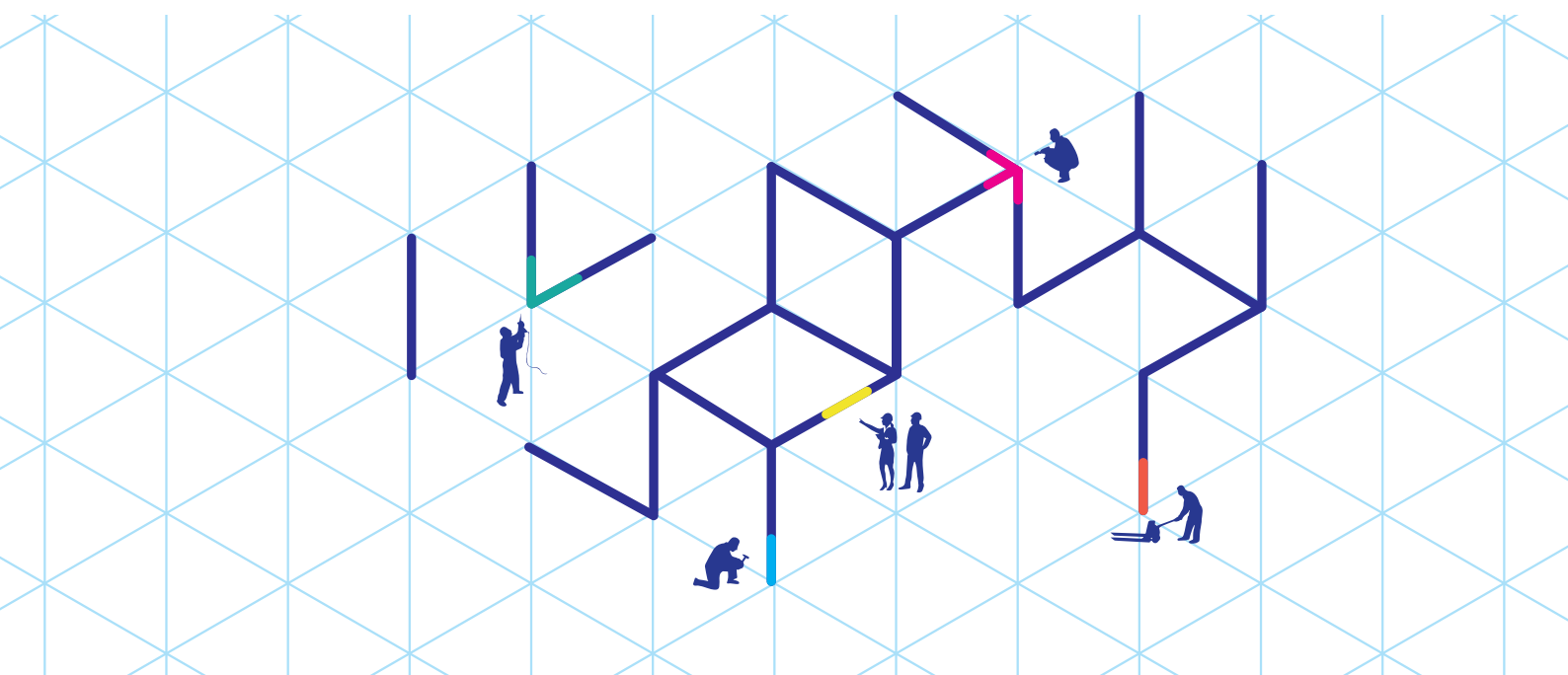


BUILD UP Skills



Report to participants

10th EU Exchange Meeting

Rotterdam, 30-31 May 2017

10th EU Exchange Meeting 30 - 31 May 2017, Rotterdam

Report to participants

D1.16 Report on 4th meeting

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Preface

This report sets out to harvest the results of the 10th BUILD UP Skills EU Exchange Meeting which took place on 31-31 May 2017 at the Bilderberg Hotel in Rotterdam, the Netherlands.

A total of 52 participants attended the two-day event including 46 BUILD UP Skills project coordinators representing finalised Pillar I projects, ongoing and finalised Pillar II projects as well as H2020 Construction Skills projects; two (2) representatives from the European Commission DG GROW and DG ENER respectively; one (1) national stakeholder from the Dutch trade organisation for entrepreneurs in installation and technical retail businesses, and three (3) representatives from projects relevant to BUILD UP Skills namely BUILD UPON, Connecting people for green skills project and the Sector Skills alliances for transfer of knowledge and skills of VET workforce in construction - SKILLCO.

The event was prepared and facilitated by four consultants from Trinomics (Koen Rademaekers, Rob Williams, Katarina Svatikova and Irati Artola), a senior consultant from Visionary Analytics (Simonas Gausas) and two event and communications managers from GOPAcom (Adama Carr and Veronika Cerna respectively) together with EASME staff (Agata Kotkowska, Santiago Gonzalez, Amandine Lacourt and Rebecca Kanellea) under the service contract EASME/H2020/EE/2015/008 “Support for BUILD UP Skills EU exchanges and analysis on construction skills”.

The Exchange Meeting consisted of plenary presentations of relevant projects and parallel break-out sessions with in-between time for informal networking and exchange of experience, as well as a site-visit to the Innovation Centre for Sustainable Building ([Innovatie Centrum Duurzaam Bouwen - ICDuBo](#) in Dutch). This report summarises the presentations and speeches given throughout the 2-day meeting. All the presentations are publicly available on the BUILD UP Skills website:

<http://www.buildup.eu/en/skills/10th-build-skills-eu-exchange-meeting-rotterdam-netherlands-30-31-may-2017>

Great appreciation and thanks is given to all the participants, for their hard work particularly within the Technical Working Groups (TWGs). The team of consultants would also like to particularly thank the Dutch BUILD UP Skills coordinators Peter Smulders and Jan Cromwijk and his team for the warm welcome and cooperation during the EU Exchange Meeting.

1 Agenda of the EU Exchange Meeting

The agenda for the two-day meeting was the following

Day 1

08:45 – 09:00	Registration			
9:00 – 9:45	Introduction and welcome by EASME & Plenary Opening Session Day 1 Welcome and key note speeches by local and European stakeholders BUILD UP Skills Netherlands at Work (BUS N@W) Dutch National Authority (tbc) Chairman of the National Technology Pact (Nationaal Techniekpact), Doekle Terpstra Presentation by European Commission DG Energy, Dimitrios Athanasiou Presentation by European Commission DG GROW, Roman Horvath			
9:45 – 11:30	Parallel Session 1 - Technical Working Groups (TWGs)			
	TWG 1 Finance (sustainability)	TWG 2 Mutual recognition	TWG 3 Innovative training infrastructures, materials & methods	TWG 4 Market acceptance
11:30 – 11:45	Coffee break			
11:45 – 12:45	Parallel session 2: Project presentation			
	BUS finalised project presentations I BUS LUXBUILD2020- Luxembourg BUS EnerPro - Bulgaria		BUS finalised project presentations II BUS BRICKS - Italy BUS FORESEE - Portugal	
12:45 – 13:45	Lunch break			
13:45 – 15:00	Parallel Session 3 - Project presentations and Cooperation			
	BUS nearly finalised project presentations I BUS UPSWING - Greece BUS I-TOWN - Italy BUS TRAINBUD - Hungary	BUS nearly finalised project presentations II BUS SWEBUILD - Sweden BUS STAVEDU - Slovakia BUS CROSKILLS II - Croatia	Cooperation between H2020 construction skills projects <u>BUStoB, IngREeS, MEeS,</u> <u>PROF-TRAC, Train-to-NZER,</u> <u>Session open for everyone</u>	
15:00 – 15:45	Remarkable outputs of BUS projects BUS projects are invited on the stage to pitch their remarkable results in 3 minutes and discuss them with the audience afterwards			
15:45	Closing Day 1			
16:00 – 18:00	Site visit The group will be taken to the Innovation Center for Sustainable Building - ICduBo (http://www.icdubo.nl/), a large exhibition center of technologies			
18:30	Dinner Voluntary, at own cost (approx. 25€/pp food & drinks included)			

Day 2

09:00 – 09:10	Plenary Opening Session Day 2 Overview of the agenda for the day by EASME and TRINOMICS				
09:10 – 10:15	Plenary Session - Presentation of projects relevant to BUS BUILD UPON (http://buildupon.eu/) Presented by Emilio Miguel Mitre Connecting people for green skills project Presented by Laura Bas Skills sector alliances for transfer of knowledge and skills of VET workforce in construction (SKILLCO) Presented by Valentina Kuzma				
10:15 – 10:30	Coffee break				
10:30 – 12:30	Parallel Session 4 – Technical Working Groups (TWGs) <table><tr><td>TWG 1 Finance (sustainability)</td><td>TWG 2 Mutual recognition</td><td>TWG 3 Innovative training infrastruc- tures, materials & methods</td><td>TWG 4 Market acceptance</td></tr></table>	TWG 1 Finance (sustainability)	TWG 2 Mutual recognition	TWG 3 Innovative training infrastruc- tures, materials & methods	TWG 4 Market acceptance
TWG 1 Finance (sustainability)	TWG 2 Mutual recognition	TWG 3 Innovative training infrastruc- tures, materials & methods	TWG 4 Market acceptance		
12:30 – 13:30	Lunch break				
13:30 – 14:15	Plenary session - Reflecting on BUILD UP skills projects and further cooperation Interactive session to reflect upon the results, lessons learnt and challenges of the BUILD UP Skills projects as well as to brainstorm on how to build partnerships for future projects and exchange ideas.				
14:15 – 14:30	Plenary session – Timeline for the evaluation of the BUILD UP Skills Pillar II Presentation of the timeline of the contractor for delivering the evaluation of the BUILD UP Skills projects and involvement expected from project coordinators				
14:30 – 14:50	Plenary session – Presentation on getting the most of the BUILD UP Skills Website and Collaboration Platform Presentation by Veronika Cerna from GOPAcom				
14:50 – 16:00	Plenary session – wrap up of the work by the TWGs Plenary gathering in which the Chairs of the TWGs/ consultants will report on the results achieved by the TWGs (day 1 and day 2) on one slide				
16:00	Closing Day 2 (EASME)				

2 Key Messages of the Exchange Meeting

2.1 Key messages of Day 1 (Tuesday, 30 May 2017)

2.1.1 Plenary opening session

Day 1 opened with a warm welcome by the EASME (Agata Kotkowska) and the local stakeholder, Peter Smulders (OTIB) from BUILD UP Skills to Business (BUStoB). This was followed by speeches that set the national and European context of energy efficiency and skills.

