations, R2M, ASM

6.13. BUS-GoCircular

Website: <https://busgocircular.eu>

Project lifetime: 1 September 2021 – 29 February 2024

Duration of cooperation: 6 months

Number of joint activities: 2

Project description: One of the EU's goals is to stimulate demand for sustainable energy skills in the building sector, and increase the number of skilled building professionals across the building design, operation and maintenance value chain. The EU-funded BUS-GoCircular project aims to tackle the challenges associated with stimulating this demand, and through capacity building boost the number of capable professionals in the field. The project will develop and implement a circular construction skills qualification framework specifically focusing on multifunctional green roofs, facades and interior elements. Specific activities concerning companies, real estate, homeowners and local authorities will be developed, including support towards legislative changes through circular green procurement and recognition of skills.

Contact person: Jan Cromwijk (ISSO)

Synergies: Jan Cromwijk (ISSO) was a panelist at the Sustainable Energy Skills in the Construction Sector 3.0 workshop at Sustainable Places 2022. Moreover, BUS-GoCircular participated to the below events and publication of the writing of the proceedings (**see details on joint activities below**):

- [Sustainable Energy Skills in the Construction Sector 3.0 Workshop](#) at [Sustainable Places 2022](#) hybrid event; 6-9 September 2022, Nice, France (M28), Organised by R2M (see recording, agenda and presentations [here](#))
- "Sustainable Energy Skills in the Construction Sector 3.0" [Open Research Europe \(ORE\)](#) publication, R2M (to be published in a [specific collection dedicated to Sustainable Places 2022](#))

7. Synergies with nationally or regionally funded projects and networks

- Mediterranean Institute of Risk, Environment and Sustainable Development (<https://imredd.fr/en/home/>)

IMREDD is an Institute of Innovation and Partnerships (2IP) created in January 2020 which is interested in a societal challenge: the intelligent and resilient territory facing all environmental issues. Its activities are based on four Strategic Activity Areas (SAAs): energy through the issues of intelligent buildings/neighbourhoods, mobility, risks, the environment and, in a transversal manner, human beings. The philosophical, ethical, safety, well-being, behavioural and usage aspects are at the heart of smart city projects.

Contact person: Arianna Calza (IMREDD)

Synergies: Mohaddeseh Maktabifard (R2M) was able to share the target outcomes of INSTRUCT in the network and to exchange knowledge.

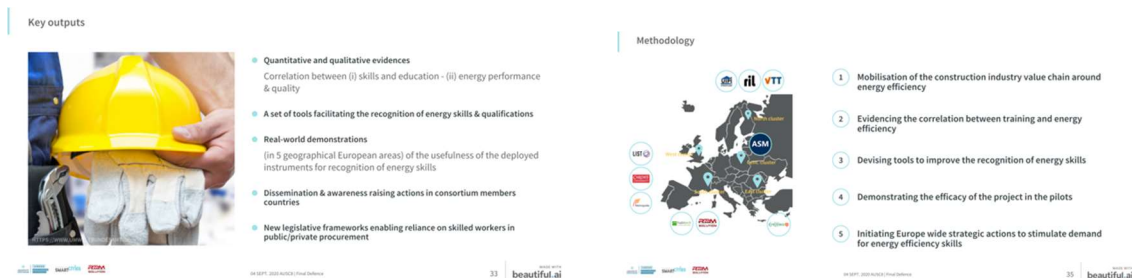


Figure 14. Screenshots from presentation on 04.11.2020

- Dalkia Smart Building (<https://www.dalkia.fr>)
Subsidiary of the EDF group and one of the major players in energy services, present throughout France and internationally.
Contact person: Jean-Christophe Clement (Dalkia)
Synergies: R2M was able to share the target outcomes of INSTRUCT in the network and to exchange knowledge.
- French Network of Energy Transition Stakeholders (<https://www.capenergies.fr/en/>)
The cluster brings together a dynamic network of 530 members - large industrial groups, companies including a majority of SMEs & start-ups, research and training centers, communities and financiers - and more than 1800 partners specializing in energy, mobility and digital technology, including 285 in Europe.

Since its creation, 766* innovative projects have been labeled and 444* projects have obtained public funding for nearly €550 million* (for a total budget of €2,198 million*). Projects are evaluated by a high-level independent labeling committee, which, beyond the award of the label, provides constructive support to project leaders through the relevance of their crossed perspectives and experience.

Contact person: Valentina Vologni (Capenergies)

Synergies: R2M was able to share the target outcomes of INSTRUCT in the network and to exchange knowledge.

8. Synergies with other global initiatives

- The European Construction, built environment and Energy efficient building Technology Platform (ECTP) (<https://www.ectp.org/index.php>)
The European Construction, built environment and energy efficient building Technology Platform (ECTP) is a leading membership organisation promoting and influencing the future of the Built Environment. First founded in 2004 ECTP brings together the collective vision for a leading edge European Built Environment on behalf of our Members. ECTP gathers more than 140 Member organisations from across the construction sector and other sectors from the whole supply chain of the Built Environment.

Contact person: Sylvie Corrado (ECTP)

Synergies: As a member, R2M was able to disseminate INSTRUCT events further on the platform and furthermore, enlist INSTRUCT on the [ECTP project database](#).

- Enlit Europe (<https://www.enlit-europe.com/welcome>)
[Enlit.World](#) is an online platform that tells the stories of the people, projects and technologies driving the energy transition. Enlit Europe is part of a [series of events](#) unlike any other – where energy professionals from around the globe come together to collaborate and innovate to solve the most pressing issue in energy.

Contact person: Linda Görtler-Weiss (clarionevents)

Synergies: R2M was able to reference INSTRUCT on the [Enlit EU project zone](#).

9. References

1. INSTRUCT's website. Available online: <http://www.instructproject.eu> (accessed on 18 October 2020).
2. BIMEET's Page on Community Research and Development Information Service (CORDIS). Available online: <http://cordis.europa.eu/project/id/753994> (accessed on 18 October 2020).
3. BUSLeague's Page on Community Research and Development Information Service (CORDIS). Available online: <http://cordis.europa.eu/project/id/892894> (accessed on 18 October 2020).
4. Renovation Wave: Doubling the Renovation Rate to Cut Emissions, Boost Recovery and Reduce Energy Poverty 14 October 2020 Press Release Page on the European Commission. Available online: https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1835 (accessed on 19 October 2020).
5. ARISE Website. Available online: <https://www.ariseproject.eu/> (accessed on 22 November 2021).
6. BUSLeague's Website. Available online: <https://busleague.eu> (accessed on 28 October 2021).
7. TRAIN4SUSTAIN's Website. Available online: <http://train4sustain.eu/> (accessed on 28 October 2021).
8. BIMzeED's Website. Available online: <https://bimzeed.eu> (accessed on 28 October 2021).
9. SEetheSkills' Page on Community Research and Development INFORMATION Service (CORDIS). Available online: <https://cordis.europa.eu/project/id/101033743> (accessed on 28 October 2021).
10. HP4ALL's Website. Available online: <http://hp4all.eu> (accessed on 28 October 2021).
11. PRO-Heritage's Website. Available online: <https://www.pro-heritage.eu> (accessed on 22 October 2021).
12. The nZEB Roadshow's Website. Available online: <http://www.nzebroadshow.eu/#> (accessed on 28 October 2021).
13. CraftEdu's Website. Available online: <https://www.craftedu.eu> (accessed on 22 October 2021).
14. CraftEdu's Page on Community Research and Development Information Service (CORDIS). Available online: <https://cordis.europa.eu/project/id/785036> (accessed on 22 October 2021).
15. Enlit Europe page. Available online: <https://www.enlit-europe.com/welcome> (accessed on 2 February 2023).
16. The European Construction, built environment and Energy efficiency building Technology Platform (ECTP). Available online: <https://www.ectp.org/index.php> (accessed on 2 February 2023).
17. Network of Energy Transition Stakeholders page. Available online: <https://www.capenergies.fr/en/> (accessed on 2 February 2023).
18. Dalkia Smart Building page. Available online: <https://www.dalkia.fr> (accessed on 2 February 2023).
19. Mediterranean Institute of Risk, Environment and Sustainable Development page. Available online: <https://imredd.fr/en/home/> (accessed on 2 February 2023).