Agata Kotkowska, Head of Sector Buildings, Heating & Cooling EASME

Agata provided an overview of the BUILD UP Skills programme, the H2020 Construction Skills calls in 2014 and 2016, and the awarded projects in the latter call:

- **Fit-to-nZEB (Coordinator: Energy Efficiency Center/Eneffect foundation) - Start: 15/6/2017**
Innovative training schemes for retrofitting to nZEB-levels
- **Net-UBIEP (Coordinator: ENEA) - Start: 3/7/2017**
Network for Using BIM to Increase the Energy Performance
- **BIMplement (Coordinator: Alliance Villes Emploi) - Start: 1/9/2017**
Towards a learning building sector by setting up a large-scale and flexible qualification methodology integrating technical, cross-craft and BIM related skills and competences
- **BIMEET (Coordinator: Luxembourg Institute of Science & Technology) - Start: 1/9/2017**
BIM-based EU -wide Standardized Qualification Framework for achieving Energy Efficiency Training
- **NEWCOM (Coordinator: Austrian Energy Agency) - Start: 1/9/2017**
New competence for building professionals and blue-collar workers - certified qualification schemes to upgrade the qualification for building nZEBs

More information about these and other Horizon 2020 projects can be found through a new EASME tool, the Energy Efficiency Data Hub: <https://energy.easme-web.eu/#>.

BUILD UP Skills was identified as best practice by the 2016 World Economic Forum report "Shaping the Future of Construction: A Breakthrough in Mindset and Technology". In a similar vein, the Clean Energy for All Europeans Package¹ stresses the need to upskill the building workforce to accelerate energy efficiency in buildings. Further, the European Construction Observatory: Analytical Report - Improving the human capital basis (to be released) reads: "Energy efficiency initiatives are greatly supported by the EU co-funded BUILD UP Skills programme, ..., and is often the only action taken by Member States, particularly in Central and Eastern Europe as well as in Southern Europe".

Agata also provided an overview of upcoming events that may be of interest for the BUILD UP Skills community:

- **19-25 June, Brussels:** European Sustainable Energy Week
- **6 July, Brussels:** High Level Conference "Construction: Let's Build Change!" (DG GROW)

¹ http://ec.europa.eu/energy/sites/ener/files/documents/com_860_final.pdf

- **24 October, Bucharest:** BUILD UP Skills workshop in the framework of EPBD Concerted Action
- **20-24 November, Brussels:** European Vocational Skills Week, when a BUILD UP Skills stakeholder event will be organised.

Dutch trade organisation for entrepreneurs in installation and technical retail businesses (UNETO-VNI), Doekle Terpstra

The BUILD UP Skills projects in the Netherlands have mobilised over 50 national stakeholders, delivered a thorough analysis of the skills gap regarding sustainable energy and developed 78 training modules to address the green skills of the Dutch building and installation workforce.

In the Netherlands there will be a shortage of 15,000 technicians in the next four years. Moreover, the Dutch workforce will have to deal with the growing interaction of different technologies and work together with technicians of several different backgrounds. They will also have to be able to advise customers on new applications and technical solution for a sustainable energy home.

This asks for not only technical but also excellent communication and team working skills to deliver the cross-craft approach that can truly address the performance gap. The extended set of skills that is needed by the workforce of the future will help to create a whole new image of technical work and technicians in general, and will inspire more people to choose for a technical career. However, if we want the demand for these kind of training courses to increase, training needs to be available in the first place.

Installation companies are facing a growing need for integration in the building process, in the whole chain from architect to contractor and installer to maintenance. ‘Cooperation’ is the new ‘competition’. In cooperation with ICT experts, the Dutch trade organisation for entrepreneurs in installation and technical retail businesses (UNETO- VNI) is part of the Dutch National Energy Agreement (Energieakkoord²). This agreement is striving for 1,5% yearly overall energy consumption; energy reduction of 100 PJ in 2020, an increase of renewable energy production towards 14% in 2020 and 16% in 2023, and the addition of at least 15,000 fulltime jobs. The deliverables of the Dutch BUILD UP Skills projects are of absolute importance for delivering the objectives of the Energy Agreement.

Further, many of the smart meters already placed will need to be replaced in a couple of years. The digital revolution will call for a constant updating of the training material that is being made available to the workers. This means that the effort does not end with BUILD UP Skills but will need to continue.

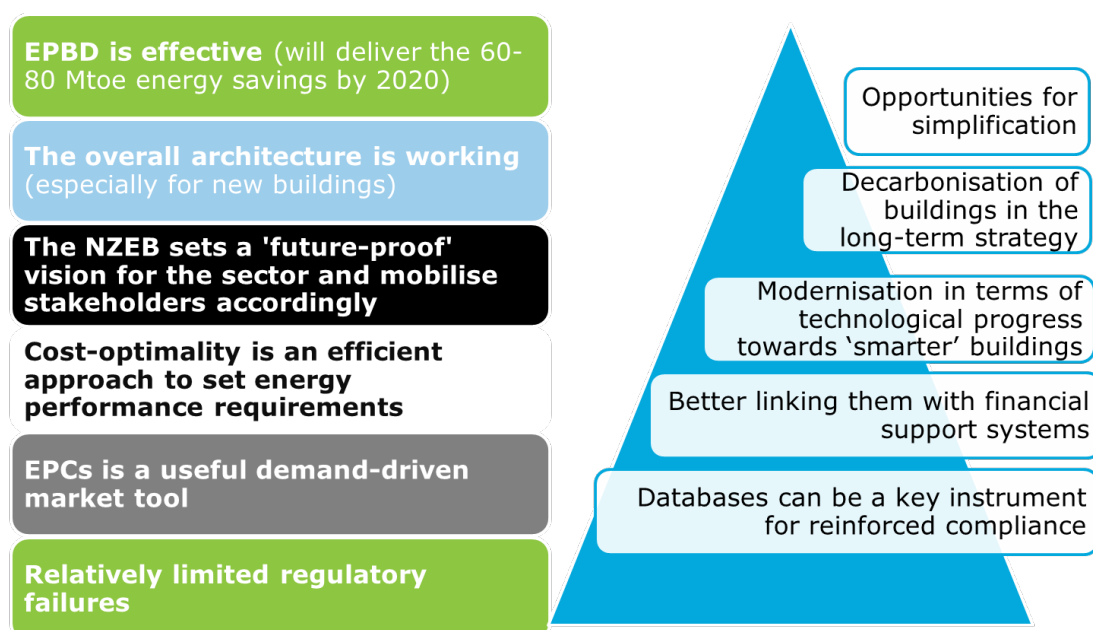
The message to BUILD UP Skills coordinators is clear: “You have formed consortia and have gained experience. We will still need that experience after you finish your projects in order to realise the roadmaps”.

² <http://www.energieakkoordser.nl/energieakkoord.aspx>

Presentation by European Commission DG Energy, Dimitrios Athanasiou

This was a presentation focused on the role of energy performance of buildings inside the European Energy Package 'Clean Energy for All Europeans'³ with a focus on the provisions on skills. Appropriate skills, which come up prominently in different pieces of energy legislation and policy from the European Performance of Buildings Directive (EPBD) to the 'Skills Agenda for Europe'⁴ are necessary in order for the objectives of the "Clean Energy for all Europeans" package to be achieved.

The following picture illustrates how the EPBD was evaluated (left) and what the opportunities or action foreseen for its ongoing revision are (right):



The main features of the European Performance of Buildings Directive (EPBD) proposal are aimed to make it more smart -through ICT and technology-, more simple -by streamlining provisions that have not delivered the expected outcomes, by setting higher thresholds for inspections, through electronic monitoring-, and more supportive -by linking policy and financing to results. The digital future of the construction sector is already addressed and a lot of the proposed legislative changes will require new skills and investment in human capital in order to avoid market fragmentation.

In order to address financial barriers, the "Smart Finance for Smart Buildings" initiative to mobilise investment has been further developed to encourage the more effective use of public funds, to help project developers bring good project ideas to maturity and to make energy efficiency investments more trusted and attractive for project promoters, financiers and investors by providing them access to market evidence and performance track record available from the De-risking Energy Efficiency Platform (DEEP)⁵.

³ [COM\(2016\) 860 final](#)

⁴ [COM\(2016\) 381 final](#)

⁵ <https://deep.eefig.eu/>

The impact of new technologies and digitalisation on the types of jobs and skills needed in the construction sector is a major issue and in that context, synergies have to be further developed with the "BUILD UP Skills" initiative.

Presentation by European Commission DG GROW, Roman Horvath

'Let's build changes!' was the title of this presentation inspired by the 6th of July conference (High Level Conference "Construction: Let's Build Changes!" organised by DG GROW.

An overview of the latest developments and activities that DG GROW has been working on and which have a focus on skills was provided: The EU Circular Economy Action Plan⁶, the New Skills Agenda for Europe⁷ (the part most relevant for the construction sector is the Agenda's Blueprint for Sectoral Cooperation and Skills) and the Clean Energy for All Europeans⁸, also known as the 2017 Winter Energy Package. Further, DG GROW has done work on apprenticeships for the construction industry as part of the European Alliance for Apprenticeships, which is currently in its evaluation phase.

A remarkable development due to its rich information / data for the construction sector is the [European Construction Sector Observatory](#), which includes country profiles, fact sheets on individual policy measures, information which is updated every year. Within the work of this observatory a second analytical report has been recently released, focusing on 'improving the human capital basis', hence skills⁹.

The [Fitness Check for the Construction Sector](#) has also been important work in the past months resulting in the evaluation of 15 EU legislative texts in the policy fields of Internal Market, Energy Efficiency, Environment and Health & Safety.

Last but not least, a sneak peak of the upcoming call on Blueprint for Sectoral Cooperation on Skills (probably published in autumn/begin winter 2017), possibly relevant for construction, was given. If the sector is selected, three focus areas will be prioritised: energy efficiency, digitalisation, circular economy, including bio-based and secondary recycled products. The project will be supported by 4,000,000€. The consortia should be broad, consisting of business and education providers, but should also include chamber of commerce and government bodies. DG GROW will support stakeholders throughout the project.

2.1.2 Key messages of the parallel session on finalised BUS projects

This parallel session was set out to present the outcomes of four BUILD UP Skills finalised projects focusing on:

- The training methods, materials, infrastructure developed;
- The most remarkable project outcomes / results and achievements;
- Challenges & good practices;
- Reporting on performance indicators;

⁶ [COM \(2015\) 614 final](#)

⁷ [COM\(2016\) 381 final](#)

⁸ [COM\(2016\) 860 final](#)

⁹ <https://ec.europa.eu/docsroom/documents/24261>

- Financing of the project and continuity.

BUS LUXBUILD2020- Luxembourg (Christiane Conrady)

Christiane introduced the holistic approach they have taken in this project, including looking at demand driven campaigns, legal framework, training and enterprise services. She mentioned that it is important to try considering barriers for SMEs as they do not have back office with Human Resources supporting training and skills development.

Their training concept builds upon three pillars:

1. 'Plan the work' internal process - plan the work for onsite managers (training course Energy for Future+);
2. 'Do the work' for onsite skills - tailor suited programme for onsite workers and
3. 'Multiply the knowledge in the company' - training program on pedagogical skills and program design for experienced craftsmen to become an in-house coach or an external coach.

As part of the project, they have developed six different AAA-Toolboxes (materials) for the training courses offered. The AAA Standard is a standard near to the Passive House standard.