10. Appendices

10.1. Appendix 1: Example of two slides presented and/or shared during the strategic meeting with sister projects

“Sustainable Energy Skills in Construction Sector” joint activities meeting with sister projects

Meeting minutes



Title	Second joint meeting
Date of meeting	27.01.2021, 09.00 - 10.00 CET
Venue	Teleconference/Google Meet

“Sustainable Energy Skills in Construction Sector” joint activities meeting with sister projects

Meeting minutes



Title	First joint meeting
Date of meeting	14.12.2020, 09.00 - 10.30 CET
Venue	Teleconference/Google Meet

Participants

1. Agnieszka Kowalska, ASM/[INSTRUCT](#)
2. Agnieszka Mikołajczyk, ASM/[INSTRUCT](#)
3. Borislav Ivanov, EnEffect /[The nZEB Roadshow](#)
4. Gerald Wagenhofer, UBW /[PRO-Heritage](#)
5. Mariana Fernandez, Sustainable Innovation /[HP4ALL](#)
6. María José Esparza, FIVE /[BUSLeague](#)
7. Mohaddeseh Maktabifard, R2M/[INSTRUCT](#)
8. Peter Gyuris, Geonardo /[TRAIN4SUSTAIN](#)
9. Regis Decorme, R2M/[INSTRUCT](#)
10. Seamus Hoyne, LIT /[HP4ALL](#)
11. Sylvain Kubicki, LIST/[BIMEET](#)
12. Uli Jakob, HFT Stuttgart/[TRAIN4SUSTAIN](#)

10.2. Appendix 2: “Sustainable energy skills in the construction sector” proceedings publication; 12 January 2021 (M8), corresponding author: R2M



proceedings



Proceedings

Sustainable Energy Skills in the Construction Sector [†]

Agnieszka Kowalska ¹, Mohaddeseh Maktabifard ^{2*}, Sylvain Kubicki ³, Dragomir Tzanev ⁴, Peter Gyuris ⁵, Seamus Hoyne ⁶ and Jan Cromwijk ⁷

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² R2M Solution, 06330 Roquefort-les-Pins, France

³ Luxembourg Institute of Science and Technology (LIST), L-4362 Esch-sur-Alzette, Luxembourg; sylvain.kubicki@list.lu

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Abstract: In this workshop we discussed the progress and results of six Horizon 2020 projects—INSTRUCT, BIMEET, The nZEB Roadshow, TRAIN4SUSTAIN, HP4All, and BUSLeague—about how to increase the number of skilled building professionals and/or blue-collar workers across the building design, operation, and maintenance value chain (designers, architects, engineers, building managers, technicians, installers, blue-collar workers including apprentices, and other building professionals), with a specific focus on the engagement of small and medium-sized enterprises (SMEs).

Keywords: skill; energy; construction; building professionals; small and medium-sized enterprises

1. Introduction

The European construction sector faces unprecedented challenges to achieve ambitious energy-efficiency objectives that can be met only if successful training initiatives and supporting policy instruments are put in place, acting as a springboard to stimulate the demand for energy-efficiency skills.

The objective of this workshop was to discuss how to increase the number of skilled building professionals and/or blue-collar workers across the building design, operation, and maintenance value chain (designers, architects, engineers, building managers, technicians, installers, blue-collar workers including apprentices, and other building professionals), with a specific focus on the engagement of small and medium-sized enterprises (SMEs). Recourse to skilled professionals/workers both for renovations and new construction of buildings and district scale solutions should be made more attractive and easier for companies and homeowners alike.

Hence, in this report, we are summarizing the contributions of six Horizon 2020 projects on sustainable energy skills and training in the construction value chain, including: INSTRUCT [1], BIMEET [2], The nZEB Roadshow [3], TRAIN4SUSTAIN [4], HP4All [5] and BUSLeague [6]. In addition, recording of the workshop is available online as a Supplementary Material.

2. INSTRUCT

The INSTRUCT project aims to act at a market level by providing an operational framework and set of services serving to increase the number of skilled building professionals and construction workers along the value chain, raising awareness of stakeholders in the construction value chain—including producers and retailers, home and building owners, and tenants about environmental challenges and the benefits of sustainable energy skills—and paving the way for legislative changes that overall will stimulate the demand for energy skills. Project key outputs include:

- Quantitative and qualitative evidence that reinforces the link between energy skills and energy performance.
- A set of tools and instruments facilitating the mutual recognition of energy skills and qualifications in the construction sector (including e.g., sustainable-energy skill passports/registers, and new partnerships and initiatives).
- Real-world demonstrations (in five geographical European areas) of the usefulness and ease of use of the deployed instruments.
- New legislative frameworks and legislative-change proposals, thanks to which energy skills will need to be confirmed by certificates.
- Dissemination and awareness raising actions in consortium members' countries, scaled up to the wider Europe.