Outcomes

The main outcomes of the project were the following:

- ✓ The Energy for Future+ certification through which 700 craftsmen were certified;
- ✓ Collaboration of the key actors (training providers and umbrella organisations for craftsmen) - in this respect, a single brochure was developed for all training programmes. This was seen positively by the client.
- ✓ Competency Framework for 30 different trades making link to the EQF;
- ✓ Creation of Centres of excellence financed by the companies;
- ✓ Support services for companies to facilitate the participation in training programmes;
- ✓ Campaign 'Challenge 2017' where they informed public, and enterprises in particular, about the legal obligation that new residential constructions must fulfil the AAA-standard. Their experience showed that it is important to start campaigning as early as possible but that the communication needs to be on time for the people that listen to it rather than 'on time' for the communication planner.
- ✓ Organised a Youth day where pupils could visit a demonstration building and play games.

Performance indicators

The project has set very ambitious goals, and as such not all targets were met. The project has underperformed on the number of training courses organised during the project, the number of trained people, and the average cost to qualify each trainee. This is related to the fact that longer courses were necessary to teach the skills needed, and as such fewer courses were organised and the cost per course increased compared to what was planned. This also explains why the number of hours taught in the courses is beyond the planned target.

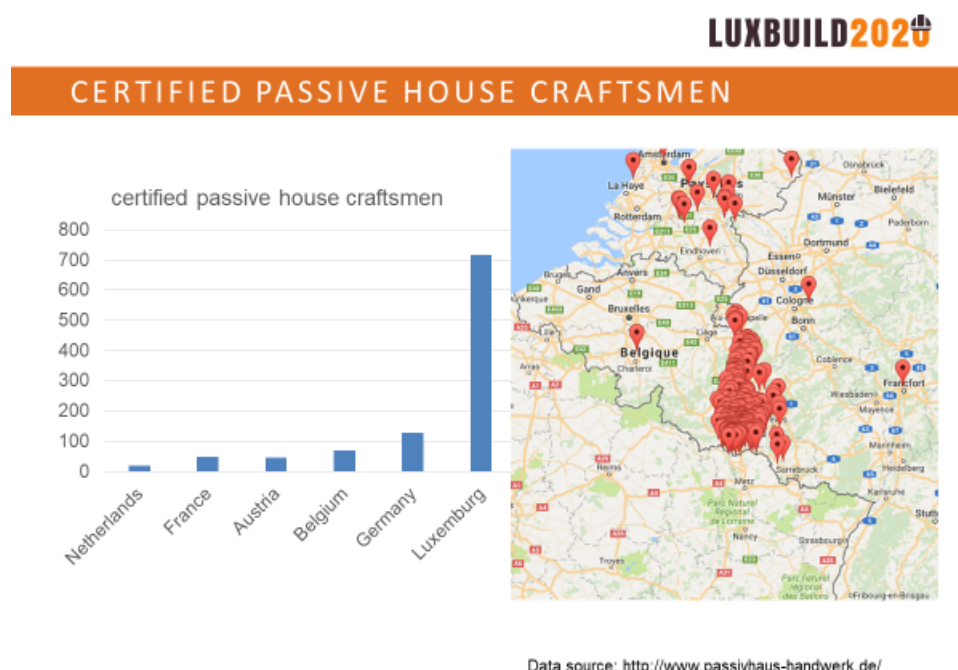
The project also had a number of other specific indicators, such as the number of trainers trained, number of companies having in-house coaches, etc. as well as a number of marketing performance indicators. The fact that the project could train school teachers explains why the number of trainers

trained indicator exceeds by far the planned target (5 planned vs. 27 achieved). Another great achievement was that for the cost of only EUR 4,000 for a press conference, they could create a value of media coverage equalling EUR 50,000.

The project has not specified energy performance indicators, as this seemed too difficult to estimate given the project objectives.

Comparative perspective

An interesting graph that Christiane showed was the comparison of a number of Member States in terms of the number of certified passive house craftsmen, issued by the Passivhaus (see figure below). It shows that Luxembourg outperforms by large other EU MS, having more than 700 such craftsmen, while other countries reach a maximum of 100 or just above. She explained that the LUXBUILD2020 project contributed to this figure, and that such performance in Luxembourg is linked primarily to the legislation requiring the AAA standard (nearly passive house) for all new residential construction since January 2017.



BUS Enerpro - Bulgaria (Dragomir Tzaney)

The project had led to a number of significant results, achievements and lessons learned that are outlined with respect to major aims of the project:

- (1) Elaborate a core of required technological competences related to the EE and RE solutions in buildings within a newly established Centre of Excellence. The project developed training frameworks and materials for 10 training programmes with a focus on practical training in two major areas - construction and renewables. The project motivated the opening a new training centre - the building knowledge hub - in cooperation with Sofia University of Architecture and Civil Engineering, within a newly initiated H2020 project - Train-to-NZEB;
- (2) Review the State Educational Requirements and initiate the necessary changes. The project has led to a new training programme focusing on energy efficiency in the construction sector;

- (3) Develop and license new training programs with the newly elaborated technical competences. The project introduced 12 new training programmes (of 40-60 hours duration), six new programmes for professional high schools and vocational education and training (VET) schools (of 120 hours duration). In total the project realised 29 training courses and trained 433 building specialists and workers. Participants were very satisfied with the overall quality of the training courses. Lessons learned with respect to training include:
- The market demands for much shorter training courses (40-60 hours is still too long);
 - Training should be more practical and use new ICT tools for better demonstration/ simulation;
 - Mostly professionals (e.g. highly qualified, PhDs) come to the trainings, difficult to attract workers who are most in need for such training;
 - Six VET schools and vocational training centres can deliver training, but there is no demand as Bulgarian market is still in its initial stage and demand still needs to be stimulated. Communication is never enough in stimulating demand for quality buildings - it should be attractive, up-to-date, and understandable and also stress issues such as the level of comfort/ health effects of buildings. Public authorities, for example, could deliver demo projects targeted at better health conditions;
 - Minority groups may have specific demands (e.g. Roma wanted to learn what is expected to learn in Germany).
- (4) Establish capacity for professional training of trainers and train and certify trainers. The project partner (Passive House Institute) helped to develop an online train-the-trainer platform. The project first sent nine Bulgarian trainers to Passive House Academy in Ireland to train on mechanical ventilation with heat recovery, airtightness and thermal bridges. These trainers have later on transferred their knowledge to local trainers in eight training sessions of five days each covering the whole territory of the country. The project used company minibus to reach different training locations. This resulted in 120 potential trainers. The key lesson is quality and qualification of the trainers - they should have sufficient pedagogic skills, practical experience and expertise.

EnerPro has taken a further step to ensure sustainability of its initiatives via the new H2020 project - Fit-to-NZEB. It starts in June 2017 and focuses on training programmes for deep energy retrofit for all qualification levels.



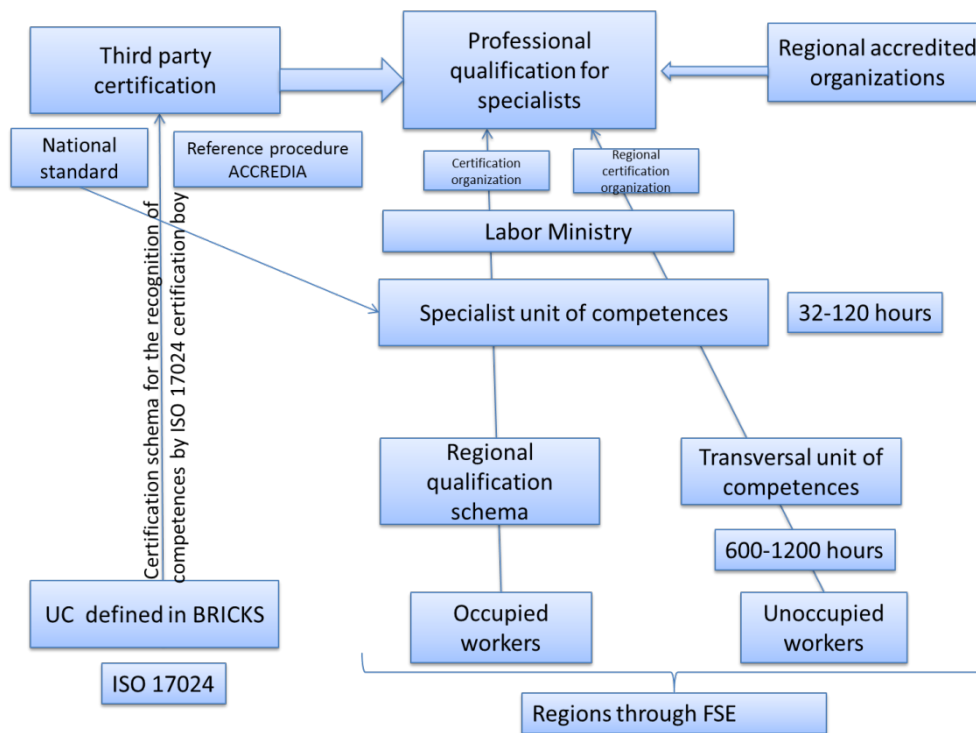
BUS BRICKS - Italy (Anna Moreno)

BRICKS' ultimate objective was to align Italy with the rest of Europe in terms of competent workers able to improve the energy performance of buildings and meet the targets for nearly zero energy buildings. A brief introduction of what BRICKS is about was also shown through a [video](#).

Defined personalised training programmes based on the workers' needs was the key approach to training courses of BRICKS. This personalised approach is a combination of online courses, practical works on the building site and a final test. During the pilot session as well as through an online assessment, the system was tested and the necessary adjustments made. A second video on this process can be found [here](#).

The most remarkable outputs are the numerous standards, videos and e-learning courses developed for trainers and workers of different fields such as energy systems, building automation, thermal insulation and geothermal heat pumps. Next to this, assessment tests in a host of fields were made available for trainees and trainers. A total of 21 trainees were trained in the pilot training courses and 12 trainees. The reason for the low amount of trainees appears to be that already-employed workers are often not interested in continuing development. In addition, many companies in Italy consist of "self-employed" especially for the building automation, therefore the trainers and the trainees are the same.

The most challenging part of the project was to deal with the 20 different regions in order to make learning outcomes comparable, through mutual recognition. The approach was to describe activities and to ask each region about the qualifications present in their regions, in order to cover the activities. BRICKS defined what the Units of Competence (UC) of a specific job are, and based on that, developed the national standard.



BUS FORESEE - Portugal (Helder Gonçalves)

BUILD UP skills FORESEE (FOr REnewableS and Energy Efficiency in building sector) developed 3- and 4-day courses for heating & cooling, building envelope and renewable and efficient use of electricity workers. Each of the courses consisted of a theoretical and practical part. The following is the example of the solar systems course programme (for the other two programmes see the Power Point presentation):

Day 1 – (7 hours)
Reception of participants
Organization of work, methodology and practical training details
Specifications of practical training equipment
Working Group 1: Installation of the support structure and collectors
Working Group 2: Installation of the hot water storage tank
Working group 3: Installation of piping of the primary circuit network
Day 2 – (7 hours)
Working Group 2: Installation of the support structure and collectors
Working Group 3: Installation of the hot water storage tank
Working group 1: Installation of piping of the primary circuit network
Day 3 – (7 hours)
Washing, filling and pressurization system
installation startup: execution of functional tests
Legislation and regulations
System components.
Working Group 3: Installation of the support structure and collectors
Working Group 1: Installation of the hot water storage tank
Working group 2: Installation of piping of the primary circuit network
Day 4 – (4 hours)
Solar thermal systems
Assessment of installed system
Training Evaluation

Some remarkable outcomes / outputs:

- Newness - as they developed a training scheme in an area in which there was no training before;
- Building of a test facility (workshop) - in two of the training centres
- Energy efficiency and Renewable Energy - incorporated in the contents of the training courses
- Mobilisation of key actors
- Integration of Training Units of Short Duration in the areas of energy efficiency that will be part of the National Catalogue of Qualifications

The project produced 8 manuals (Boilers, HVAC, Lighting, PV systems, Solar Thermal, Thermal Insulation, Wind, Windows). A total of 32 training actions were carried out, the planning and execution of the training actions were always developed in close collaboration with the National Stakeholders and Training Centres. The following screenshot lists some of the results on performance on indicators:

Within the duration of the action			
Common Performance indicator	Planned target	Actual achievement	Comment on performance
Number of training courses	24 12 Train trainer 12 Pilot courses	24 12 Train trainer, 12 Pilot courses	All the 24 courses were carried out
Number of people	420 15x12 (TT)= 180 20x12(TC)= 240	441	In the training trainers we achieved 179 people, and in the Pilot courses 262 trainees.
Number of hours taught in the frame of the courses	738 hr 12(TT) x 24hr= 288 6 (TC)x50 hr= 300 6 (TC)x25hr= 150	900 hrs 12x25hr+ 12x50hrs	Accomplished
Estimated specific cost to qualify each trainee (€)	400 (€) Approx./trainee	350€ (5000€ per 3day course, with 15 students and 2 teachers)	The values could be between the 350 and 400 or 500€ depending of distinct factor related with the facilities in the different sites
Cumulative Investment (Euro)	359.180,00	325.120,86	Correspond to the total budget of the Project
Renewable Energy (toe/year)	2.3 kToe/year* *values included in National Renewable Energy Plan	2.3 kToe/year	We assume that the application of the plan is on track with the goals.
Primary energy savings (toe/year)	320 kToe/year*	340**	The same
Reduction GHG emissions (t CO2e/year)	1400 kTon CO2e/year*	1400 kTon CO2e/year*	The same

Further, the training scheme brings direct and indirect benefits to the workers for instance a certificate after completion but also in terms of marketing (certification increases the status of the worker).

Challenges:

- It is hard to bring employed workers back to training;
- The practical component should be at least 75% of the training (25% at maximum theoretical);
- Time is an issue as it is not easy to get a worker attend a training for 3,5 days;
- Including the “Short Duration Training Units” that the project created in the National Catalogue of Qualifications (NCQ) was challenging.

2.1.3 Key messages of the parallel Session on nearly finalised BUS projects

This parallel session was set out to present the outcomes of three nearly finalised BUILD UP Skills projects.

BUS UPSWING - Greece (Charalampos Malamatenios)

In the first phases of BUS UPSWING the occupational profiles of the 3 targeted professions (insulation technicians, aluminium and metal constructions craftsmen, installers-maintainers of burners) were updated and validated (from the national competent body, i.e. EOPPEP), from which 3 specific training and qualification schemes have been developed. The idea is for these training courses to be fully functioning by the lifetime of the project end, to avoid that they stay at the pilot level. For that, training materials (handbooks of 180-200 pages each) and guidelines (for the “practical part” of training), for both the trainees and their trainers, have been produced. The pictures below illustrate these.



So far a total of 139 people finished the courses from the 149 who registered. The courses consisted of a total of 30 hours - 20 theoretical and 10 practical.

As for as the way forward, a number of incentives to boost the interest and demand for highly qualified workers have been identified and are discussed with the authorities, while funding mechanisms for the implementation of the courses at national level are examined, such as:

- Being involved in the negotiations for the design of National Strategic Reference Framework (NSRF) 2014-2020 proposing specific interventions, designing targeted subsidy training programs;
- Exploitation of the already in use "Account for Employment and Vocational Training" (LAEK) fund (0.24% of employer contributions for workers are directed to workers' training) for which there is still a lack of understanding and lack of awareness (from the employers point of view);
- Expansion of the training vouchers initiative to the construction sector workforce for obtaining green skills;
- Motivation of large building materials manufacturers and suppliers to provide funds for training in the framework of their corporate responsibility programmes;
- Mobilisation of the related professional associations to finance training courses - as part of their "services" for their members;
- Linking the obtained skills to workers' wage or employability.

BUS i-TOWN - Italy (Elisa Sirombo)

i-TOWN is due to finish at the end of August 2017. One of the remarkable outputs that they have generated so far is the 'Italian National Survey of Life-Long Learning Needs on Energy Efficiency of buildings, Safe and Sustainable Buildings'. The survey, which obtained responses by 901 people in Italy, was very helpful to understand the main needs in the field of life-long learning needs in the construction sector. The conclusion was that new roles are needed in the construction sector, but above all it is essential to turn the existing ones, already with general competences, into new profiles having advanced skills and competences in the field of sustainable construction. Current workers need to develop their skills / knowledge in the fields of energy efficiency, sustainability and green building. The results of this survey are publicly available on the I-TOWN website (www.bus-itown.eu), also in English.

The training strategy of I-TOWN is based on two main actions:

1. Train the trainers (WP3)
2. Train the workers (WP2)

The project developed a map supporting the necessity of lifelong learning, requalification and specialisation both for trainers and workers. The training programs will encompass basic training, process training, product training modules and transversal modules about soft skills. All the training modules last 4 hours.

The project has developed four (4) pilot training courses for trainers and ten (10) pilot courses for workers (5 courses for workers already employed, 5 courses for young people at the first entry into the construction sector).

Pilot courses for trainers have covered three specialisations (building trainers, electrical systems trainers, mechanical system trainers): a total of 69 trainers have been involved in 16 hours of training. Pilot courses for workers have had a more practical approach with laboratory activities and mock-up construction; a total of 120 workers have been involved in 16 hours of training.

In all the courses done, they included a final evaluation to understand what the attendees learn and to assess the course.

Another major output is the e-learning platform, a repository of all the training materials developed within the project, publicly accessible from the I-TOWN website.

I-TOWN has collaborated with the other Italian BUILD UP Skills project (BUILD UP skills BRICKS), mainly sharing the best practices mapped in Italy and abroad and comparing the training and the workers qualification strategies developed within the two projects.

BUS TRAINBUD - Hungary (Viola Kemen & Karoly Matolcsy)

One particular output of BUILD UP Skills TRAINBUD is the establishment of a Sustainable Construction Skills Alliance (SCSA) consisting of construction companies and manufacturers/distributors, training institutions, and governmental organisations.

A basic (12 hours) and an additional (8 hours) train the trainers training courses have been developed as well as a training course for trainees (60 hours) consisting of 8 modules, where the 8th module is a systems approach addressing the connection between the other. The materials used are printed handbooks and Power Point presentations.

1. Solar collector, photovoltaic systems
2. Heat pump systems and biomass boilers
3. Surface heating and cooling
4. Condensation boiler, chimney
5. Heat recovery ventilation system
6. Control technology, measurements in energetics
7. Wall insulation, windows-doors
8. Entrepreneurial skills

An interesting aspect is the voluntary qualification system developed, which works as a quality label, certification and skilled workers database for those who have carried out the training courses.



Finally some lessons learnt were presented in the form of a SWOT:

- Strengths:
 - High level training material
 - An active Skill Alliance
 - The training material has good reputation and is approved by external experts
 - The training institutions proved to be engaged in the initiative
 - The good reputation of the consortium coordinator (ÉMI) through its experience working for the Prime Minister's Office, Supervising Authorities, etc
 - Structures proved effective (different type of courses, basic + special modules)
 - Pool of trainers countrywide
 - Model exams (scheme for the exam questions, oral questions etc)
- Challenges:
 - Difficulties to make training mandatory
 - Lack of long term and powerful contact with decision makers
 - The black market does not help demand for skills development and certification
 - Complex, cross cutting knowledge proved difficult to be certified
 - The "lack of craftsmen" situation results in lower quality expectations
 - Spreading good practices requires time.
- Opportunities:
 - Internationalisation of training courses
 - Interactive digital training materials (APPs)
 - Integration of requirements for skills in national/regional grant tender systems
 - Opening for the professionals, clients, citizens, young generation and children
 - Boosting new type performance based contracts (SME's)

- Threats:
 - Lack of real motivation
 - Fear of companies of losing quality workmanship
 - Not achieving the ambitious goals
 - For the sector to retain its reputation of being traditional, fragmented, non-transparent

A question was raised on whether all the digitalisation and new technologies e.g. 3D printing, will not shrink the amount of jobs in the sector. There was some discrepancy in the room. For instance, while in Slovenia it may be a concern that the number of jobs is shrinking and there is in the country the sense that the modernisation is not helping, in Ireland and the UK the reality is different; the construction sector is actually expanding in terms of jobs, just these jobs are created in a different area e.g. renovation.

BUS SWEBUILD - Sweden (Per-Johan Wik + Asa Douhan)

The SWEBUILD project (se. *Energibyggar*) led to a number of results, achievements and lessons learned with regard to the following aims:

- (1) Create conditions for efficient rollout of large-scale training in energy efficient building. The project focused on clearly identified training needs:

- training for small and medium enterprises; free of charge;
- four-hour duration divided in six modules focused on cross-craft understanding (i.e. introduction, the building as a system, thermal insulation, air tightness, moisture and installations);
- modules can be taken at different time;
- content is always updated;
- free access from whatever source (mobile, table, PC, etc.);
- completion followed by registration into national competence database.
-

The project emphasized a number of differences between students and adults including:

- The need to learn: while students learn what is required to receive a good mark, adults choose to learn specifically what is need for him/ her to deal with a situation;
- Role of experience: while students rely more on teacher's experience (more one-way learning communication), adults prioritise their experience (somewhat higher need for individualised approaches and two-way communication);
- Motivation: while students are often driven by rewards (e.g. marks and praise), adults are motivated by increased confidence, competence, pay and overall quality of life.

- (2) Identify and prepare quality curriculums and training materials of high international standards. The key output of the project is an online training course available at: www.energibyggar.se;

- (3) Train 500 trainers that by extension will deliver fit for purpose on-site training of 18 000 workers. The project targeted craftsmen, installers, site managers and supervisors. The action plan consisted of two steps: instructors (22 in total) from the consortium train the trainers (i.e. regular workers trained to perform as mentors for their colleagues); later on trainers train their co-workers on-site. The project has exceeded its target for trainers (735 trainers were educated in spring

2017), but not for workers (1321 persons were trained as of May 2017). The main reason behind lower than expected number of workers is that not all trainers were willing to train their colleagues.