The 30-month project started in June 2020 and is being implemented by the Consortium of 8 Partners, which draws on the engagement of internationally leading industry best practice, research and vocational training, the educational excellence of leading institutions in Europe, and the robust experience of accrediting bodies in the construction domain. It provides Europe-wide coverage with seven participating countries, scaled up to five regional clusters, representing a multi-expertise ensemble of stakeholders and energy value chains deploying the INSTRUCT methodology and supporting tools in country-based pilots. It is supported by a network of stakeholders, involving the Build Up Skills chapters across Europe, already finished (BIMEET) and ongoing EU research projects and a Europe-wide community of interest of 200+ members.

3. BIMEET

The European construction sector is facing unprecedented challenges to achieve ambitious energy-efficiency objectives (with the aim to generalize near-zero energy buildings), in an economic crisis context dominated by reduced investments and a search for cost effectiveness and high productivity. Moreover, the industry is experiencing its digital revolution, with the Building Information Modeling (BIM) approach gaining significant interest across Europe. Member states implement very different approaches through regulations and maturity targets, which always face the traditional low-tech and informal practices of construction businesses (a fragmented sector, dominated by SMEs).

The BIMEET project aimed to leverage the take-up of ICT and BIM through a significant upgrade of the skills and capacities of the EU construction workforce. This Coordination and Support Action project was built around a strong consortium relying on educational and research expertise, the robust experience of accrediting and labeling bodies, the training supply chain, and a wide engagement of industry-led best practices (already committed in an EU-wide expert panel).

Through its actions the project (a) paved the way to a fundamental step change in delivering systematic, measurable, and effective energy-efficient buildings through BIM training with a view to effectively address European energy and carbon reduction targets; (b) promoted a well-trained world leading generation of decision makers, practitioners, and blue collars in BIM for energy efficiency; (c) established a world-leading platform for BIM for energy-efficiency training nurtured by an established community of interest. Its principal outputs were (1) a skills matrix related to BIM and energy efficiency, harmonized thanks to The European Qualifications Framework (EQF) standard, and (2) a training platform contributing to widely disseminating the BIMEET EQF. These results associated with a labeling scheme guaranteed the sustainability of the project results after its lifetime.

4. The nZEB Roadshow

The nZEB Roadshow project will organize national-scale marketing and communication campaigns in five European countries, focused around nZEB days organized in three to five selected cities in each of Bulgaria, Croatia, Greece, Italy, and Romania. The nZEB weeks will consist of a multitude of events: Construction products and real estate fairs, practical demonstrations and real-time nZEB construction, training courses for designers and construction workers (with inclusion of BIM-enabled VR and AR solutions), information sessions and free consultations for citizens active in the real estate market, on-site training at public building renovation sites, and career orientation centers and construction job fairs with a focus on the local construction sector SMEs.

As a focal point of the events, the BKHs will get on wheels—through the design and construction of prefabricated modular mobile buildings that will serve as information and demonstration centers for raising awareness of the benefits and specificities of nZEB—and will create the necessary prerequisites for effective communication between stakeholders. With very careful attention to exterior and interior design, the centers will offer real-life experience of quality nZEB and will be equipped with all necessary technologies to provide full information on the processes with relevance to the building's performance in terms of comfort, internal air-quality parameters, and energy consumption.

In addition, the nZEB Roadshow will add to the current efforts to promote nZEB—related to two very important but unfortunately still largely missing components: professional marketing and sales services, and strong media partnerships.

5. TRAIN4SUSTAIN

The TRAIN4SUSTAIN (T4S) project was constituted for stimulating the demand for skilled construction-sector professionals (architects, contractors, SMEs, and workers) through raising acceptance of regional and national qualifications and skills on the EU construction market. We believe that comparability of national qualifications and sustainable-energy skills is key for increased transparency and penetration power in the market. T4S is tackling the issue of mutual recognition of qualifications and skills so that training accredited in one country could be recognized easier in another country.

The project is set to analyze already available transnational energy-skill qualification frameworks for building professions, such as the Prof/Trac project's scheme or the ones produced by the BIM community. A very important methodological approach that will be used throughout the project implementation and create the qualification standard is the recently developed EU framework for the assessment of energy and resource efficient buildings, also known as the Level(s) initiative. The T4S project focuses on acting at market level, collaborating with relevant training providers, and building assessment providers and scheme operators.

The project consortium will build on its activities with continuous consultation with stakeholders as well as ultimate end-users. The T4S project aims at fostering a common understanding of sustainable-energy skills across Europe by promoting a competence quality standard, a European Skills Registry, and a Skills Passport for facilitating transnational recognition of learning outcomes and skill levels of existing qualifications and vocational training.

6. HP4All

HP4All brings together leading experts across Europe to enable capacity and skills development within the heat-pump sector and to ensure that the energy-efficiency gains afforded by heat pumps are realized. HP4All, following a holistic, systemic point of view, will work both with the supply side (manufacturers, SMEs, installers, etc.) and demand side (building owners, public sector, etc.). This way, the project will enhance, develop and promote the skills required for high-quality, optimized heat pump (HP) installations within residential/nonresidential buildings, bringing Europe to the forefront of the climatization sector.

Over 1.1 m heat pumps were installed in 2017 across Europe, with the sector seeing a 100% growth since 2006. As the transition to electrification of heat speeds up, this growth rate is set to increase further. HP4All will develop the HP4All package, a set of innovative tools and resources to be used by the different related stakeholders. The package includes:

- An HP competency framework to facilitate mutual recognition of HP skills across Europe and the construction sector.
- From an end-user perspective, a digital HP knowledge hub will be created to provide guidance, support and tools, e.g., technical information, case studies, and procurement guidance to increase the demand for HP skills and knowledge.
- An HP benchmarking tool will enable end users to consider options and performance of HP technologies within different building types.

The HP4All package will be validated through three regional plans being implemented (AT, ES, and IE) with the ambition of driving market change, influencing end-user decisions, and planning for new innovations. The implementation plans will be informed by extensive stakeholder engagement to map current and future barriers to HP market exploitation and skills development:

- 400 people will receive capacity-building and guidance interventions at the regional/national level to build skills/knowledge on new innovations and HP solutions, e.g., smart-grid integration, hybrid technologies, etc. Large promotional campaigns for end users will be held.
- >20 case studies/best practices showcasing the impact of skills on HP performance will be created.
- >10 workshops with policy makers, manufacturers and supply chains will be held.
- Campaigns will be held in 10 DIY stores and recommendations regarding policy and procurement development will be made.

Moreover, critical to the success of HP4All is the focus on new innovations and emerging solutions in the HP market, and the skills associated with their application. To that end, ~20 leading experts in the HP and energy sectors will support the regional actors to prepare the market for new innovations related to HP technology, procurement, and contracting services.

The impact of the project will be maximized through the role of the observers (HR, PT, RO) as they will follow closely the development and validation of the HP4All package, becoming early adopters even before the project ends. Moreover, a replication plan will be developed, including train-the-trainer actions, a roadmap for HP4All package use, and an outreach awareness campaign that includes the organization of a pan-European event targeting public bodies. Thus, HP4All will ultimately address HP Skills in all countries, for all HP building types and also all HP types and innovations.

7. BUSLeague

The overall aim of BUSLeague is to address and overcome the challenges of the stimulation of demand for an energy skilled workforce (demand side), along with hands-on capacity building to increase the number of skilled workforces across the building design, operation, and maintenance value chain (supply side). BUSLeague will achieve this objective by developing and implementing a cross-European recognition of energy skills, together with upscaling successful training methods and techniques that have already been developed in previous EU and national initiatives such as Build Up Skills and Construction Skills. BUSLeague focuses on a blend of four elements: mutual recognition of energy skills, awareness raising, capacity building, and legislative changes.

Implementation will be done at country-specific and regional levels, based on a blend of measures to stimulate demand complemented with hands-on and practical up-skilling of involved local and regional workforces. In this way, engagement of SMEs will be ensured. BUSLeague is formed by a coalition of former Build Up Skills and Construction Skills projects. The partners believe that by working together the national implementation plans and developed means will improve and become more attractive and effective. BUSLeague is strengthened by experienced anthropology

researchers and educational technology researchers in order to prove impact and to optimize the blends for stimulating demand and optimizing learning transfer of applied learning means and materials.

8. Conclusions

The importance of identifying the potential synergies among the above projects in order to reinforce and boost the skills and energy efficiency in the construction sector was addressed. This identification supports the projects in achieving the objectives planned by the European Union within the established policy framework and directives in place. Among all revised EPBD 2018/844/EU and article 2a: long-term renovation strategies to encompass an overview of national initiatives to promote skills and education in the construction and EE sectors, precisely highlighted the importance of trainings and skillful professionals in the building sector.