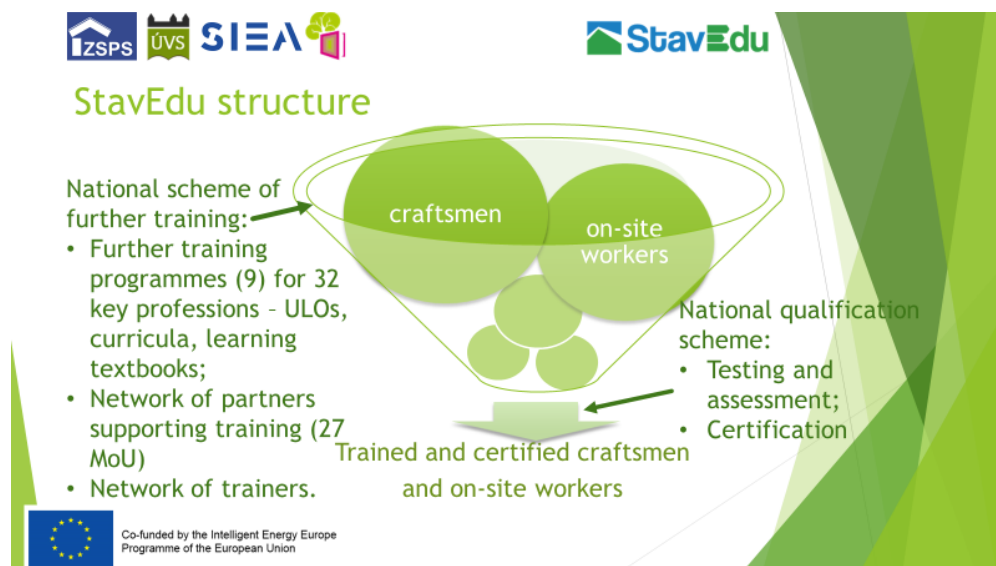
- (4) The project has delivered a good practice solution - since April 2017 it has launched a competence database for employers in the building sector where every trained worker can register and all the building companies can scan the compulsory ID06 card of a worker and see the proof of that exam, together with other skills (these cards are planned by Swedish Construction Federation for a number of years already).
- (5) The project learned that:
- Three years is too short period of time to develop and implement a new modern education and reach out to a quarter of a million craftsmen in Sweden;
 - The nZEB is still not defined in Sweden and that has not supported the project in motivating building site trainers to educate their colleagues;
 - Building boom (e.g. plans for 700 000 new residences to be built till 2025) leaves little time for education at construction companies;
 - Interactive education is much appreciated by the target group. In Sweden regular workers have tablets, smartphones, etc. and thus appreciated e-learning.



BUS STAVEDU - Slovakia (Frantisek Doktor)

The presentation started with the background on construction education in Slovakia, as this is an important starting point for the development and outcomes of the project. Frantisek explained that there have been no training courses and materials on energy efficiency in buildings in Slovakia until the implementation of this project. Another particular characteristic of the country influencing the demand for their training courses is the composition of the construction market in terms of providers. The majority of contractors doing construction work are self-employed individuals or SMEs, which means that these individuals or micro-companies do not have the opportunity to learn from others in a

company setting. This creates demand for the training courses offered for craftsmen. As in other countries, companies are not that interested to send their employees for these training courses due to the opportunity cost of working elsewhere, and/ or the cost of training.



Outcomes

The project had the following four main results:

- ✓ Development of a national qualification and training scheme with nine learning outcomes oriented training programmes for 32 key construction (and energy related) professions. Frantisek explained that the reason behind covering so many professions was to kick it off ambitiously in order to have an impact.
- ✓ Pedagogical resources, including a number of textbooks that have been developed as no training material existed in the country before. The material has not been printed but exists online.
- ✓ A network of trainers and supporting organisations underpinning the national qualification and further training scheme was set up (for providing infrastructure, training equipment and/or environment).
- ✓ A database of trained trainers, trained and certified craftsmen and on-site workers to underpin the resources and provide possibility to verify certificates issued by the scheme.

Lessons learnt

The project contradicted the perception that having a law in place solves the problem. In Slovakia, there is a law on qualification requirements, NQF (qualification standards, assessment standards, certification), but in practice these tools are not used actively. Some of the challenges the project had to face were related to the training centres, as these were not fully equipped to train workers on energy efficiency related work, and as such they had to get the necessary equipment from other organisations. Therefore, the project developed a network of supporting organisations and companies to acquire the necessary training equipment and training environment.

Another challenge has been to develop training courses which would comply with the state requirements in order to integrate them into formal learning. These requirements ask trainers to have certain years of experience or specialised training course that is recommended to have 150 hours. Moreover, working with Units of Learning Outcome (ULO) was rather formal and they have been developed after developing curriculum and content of the training programme in order to document content, and not as a tool that is defining the content of the programme. The project used ULOs correctly for defining targeted learning outcomes.

The project also showed that unlike in practice, where secrecy exists on the workplace ("I don't want to show you how I do it"), workers are willing to share their practices at the training centres and are interested in such training programmes. As such, promotion of the training is more effective if it targets directly trainees, for example self-employed craftsmen, rather than targeting craftsmen via employers and/or contractors. Despite the lack of demand from companies, it is apparent that companies in Slovakia start to feel a severe impact of lacking qualified craftsmen after the critical generation of craftsmen retires.

The pilot courses have shown there is demand for training, especially among self-employed craftsmen in the construction and energy efficiency sectors.

Barriers

- ✓ Qualification requirements for craftsmen and on-site workers are not set adequately in the NQF, access to qualification is limited due to missing certification schemes, prior learning and informal learning recognition;
- ✓ New licensing/certification requirements relevant to energy efficiency and use of renewable energy sources in buildings are creating barriers through prohibitive pricing of the required training and certification/licensing (for example, for ETICS);
- ✓ Development of NQF without European standardisation and/or harmonisation of qualification standards for the common professions leads to lack of transparency and high complexity of the requirements.

Key needs & recommendations

- ✓ There is a need to work with youth and pupils in schools. Young craftsmen are not aware of the problem of airtightness, and the like, and as such, we need to involve youth in apprentice programmes and embed energy efficiency into their curricula.
- ✓ Support to mass roll-out of the further education and training by ESF.
- ✓ Review of the NQF in the construction qualification and develop certification scheme for craftsmen and construction professions.
- ✓ Address new barriers raised by new licensing schemes (for example ETICS).

BUS CROSKILLS - Croatia (Bojan Milovanović)

Bojan explained the background context to this project. In Croatia, schools still use old study material, which can even date back 40 years. As such, the first aim of the project was to develop a manual for trainers, from which a manual for workers was developed.

Main outputs of the project

CROSKILLS developed seven manuals for trainers for specific topics and one manual for trainers for common topics, and six smaller training manuals for workers. The size of the training materials corresponded well to the level of education and ability to handle such literature of trainers and

trainees. In addition, a register of trainers, training centers as well as trainees which will be accepted as the official Register of the Ministry of construction and physical planning was developed.

Moreover, CROSKILLS consortium contributed significantly to the development of the Ordinance for construction workers for energy efficient buildings. This ordinance was prepared according to the CROSKILLS training programme, it has passed the public discussion phase, and will be published in the next few weeks in the Official Gazette of the Republic of Croatia by the Ministry of Construction and Physical Planning.

The project runs 12 training centres in Croatia, for which there has been a call for interest for trainers. The training centres offer one and two-day train-the-trainers programmes. These training programmes received a very good evaluation.

With regard to the workers' training programme, it consists of some theory and a lot of practical work, group discussions, which are overseen by the consortium. At the end of the programme, there is a short final exam with multiple choice questions. The project offers three training durations of 20, 25 and 30 hours. The number of hours was adjusted to qualified and non-qualified workers.

Marketing and outreach strategy

The project used the national platform set up in Pillar I to market and disseminate the main outcomes. Craft sector information was disseminated via circular letters to companies, press (work in progress), internet (webpages). Partners in the project do their own marketing. The communication campaign was implemented on multiple levels, i.e. workers, employers, investors, site and supervising engineers, vocational schools and the general public. The project has engaged with more than ten thousand people, and conducted presentations at 15 professional conferences. Even their Minister of Construction and Physical Planning is promoting the need for energy efficiency skills, as there are a lot of refurbishment projects going on from the public money but no workers to do it. They have to go to other countries to recruit qualified workers.

The most remarkable project outcomes

The most remarkable project achievements have been the set-up of the national qualification platform and engagement of different stakeholders from governmental and non-governmental institutions, industry, professional associations and media. Moreover, the project's certification scheme has been incorporated into the above-mentioned Ordinance ('CROSKILLS' certification regulation). This will open more possibilities in the future for the continuation of the programme. Overall, the project has been seen and valued very positively.

The most remarkable project outcomes / results and achievements

- National qualifications platform



- Engagement of different stakeholders
 - Governmental institutions
 - Non-governmental organisations
 - Industry
 - Professional associations & associations of citizens
 - Media



Achievement - Regulation – public discussion

Propisi - informacija

NACRT PRAVILNIKA O SUSTAVU IZOBRAZBE I CERTIFICIRANJA GRAĐEVINSKIH RADNIKA KOJI UGRADJUJU DIJELOVE ZGRADE KOJI UTJEČU NA ENERGETSKU UČINKOVITOST U ZGRADARSTVU NA JAVNOM SAVJETOVANJU



20. veljače 2017. - Ministarstvo građevinarstva i prostornoga uređenja izradilo je Nacrt Pravilnika o sustavu izobrazbe i certificiranja građevinskih radnika koji ugrađuju dijelove zgrade koji utječu na energetska učinkovitost u zgradarstvu koji se nalazi na javnom savjetovanju.

CROSKILLS certification scheme incorporated in this regulations!

Zainteresirane i stručna javnost svoje prijedloge, primjedbe i mišljenja na Nacrt Pravilnika može uz prethodnu registraciju dostaviti putem portala e-savjetovanje najkasnije do 22. ožujka 2017. godine. Ovim putem sredstvo pozivamo da je Prilog 2 - Izgled i sadržaj Certificata moguće vidjeti u rubrici Ostali dokumenti.

Challenges

The main challenge has been to achieve the planned targets. For example, it seems that less trainers will be trained than planned (108 vs 200), and that the number of trained workers will be lower than expected (around 800 vs 1200). But efforts are being made to meet the set targets. On the other hand, there are more training centres opened than planned (12 vs 10).

Mutual recognition work

A 'mutual recognition clause' is incorporated in the 'CROSKILLS' regulation. Two meetings on this have already taken place, one with FYR Macedonia in Zagreb and one in Greece. The project is also actively participating in the TWG2 on mutual recognition.

Financing of the project and continuity

The challenge is to secure financing for the continuity of the training programmes. One option would be through the National Qualification Framework, which is currently non-formal, but the difficulty is that there are still no ordinances regarding the non-formal and informal education in Croatia thus the partners cannot get the approval from the Ministry of Science and Education. The consortium is working with the Ministry of Science and Education on this issue.

The fourth Action Plan for Energy Efficiency is being prepared in Croatia and CROSKILLS have cooperated in preparing the draft. CROSKILLS has also attempted to incorporate the need of qualified builders in the public procurement process for energy refurbishment. So far a couple of stakeholders have agreed to do so, such as the City of Zagreb. Moreover, several industry leaders are interested in the CROSKILLS training.

2.1.4 Key messages of the parallel session on the ongoing H2020 construction skills projects

IngREeS

- The focus is on architects, engineers and on-site professionals, through the set-up of qualifications and continuous professional development for selected professionals.
- The hardest part has been the definition of common learning outcomes and developing 5 training programmes, 15 modules of about 50 pages. All of them are in Czech and Slovak Language, most of them in English, some in German.
- The next phase was training of trainers and localisation. Translation / localisation requires about 50% new content to account for local regulations. Currently, the courses have been launched in two countries.
- The results (training materials) have also been used in the Train-to-NZEB project.