These energy-efficiency and renewable-energy directives emphasize the significance of measures to support the increase of renewable heating and cooling, and qualified installers in the building sector. In addition, launch of the renovation strategy published by the European Commission during October 2020 strengthened the importance of these measures ("Renovation Wave: doubling the renovation rate to cut emissions, boost recovery and reduce energy poverty", 2020) [7].

According to the Renovation Wave, doubling the renovation rate to cut emissions, boost recovery, and reduce energy poverty has six general leading actions:

1. Set stronger regulations, standards, and information regarding energy performance to improve incentives for public and private owners to undertake renovations.
2. Ensure adequate, accessible, and well-targeted financing to aid the process of combining different funding, and multiple incentives for private funding.
3. Increase the capacity of developers to develop renovation projects, and training and skills development for workers.
4. Expand the market for sustainable building products and services, including the incorporation of sustainable materials, and revised legislation.
5. Create a New European Bauhaus, with support of an advisory board consisting of external experts including scientists, architects, designers, planners, artists, and civil society.
6. Develop neighborhood-based approaches for local communities to corporate renewable solutions towards the path of zero-energy districts.

Moreover, this new Renovation Wave strategy underlines that the transformation towards climate-neutral construction will only be achievable if existing jobs include circular skills and if new green jobs also emerge in this context—job profiles such as professionals in deep building renovation, installers for advanced renewable technological solutions or building information modeling specialists. Furthermore, boosting know-how, workers' skills in the renovation sector, and the support provided by the Build Up skills initiative is underlined by this Renovation Wave.

In summary, identifying the potential synergies among the above projects is based on:

- Projects building on the results of previous projects from the Build Up skills program and also from other EU and national programs.
- Producing practical and innovative tools addressing specific gaps within a project.
- Collaborating with industries and directly involving them to develop tools evolved within the projects.
- Boosting the supply and the demand for skilled workers, both white and blue collars.
- Renewed focus on supporting public authorities followed by expected changes in legislation and enabling public procurement procedures.

Supplementary Materials: The recording of the workshop is available online at <https://www.sustainableplaces.eu/home/sp20-workshops-events/sp20-sustainable-energy-skills-in-the-construction-sector/>.

Proceedings 2020, 65, 27

6 of 6

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10.2. Appendix 3: “Sustainable energy skills in the construction sector 2.0” environmental sciences proceedings publication; 29 November 2021 (M18), corresponding author: R2M

Proceeding Paper

Sustainable Energy Skills in the Construction Sector 2.0[†]

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Abstract: In this workshop, we discussed the targets, current status, and future plans of 10 Horizon 2020 projects—ARISE, BUSLeague, TRAIN4SUSTAIN, BIMzeED, SEEtheSkills, HP4ALL, INSTRUCT, PRO-Heritage, The nZEB Roadshow, and CraftEdu—about how to increase the number of skilled building professionals and/or blue-collar workers across the building design, operation, and maintenance value chain.

Keywords: skill; energy; construction; building professionals

1. Introduction

The European construction sector is one of the areas with the highest potential when it comes to reducing annual energy consumption. Facing many challenges to achieve ambitious energy efficiency objectives, this sector aims to go forward by applying successful training initiatives and supporting policy instruments.

For this reason, the creation of BUILD UP Skills, an EU Initiative to improve the qualification and skills of Europe's building workers, acted as a springboard to stimulate the demand for energy efficiency skills. Furthermore, focusing on continuing education of craftsmen and other on-site building workers, this initiative is home to most of the projects presented during Sustainable Energy Skills in the Construction sector 2.0 workshop. Conducted during Sustainable Place 2021, this workshop was a continuation to the primary workshop with the same topic during the 2020 edition of this conference.

In this report, we are summarising the contributions of 10 Horizon 2020 projects on sustainable energy skills and trainings in the construction value chain, including ARISE [1], BUSLeague [2], TRAIN4SUSTAIN [3], BIMzeED [4], SEEtheSkills [5], HP4ALL [6], INSTRUCT [7], PRO-Heritage [8], The nZEB Roadshow [9], and CraftEdu [10].

2. ARISE

ARISE is revolutionising the learning process by monetising skills development and learning exchange with a dual digital system based on skills recognition rather than accreditation. ARISE is developing a Europe-wide distinguishable recognition scheme of digital energy-efficient BIM construction skills linked with a maturity-based digital ranking system for accounting CPD learning transactions. The open competency-based qualification scheme based on maturity levels that empower micro-learning will be the basis for making learning transactions count. The project team will be gathering and linking BIM modules, tools, and materials with the aim of establishing a BIM resource and skills recognition pathway that all stakeholders can utilise, deliver, and stimulate. This will provide BIM Energy Performance Alliance (BIM-EPA) partners and other stakeholders with an e-learning materials repository to contribute to, whilst also developing a CPD recognition pathway for the whole supply chain to access and utilise.

3. BUSLeague

The Horizon-2020-funded BUSLeague project works on both building capacity within the industry (supply side) and stimulating demand for energy efficiency upskilling. On the supply side, the main objective of BUSLeague is to upscale successful methods and training (e.g., by working with hardware stores). On the demand side, it aims at incentivising upskilling through recognition of skills, finance mechanisms (e.g., by introducing additional skills requirements to access public grants), and green public procurement (GPP). Public procurement constitutes approximately 14% of the EU gross domestic product. It, thus, has the potential to provide significant leverage in seeking to influence the market. As part of BUSLeague, the project partners will explore how public procurement could be used to incentivise energy efficiency upskilling.

4. TRAIN4SUSTAIN

The TRAIN4SUSTAIN (T4S) project stimulates the demand for skilled construction sector professionals (architects, contractors, SMEs, and workers) through raising acceptance of regional and national qualifications and skills on the EU construction market. The approach of T4S is the development of a European Skills Registry (ESR) web application based on the T4S Competence Quality Standard (CQS). The developed T4S CQS is a standard to identify and describe learning outcomes (LOs) for professions in a unified manner and communicate the competencies across domains (environment, society, economy, processes). Over 300 existing qualification schemes (QS) were evaluated and mapped to fill the T4S CQS with 67 QSs from all over Europe as well as non-EU countries. Furthermore, the T4S project provides guidance for public authorities in demanding and evaluating sustainable energy skills in Green Public Procurement and contracting processes.

5. BIMzeED

The BIMzeED project, cofunded by the EU Erasmus Programme as a Knowledge Alliance partnership, investigates the development of new and innovative training and education resources within the fields of BIM and nZEB. The partnership includes industry experts and academics from Ireland, Spain, Croatia, and Hungary. The main goal is to introduce additional learning resources within the field of BIM/nZEB into the existing accredited construction courses or create new standalone modules to improve training and knowledge transfer for the construction industry. BIMzeED developed 12 innovative learning units with the aim of increasing the understandings and skills of Building Information Modelling (BIM) and other digital tools to achieve nZEB within existing construction training curricula, thus capitalising on the opportunities that environmental protection can offer to the labour force.

6. SEetheSkills

SEetheSkills aims at uniting the best from BUS experiences in five countries: North Macedonia, Spain, Slovenia, Slovakia, and the Netherlands. Precedent actions in each of the countries are marked and become recognized by innovation and bravery to meet the challenges in the introduction of new approaches toward meeting needs for energy efficiency in the building sector. As they revealed different approaches in skilling and upskilling of the building workforce, their best experiences are a starting point to build upon and a subject of iterative improvement, upgrading, and implementation. The novelty of the SEetheSkills idea is by acting through a 3V approach (visibility, validation, and value) to tackle direct stimulation of demand of energy skills in construction by spreading the actions on a wide inter-regional level to ensure easy uptake of results in partner countries and beyond.

7. HP4ALL

HP4ALL has at its core the desire to enhance the skills of those working in the heat pump sector and to promote these skills to the people who need to make decisions around the use of heat pumps. These decision makers could be owner–occupier, end-users, residential project developers, and housing department staff within local authorities or social housing organisations. Contact with all actors in the supply chain and with these decision makers is identifying the weak points in the systems. In each region, the existing policy measures will be acknowledged and results from interactions with the supply chain and with end-users will be communicated. It is hoped that this work will be helpful in the three pilot regions of Upper Austria, Andalusia, and Ireland in linking on-the-ground issues to policy and back into training offerings. Regional pilot activities are in the planning stage and will be conducted throughout 2022.