PROF/TRAC

PROF/TRAC is an open platform for CPD, meaning it is focussed on white collar skills.

PROF/TRAC is focussed on:

- A roadmap to train nZEB professionals
- Skills mapping app - to identify the gaps and develop future training
- A database of existing training materials (focussed on EU financed projects)
- An educational guide - advice on how to deliver the training
- 3 train the trainer events - creating ambassadors in multiple MSs

- A Youtube channel with multiple videos

MEnS

MEnS focusses on providing training for the unemployed and for women and has been developed in close cooperation with PROF/TRAC:

- Learnt of common issues with PROF/TRAC project via the EU exchange meetings
- Developed common communication and shared social media and best practice plus skills gap data
- Also attended each other's project meetings - have short, but very useful and effective, telephone catch ups with each other.

BUStoB

A consortium consisting of NL training providers - working on basic/essential training content for the skills needed for the energy transition, implementing the 2012-2020 BUS roadmap. The project:

- Secured the commitment of national stakeholders, including training institutes
- Developed qualification description for the professions (craftsmen and other on-site workers) the project addressed.
- Developed an app based tool the BUILD UP Skills advisor app, includes the option of adding a personal profile, to suggest potentially relevant courses,

It was not easy to develop new content, particularly if it is to be used in the regular curriculum. Some success factors identified were: national stakeholder networks - which help integrate training courses into national programmes and qualification framework; regional training centres - to attract and serve local workers, who don't want to travel; marketing tools to attract people e.g. gamification - to entice people into pursuing training, by testing their skills; a focus on pioneers - who are more likely to follow training; and helping regional training centres.

The help to the regional training centres included measures such as BUStoB providing them with letters of support (expressing the value and quality of the work they do) as supporting information when the regional training centres apply for national and other funding. The regional centres that the BUStoB project works with have managed to get €40m of national and other funding support in the last 7 years.

The project also co-operated with PROF/TRAC on sharing the skills mapping methodology, lessons learned while road mapping and the BUS-app infrastructure.

Train-to-NZEB

The main focus is on opening 3 training centres in Europe, which has been achieved by focussing on existing training centres in Bulgaria, Ukraine, Czech Republic, Turkey and Romania. Using existing training centres cut the cost, and they are also set up in a way to facilitate the training. The partners encountered certain issues, for example charging for training courses in Romanian users were used to free courses.

The five recently approved H2020 projects were also briefly discussed - although not all were represented in the session. Three of them are focussed on Building Information Models (BIM). DG GROW

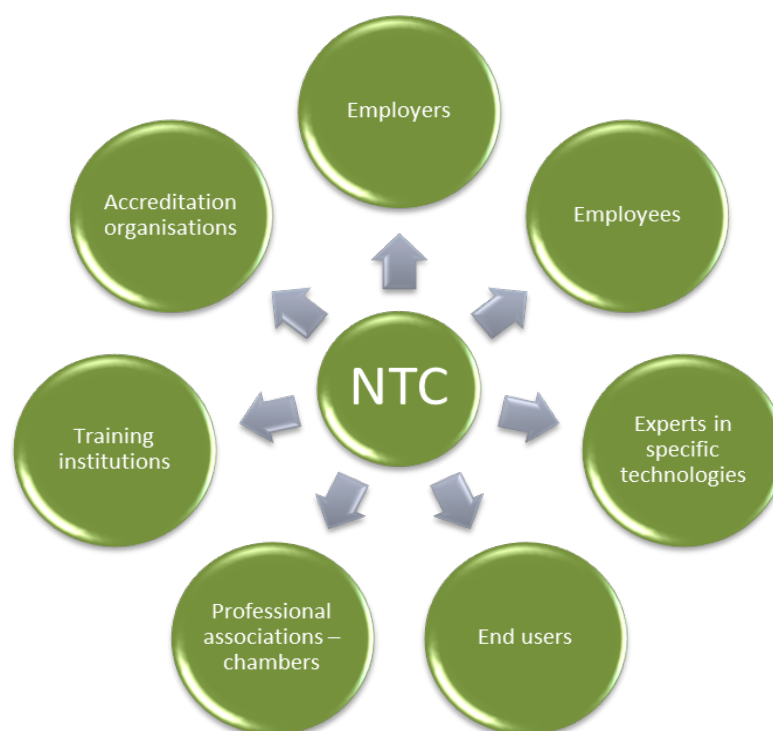
mentioned that there is a working group on BIM, and expert guidelines on its use in public procurement. Digitalisation is at very low levels in the construction sector.

2.1.5 Key messages of the Plenary Session on Remarkable Outputs of BUS projects

This session consisted of 3-minute pitches by four (4) BUILD UP Skills project coordinators who had some remarkable outputs to present. Participants prepared one supporting slide or a video to support their speech. The items presented were:

BUS UPSWING - The 'complete process' of establishing a training and certification of qualifications scheme (Charalampos Malamatenios)

The most remarkable output conveyed by BUS UPSWING is the involvement of all stakeholders in the chain. They created National Technical Committees for three (3) blue-collar professions: insulation technicians, aluminium and metal constructions craftsmen, installers-maintainers of burners.



LuxBuild2020 - The integrated approach to qualification of craftsmen (Christiane Conrady)

There are currently over 700 Passive House certified craftsmen in Luxembourg, a remarkable achievement partly thanks to the BUILD UP Skills project in Luxembourg.

LuxBuild 2020 embraces the Passive House standard did not follow it to the letter. For various reasons, they deliberately decided to allow for a slightly higher energy use of the 15 kWh/(m²yr) that the Passive House standard demands e.g. they wanted to avoid poor indoor air quality, and they also wanted to make sure that also houses not perfectly oriented would also be able to be certified.

Train to nZEB- The Success of the Building Knowledge Hubs (Dragomir Tzanev)

As part of the work of Train-to-nZEB, Building Knowledge Hubs (BKHs) have been opened in various European countries. These Hubs offer new training facilities, demonstration tools and are meant for construction sector professionals to be able to see and touch building components. These Hubs have been developed in close cooperation with several parties relevant to the construction sector skills training (architects, policymakers, university) have been involved. Similarly, they are meant to cater for builders, designers and users altogether.

PROF/TRAC - The PROF/TRAC open platform (Peter Op 't Veld)

PROF/TRAC is developing and maintaining an Open Education Platform for Continuing Professional Development for professionals in the building sector addressing technical experts, engineers, architects and building managers. So far their most remarkable outcomes read:

- A roadmap to train nZEB professionals
- A methodology for skills mapping, supported by the PROF/TRAC skills mapping app
- The PROF/TRAC Database - online <http://proftrac.eu/training-materials.html>
- The PROF/TRAC Educational guide on how to organize national trainings
- 3 successful Train the Trainer sessions with 60 professionals trained from 14 EU countries (CZ, DK, NL, HR, SI, IT, ES, PT, BE, SK, FI, IR, RO, HU)
- 7 national pilots organized with 834 participants

2.2 Key Messages of Day 2 (Wednesday, 31 May 2017)

2.2.1 Key messages of the Plenary Session on Relevant Projects for BUS

Day 2 started with a session on other projects that are relevant for BUS and that could broaden the perspective for the existing BUS and H2020 Construction skills projects. The following three projects were presented during this session:

1. Spanish project BUILD UPON;
2. Another Spanish project Connecting people for green skills;
3. Slovenian project Sector Skills Alliances for transfer of knowledge and skills of VET workforce in construction (SKILLCO).

The key messages from each of these projects are outlined below.

BUILD UPON (Emilio Miguel Mitre)

BUILD UPON is a two-year Horizon 2020 project (March 2015 - Feb 2017) with a budget of 2.35 million EUR composed exclusively of civil society organisations - 13 Green Building Councils (BG, CZ, ES, FI, HR, IE, IT, LV, RO, SE, SI, SK and TR), and the support of WorldGBC. It aims at empowering +1,000 key stakeholders - from governments and businesses, to NGOs and householders - across the 13 countries, to shape the change needed in our existing buildings. The project focuses on renovation by helping national governments to define and implement national renovation strategies.

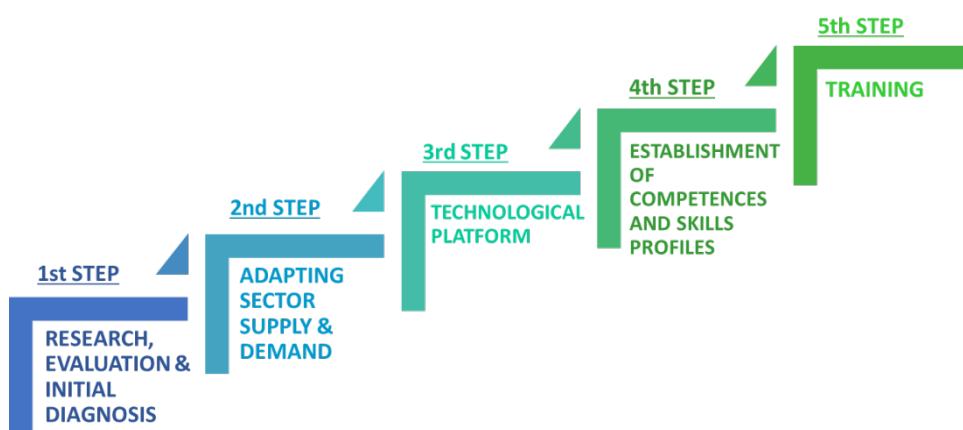
Key messages from the project included the following:

- Renovation projects usually do not try to reach end users (i.e. dwellers of to be renovated building). Meanwhile this project specifically aims to reach the end user;

- The project offers unique approach to analysis of the status quo - [RenoWiki](#) (i.e. Wikipedia™ on relevant initiatives in the area of renovation of buildings) containing around 800 of selected initiatives;
- The project is exceptional in terms of the scope of its awareness raising activities such as [events](#) - more than 100 workshops were organised in the project plus two summits in Madrid and Brussels. The project provides many [resources](#) on how to conduct collaborative processes.
- The values and the vision have evolved during implementation of the project, e.g. the 10-12 RENOmmandments (i.e. recommendations on how to improve renovation process) developed in the project by each participating country suggest. From the Coordinator's point of view, initiatives should mostly focus on end user activation and less on financing (i.e. financing should run after the user/ the demand). Final user should be reached via carefully chosen message, language and channel;
- The project foresees some follow-up activities as well, for example, monitoring to what extent its recommendations are taken into account at the national level.

Connecting people for green skills (Laura Bas)

This was a 1.5 years project (October 2014 - March 2016) project supported by the EU PROGRESS 2007-2013 programme with a budget of 0.4 million EUR. Eight partners from five European countries (DK, CY, LT, PL and SE) joined an international consortium coordinated from Spain. The project was unique in terms of effort in linking supply and demand for green jobs. Its aims were twofold: (1) to identify green skills gaps and training needs in the construction sector; and (2) to detect the professional and educational factors that make impossible for professionals of construction sector to get jobs that require new qualifications and skills based on sustainability. The 4 steps of the project -and a fifth one which is out of the scope of the project- are illustrated and explained below.