8. INSTRUCT

The objective of INSTRUCT is to increase the number of skilled building professionals and/or blue-collar workers across the building design, operation and maintenance value chain (designers, architects, engineers, building managers, technicians, installers, blue-collar workers, including apprentices, and other building professionals), with a specific focus on the engagement of SMEs. Tools facilitating the mutual recognition of energy skills and qualifications in the construction sector are part of the project for the development of sustainable energy skills passports/registers for workers at a regional/national level. The project will advance energy efficiency training at the EU level using mobile applications facilitating the comparison of workers' skills and qualifications between countries. INSTRUCT will develop partnerships with producers, retailers, and contractors for energy skills promotion. The project will give evidence on the sustainability and viability of the new technologies to produce zero and low emission energy.

9. PRO-Heritage

The partners of PRO-Heritage strive to offer skilled craftsmen an initial and permanent training that offers traditional competencies and skills for the built cultural heritage, based on best practice examples of the partner organizations. In addition, PRO-Heritage will create a structure and environment for regular journeys of journeymen in Europe to further promote the exchange of competencies and skills in Europe. The most important needs addressed in PRO-Heritage are: the protection of traditional competencies and skills for the built cultural heritage relevant to energy efficiency and renewable energy; the need to involve sufficiently trained professionals and craftsmen in the "gentle" maintenance and care; the need to certify these professionals and craftsmen so that their competencies and skills can be recognised.

10. The nZEB Roadshow

The nZEB Roadshow project will organize national-scale marketing and communication campaigns in five European countries, focused around nZEB days organized in three to five selected cities in each of Bulgaria, Croatia, Greece, Italy, and Romania. The nZEB weeks will consist of a multitude of events: construction products and real estate fairs, practical demonstrations and real-time nZEB construction, training courses for designers and construction workers (with inclusion of BIM-enabled VR and AR solutions), information sessions and free consultations for citizens active on the real estate market, on-site training at public building renovation sites, and career orientation centres and construction job fairs with focus on the local construction sector SMEs.

11. CraftEdu

The CraftEdu project has set up in the Czech Republic the national qualification and training scheme for craftsmen and on-site workers in the field of energy efficiency and use of renewable energy sources in buildings. It has also developed the training offer delivered via Slovak national scheme STAVEDU. Moreover, it led to: development of seven training programmes for further education of craftsmen and on-site workers in the field of energy efficiency; development of an on-site training course based on the training course developed by CrossCraft project (IEE project BUS Pillar II); setting up a permanent network of trainers delivering the programmes developed under the project; training of trainers for delivery of the programmes; development of an e-learning programme for targeted craftsmen and construction professionals in Austria, Bulgaria, the Czech Republic, and Slovakia; proposals to governments for incentives boosting demand for highly qualified workers [11].

12. Conclusions

Sustainable Places 2020 has been the starting point for the presented projects to map and identify joint activities. Such interactions are still ongoing in the form of joint publications, series of webinar and other disseminating and communication activities and are aimed to reinforce the skills and energy efficiency in the construction sector.

These interactions support the projects in achieving the objectives planned by the European Union within the established policy framework and directives in place. Among all revised EPBD 2018/844/EU and article 2a: long-term renovation strategies to encompass an overview of national initiatives to promote skills and education in the construction and EE sectors precisely highlighted the importance of trainings in the building sector.

These energy efficiency directives emphasize the significance of measures to support the increase in renewable heating, cooling, and qualified installers in this sector. In addition, launch of the renovation strategy published by the European Commission during October 2020 strengthened the importance of these measures. According to the Renovation Wave [12], the six general leading actions in this area are: set stronger regulations regarding the energy performance to improve incentives for public and private owners to undertake renovations; ensuring accessible financing; increase the capacity of developers to develop training development for workers; expand the market for sustainable building products and services; create a New European Bauhaus, with the support of an advisory board; and developing neighbourhood-based approaches for local communities to incorporate renewable solutions towards the path of zero-energy districts.

To conclude, the next funding opportunities and the current LIFE clean energy transition call were discussed and the five intervention areas of: developing the right policy framework for the clean energy transition, the technology rollout of new services and business models, attractive private financing, equally supporting the development of local and regional projects and empowering citizens in clean energy transition, were introduced.

Supplementary Materials: The recording of the workshop is available online at <https://www.sustainableplaces.eu/sustainable-energy-skills-in-the-construction-sector-2-0/>.

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Evidence-based market and policy instruments implementation across the EU to increase the demand for energy skills across construction sector value chain.



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