- Initial diagnosis has resulted in a catalogue of 22 potential job opportunities in three categories: (1) specialists in installation and maintenance of new processes and technologies; (2) consulting services' (3) expert audit. Each job opportunity contains level of qualification and main training areas/ modules and skills and competences to be acquired;
- To adapt sector supply and demand, the project has surveyed 20 respondents per country (employed and unemployed, among which 10 qualified and 10 non-qualified). A result of this was a catalogue of job offers for 42 selected vacancies related to green building. The

catalogue reveals significant differences (most job offers are unique for one country only) due to, for example, the fact that in some countries (e.g. Spain) most of jobs were for non-qualified workers, while in other countries (e.g. Denmark) the major focus was on high-qualified jobs;

- The [technological platform](#) matches supply and demand to link “Green Skills workers” with “Green skills jobs vacancies”. The platform is a step further from a traditional jobs website, in the sense that in a traditional jobs website visitor finds a job, reads requirements and applies or not, while in the platform, besides the aforementioned functions, the visitor is able to understand ‘why’ she/ he is not succeeding in finding a job and what steps to take to succeed.
- The project then established 30 competence and skill profiles describing training requirements, specialisation, experience and psychological profile for the identified green jobs;
- The last (training) stage established 30 educational guidelines for 42 identified green jobs. Based on these educational guidelines 12 pilot courses have been carried out;
- The key outputs of the project (the platform, educational guidelines) are used by public employment services and training providers in the project’s countries. Educational guides and training courses can increase the green skills background of workers, improving their employability and reducing the gap between labour market needs and supply skills.

Skills sector alliances for transfer of knowledge and skills of VET workforce in construction - SKILLCO (Valentina Kuzma)

SKILLCO is a three-year (November 2016 - October 2019) Erasmus+ project with a budget of over 1 million EUR. It builds on eight partner consortia representing three countries (Germany, Hungary and Slovenia), plus European umbrella sectoral organisation) and coordinated from Slovenia. The project aims at defining and identifying existing and anticipated skill needs, elaborating and defining learning units, with the use of ECVET principles that could be integrated in formal VET programmes or used as training courses.

The project focuses on the 4th EQF level skills. It addresses the challenge that construction is still nationally based sector which does not fully allow improved vocational education and training across countries. Renewal of occupation (national qualification standards) takes years in, for example, Slovenia, while the need for construction workers is often immediate. The project thus aims to address this challenge by offering relevant training content across countries.

The project develops curriculum units (Module A) for pupils and training course (Module B) for employees supported by specifically (to be) developed didactic tools. It aims to permanently integrate the curriculum unit for pupils into VET education and training systems in project participating countries and throughout Europe and to offer developed Modules for employees free of charge to employers/ VET centres/ VET schools.

The project is implemented in five main steps:

- (1) Overview of the status quo (via field and desk research) and
 - Via skills gap research based on previous EU and national sectoral skills studies;
 - Questionnaire for ex pupils and employers;

Two national focus groups (for different representatives of construction companies) on skills gaps identification in each of the three countries of the project;

Interviews with three construction companies per project country.

- (2) Creation of the two Modules (A and B) training content for pupils and employees and final selection of four common construction sector skills;
- (3) Testing the Modules with both target groups and adapting the content;
- (4) Developing the new mobile applications to support both custom developed Modules;
- (5) Integration of developed Modules in VET curricula where possible.

So far the project has identified six common skills gap fields (social skills; literacy; numeracy; green skills; occupational health and safety skills; and ICT skills). Four selected fields will be addressed in detail (by developing the two Modules) and supported by an app which will provide for trainees (pupils, employees) access to different video clips, photos, audio clips, documents and texts etc.

Didactic methods are to be developed in the project. Classroom-based training is outdated and is therefore not identified as a good technique. Thus the project wishes to go a step further and initially identified app, video material, photos, real-life dialogues, mini serious games, scenario building and questions and answers as potential tools. The project is still in search of the best modern way to present and transfer knowledge and skills. The key question is how to encourage user to use the project app. Participants in the room suggested that it is a good idea to consult academic research (especially in the anthropology field), to study user behaviour, to develop content in a decentralised way (each relevant training providers contributing to the training content) and to develop an 'intimate' relationship with the user, making sure that she/he gets customised messages, to maintain the motivation of the user to continue to use the app. In addition, someone mentioned that reliance on a website (instead of an app) may be preferred, as some construction workers do not have mobile phones and problems with user data.

2.2.2 Key messages of the plenary session Reflecting on BUILD UP skills projects

This was an interactive session to reflect upon the results, lessons learnt and challenges of the BUILD UP Skills projects.

BUILD UP Skills programme has generated less training courses / people trained than foreseen

The preliminary analysis of the results of projects shows that BUILD UP Skills projects have not always managed to meet their targets on the number of training courses to be developed and number of people to be trained. The group was asked to reflect on the reasons for this, and the following points were raised:

- People have (and will be) trained beyond the project duration, and these outputs are not captured in the reporting;
- There is simply a lack of demand for many reasons that better marketing could help solve:
 - Insufficient promotion of the training courses (assuming that trainees would come to them)
 - Late promotion of training courses, which explains why some people are trained after the completion of the projects
 - Difficulties in conveying the right messages to convince employers of the benefits of training employees (BUILD UP skills coordinators are organisers of training courses, and when they want to promote their training courses, they stress why the course is

good from the perspective of the individual learner, without thinking of the employers' perspective)

- A lack of understanding of the importance of quality construction and hence low demand (which knocks onto low demand for energy efficient renovations with renewable energy systems, and a lack of specific demand for having such works conducted by skilled professionals)
- Lack of time, given the fact that it often takes longer than the project duration to carry out the pilots.
- Legislative barriers - Validation of courses by official verification bodies is an issue. Also, if a training approach is too innovative, it runs the risk of not being officially recognised. Recognition of skills obtained is essential.
- Unrealistic predictions / economic factors - there was a downturn in demand in the construction sector related to the economic downturn.
- Lack of resources (time, budget) - there was a variation in opinion on whether or not this played a role.

There are several important barriers to selling training courses but an important one is that companies need their workers at the workplace

Overall, there was agreement that sending workers off site for training can be a barrier. The project coordinators who disagreed with this being the most important barrier, still agreed that it is an important barrier. These felt that the most important barrier is the fact that workers do not perceive the value of attending training courses. Cost of training was not (per se) felt to be an important challenge. Generally, if the training is perceived as worth it, there is willingness to pay for it. Only when the costs of training are very high will there be a problem.

"The recipe for success in training provision"

"The perfect recipe for one worker can be a nightmare for another - you need to diversify the training offer to satisfy several audiences" is the quote summarising the approach to a 'perfect' training course. There is no one-size-fits all approach, but in general training courses should take the following points into consideration:

- Brevity - short training courses (2-4 days)
- Flexibility - offering a day time & a night time option as well as an option to spread training days across time
- Should contain a strong practical and visual component (not necessarily on-site). Diversity in methods to cater for the needs of all trainees - The theoretical part should probably be taught in a classroom (face-to-face contact is important and it stimulates discussions) but that should be supported by online learning tools and videos.

2.2.3 Key messages of the plenary session on the timeline for the evaluation of the BUILD UP Skills projects (Irati Artola, Trinomics)

The contractor supporting the EASME with the implementation of the BUILD UP Skills EU Exchange Meetings and evaluation of the programme, Trinomics, presented its timeline for delivering the evaluation of the BUILD UP Skills Pillar II projects and involvement expected from project coordinators. Concrete deliverables expected in the coming months are:

- D3.4: Country factsheets - ongoing

- D3.5: Projects Database (Excel) - ongoing
- D4.4 Final Assessment report (evaluation report) - December 2017
- D2.10 Final publishable report on BUILD UP Skills Pillar II - August 2017

The Country factsheets for most of the BUILD UP Skills country projects are already available on the BUILD UP Skills website under '[national pages](#)' by clicking on each country. These factsheets include data on performance of indicators and address for each BUILD UP Skills project the lessons learnt, main challenges faced, replicability, etc. These can be downloaded in PDF format.

BUILD UP Skills FINLAND Factsheet

BUILD UP Skills activities of the country	
BUS Pillar I project title (contract number)	BUILD UP SKILLS FI IEE/11/BW490 / - SI2.604356
BUS Pillar II project title (contract number)	BUILD UP Skills BEEP IEE/12/BW/350/SI2.659663
Horizon 2020 Construction skills project title (contract number)	n/a
BUILD UP SKILLS BEEP	
Project coordinator's full name	Irmeli Mikkonen
Contact person's name	Irmeli Mikkonen
Contact person's phone	+358 40 700 1466
Contact person's email	irmeli.mikkonen@motiva.fi
Project Partners	<ul style="list-style-type: none"> MOTIVA (Consortium coordinator) Tampere University of Technology Work Efficiency Institute
Project website	http://www.motiva.fi/buildupskills/finland
Keywords	Education, training scheme, on-site, construction, energy efficiency, best practices, condensation, mould, life-long learning, pilot training, adult training
Duration	Start date: 01/10/2013 End date: 31/03/2016
Budget	EUR 551,017 (EU contribution: 75%)
Context	
Summary description	The project aimed to identify and document best practices in energy efficient construction, produce training material for trainers, develop a teacher training scheme, arrange pilot trainings to test the approach and improve the competence of trainers.
Objectives	<ol style="list-style-type: none"> 1. Identify and document today's best practices of energy efficient construction 2. Improve the teaching of construction workers, by preparing new teaching material to be used by teachers, preparing a scheme for training teachers, and arranging pilot training to test the approach 3. Improve the training of workers on construction sites, by producing education materials and new methods, preparing a scheme for training "change agents", and arranging pilot training of the change agents

In all countries* involved in the BUILD UP Skills were formed. Each country team first worked the national status quo. The aim was to assess demand in the building sector until 2020 and specific skills shortages by craft occupation.

This analysis formed the basis for broad discussion with private stakeholders about gaps, future needs, the elaboration and endorsement of national measures to up-skill the qualification of craftsmen, other on-site workers and system installers of buildings. The identified measures aimed at reaching the 2020 targets in the building sector.

For the missing pieces of information in some of the country factsheets (of ongoing projects), the contractor (Trinomics) will get in touch with project coordinators in September 2017, as all projects must have reported their results by then.

Between September and October 2017, project coordinators of BUILD UP Skills and H2020 Construction Skills projects may be contacted for additional information or clarifications important for the BUILD UP Skills evaluation work.

2.2.4 Key messages of the plenary session presentation on getting the most of the BUILD UP Skills Collaboration Platform (Veronika Cerna, GOPAcom)

The communications contractor, GOPAcom, gave a presentation on how to get the most out of the BUILD UP Skills Collaboration Platform (the so-called BUILD UP Skills Community).

The BUILD UP Skills Community is a forum-like standalone platform which offers project coordinators a space to:

- Create groups of interest (e.g. to start a discussion on a topic)
- Share news, reports, documents

- Co-create together
- Discuss and exchange ideas (e.g. post a question to everyone)
- Create polls, express your opinion and vote
- Post events and show participation



After you log in, you will arrive at the dashboard. It offers you:

- HOME
- GROUPS
- EVENTS
- SEARCH

Every BUILD UP Skills coordinator received a login in the past and two seminars have been organised so far aimed to explain how the platform works. Interest from project coordinators has been low, and as result, the platform is yet not in use. Its ultimate use would be to reduce email load and facilitate exchanges. Veronika encouraged everyone to try it. After the 10th EU Exchange Meeting, log in details will be recirculated and a new seminar on how to use the platform will be organised.

2.2.5 Closing by EASME (Agata Kotkowska)

The importance of the deliverables to be prepared by the four Technical Working Groups was stressed. The recommendations that we generate therein will be communicated to DG ENER, DG GROW and other relevant Commission Directorates-General. The deadline for the final deliverables to be finalised is mid-July 2017. Further, the EASME called for the active involvement of the BUILD UP Skills project coordinators on the evaluation of the projects and programme due end of 2017.

3 Technical Working Groups

This section synthesises the outcomes of the four Technical Working Groups during the two sessions (Parallel session 1 from 9:30 to 11:15 on Day 1 and Parallel session 4 from 9:30 to 11:00 on Day 2) dedicated to these thematic groups at the 9th EU exchange meeting.

3.1 Technical Working Group 1 - Finance (sustainability)

Chair: Karoly Matolcsy (HU)

Vice-Chair: Elisabeth O'Brien (IE)

Consultant: Koen Rademaekers (Trinomics), Irati Artola (Trinomics)

EASME: Agata Kotkowska

Participants: Giovanni Carapella (IT), Agris Kamenders (LV), Viola Kelemen (HU), Dimitrios Athanasiou (DG ENER, external), Pim van de Veerdonk (NL, external).



3.1.1 Agenda

The agenda of the two sessions within this TWG was as follows:

Day 1

Focus was on discussing the layout and draft report namely the final deliverable of this TWG. The deadline to send the draft final report to EASME is mid-July.

Day 2

The session focused on discussing Chapter 7 of the report - Sustainability (longer term continuation) of the projects in terms of what is already there in the report, how it can be further developed and so on.

3.1.2 Key discussions

The starting point for the two sessions that this TWG run during the EU Exchange Meeting in Rotterdam was the draft TWG1 Report (final deliverable) written by Trinomics in collaboration with the Chair and vice-Chair of the group. The outline of the report reads as follows:

Chapter 2: Introduction to TWG1 Finance - Background

2.1 Purpose of TWG1

2.2 Link between TWG1 and the other TWGs

Chapter 3: Sources of finance for trainings in the construction sector

Chapter 4: Best Practice cases for financing trainings

Chapter 5: Situation of mandatory trainings in the EU

Chapter 6: Other (non) financial elements of trainings

Chapter 7: Sustainability (longer term continuation) of the projects - training courses developed by the BUILD UP Skills projects

7.1 Short term measures

7.2 Medium term measures

7.3 Long term measures

Chapters 5-7 were the main focus of the discussion in Rotterdam.

The aim of the TWG1 is to draft a report where all the issues relevant to financing of training courses are tackled. The first day in Rotterdam, each of the chapters envisaged in the report was discussed to address 1) whether TWG members agreed with what had already been written in each chapter, and 2) how to expand it and improve it. Since the group was joined by external participants that had not been following up the TWG1 discussions, that served to validate whether the structure foreseen for such a report and its contents are easily understandable for non-TWG members and other non-specialised audiences.

Overall, there is agreement on the contents and several specific suggestions for additions were discussed. These additions will be incorporated into the draft by the TWG members after the EU Exchange meeting (see timeline below under 'action points'). Some general comments to be taken into account:

- To enhance understanding, the report should elaborate on the current bullet points to help the reader of the report understand the context;
- It should consist of full words (e.g. 'Vocational Education Training' instead of VET);
- The report will include a disclaimer reading something like the following: "This is a report reflecting the views of the Technical Working Groups and not necessarily official information".

There was also discussion on expanding the scope of the report, as financial issues are currently addressed just for a few of the countries present in the TWG. However, since surveying BUILD UP Skills project coordinators has not worked so far (low response rate and dubious quality of responses), the

TWG agreed to try a new approach. The project coordinators who provided some information on the survey sent by this group will be contacted again to validate such information. In doing so, the group will ask for the source of information (where did you get this information from?) so that we can make sure of the quality of the information obtained.

Discussion on Chapter 6 of the report

The guiding questions were: How much information would it be interesting to have in such a section in the report e.g. Is it necessary to state amounts? To which exchange should these costs be differentiated for unemployed and employed? It was agreed that:

- The definitions for direct and indirect costs should be given
- When possible these costs should be differentiated for employed vs. unemployed

Discussion on Chapter 7 of the report

This Chapter is key for all BUILD UP Skills coordinators. It should contain recommendations / advice to project coordinators in order to ensure the continuation of their projects / developed trainings in the long term, in other words ensure financial sustainability of their projects, that is the purpose of TWG1. Currently, the chapter consists of short term measures (0 -2 years), medium term measures (2-5 years), and long-term measures (>5 years). The chapter currently reads as a sort of wish list, but what would be interesting is to say how to achieve that, for example, by providing recommendations.

Scope

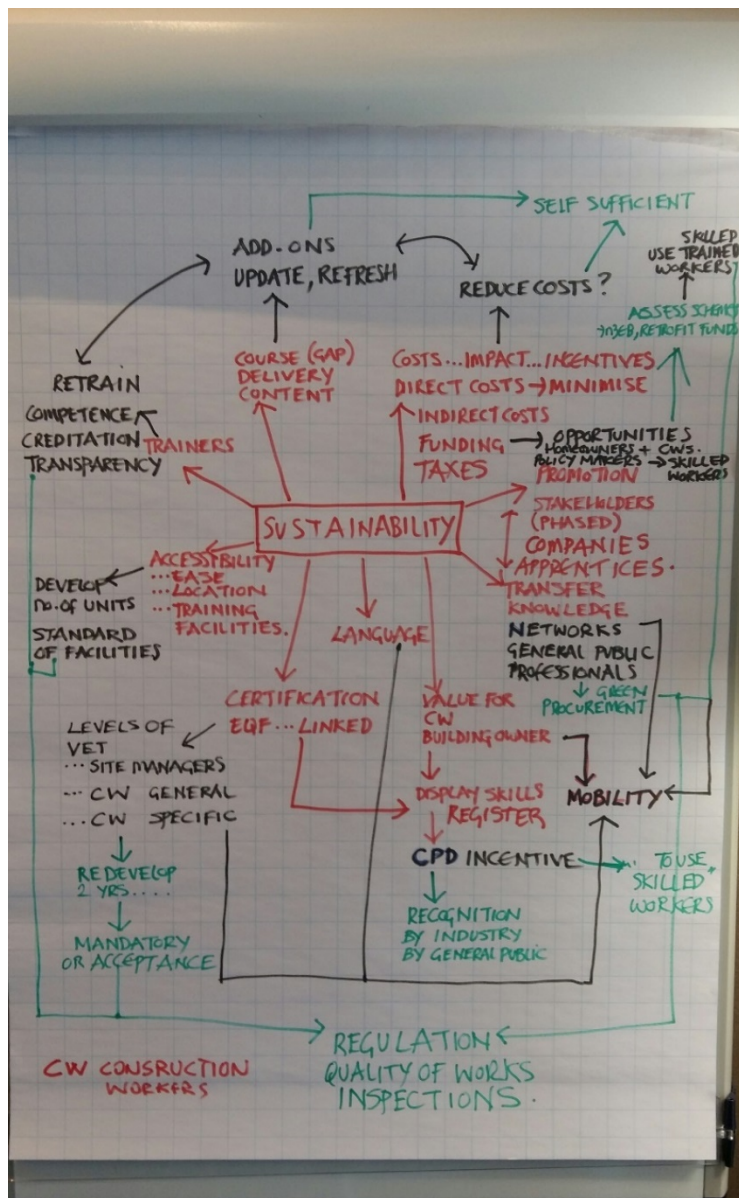
Part of the discussion focused on deciding what the Group should include in these chapters, that is, the scope of the measures to be written here. There was uncertainty on the target group for the measures, for instance, whether these measures should be directed to blue-collar workers or site managers. Also challenging was to decide whether the measures should address the structure i.e. the 'framework conditions' (how training courses are institutionalised). This latter is important to ensure that the sustainability, long-term sustainability of the project is ensured. On the latter matter, it seems there are no reports at Member State level to understand how training courses and skills development initiatives are organised. Knowing this is also key for policymakers to develop suitable legislation. TWG1 considered that it would be interesting to have some document that explains the 'framework conditions' for trainings for each country, meaning:

- What are your current financial streams for trainings?
- What organisations are interacting / working (together) in the sector?
- If there are contributions of companies to financing training where is that going to (a financial Ministry? Institutions directly involved with training?)

This could be a two-pager / factsheet for each member state, but it is not straightforward. For some countries, these conditions may even differ for adult education and VET (e.g. Hungary). Populating such factsheets will not be possible during the timeframe that TWG1 has for submitting deliverables. As such, this will be proposed as a recommendation on Chapter 7.

Contents

The following image illustrates the elements needed for ensuring the longer terms sustainability of training courses that TWG1 brainstormed during in Rotterdam. The elements encompass short term (red), medium term (black), long term (green) aspects.



The starting point is, what gives sustainability to your training courses (how to get the BUILD UP Skills outputs -trainings, platforms, etc continued?)? These range from offering the training in different languages to making it accessible in terms of logistics, to promoting it sufficiently to name some. Although at initial stages you may have trainings in for instance 3 sites in a specific area of a country, that needs to be extended to reach the rest of the country. This needs to be developed for instance in 2 years, and eventually be mandatory or made preferred (as 'mandatory' not be possible on each country). Further, you need to consider module add-ons and updates to the trainings, and make sure trainers are credited, there needs to be transparency. Certification is necessary -- toolkits are useful but are not enough for the trainings to be sustainable. In turn, certification should be available for every construction worker, from blue-collar workers to site managers. The goal is to build a self-sufficient system at the end. Eventually, there should be green tender procurement from the authorities' side: making sure that qualified workers are prioritised. When this is in place (such as proposed in Ireland, where 'green procurement' is the tendering system, for public buildings), the

architect sending out the contracts states that the workforce needs to be skilled/competent, and this needs to be proved (the workers need to prove that they have followed an upskilled training course). The report's Chapter 7 should elaborate on the policy measures behind each of the aspects in the picture

- e.g. one measure for the construction worker is creating a register that everyone can see
- e.g. one measure for the home owner would be lower taxes or being allowed a grant when using qualified workers

3.1.3 Action points and next steps

The consultants will coordinate the work to be done in order to meet the deadline. The timeframe is proposed as follows:

- TWG1 participants will be asked to provide with missing inputs by June 23rd.
- The consultants will in parallel try to reach BUILD UP Skills project coordinators from other countries to see if they can validate / add to the data that TWG1 has collected on financing training in various countries.
- A consolidated draft with the inputs from TWG1 members and non-TWG1 members will be circulated to the TWG1 for a final counter-read.
- A draft final should be ready to be circulated to the Commission by the beginning of July.

3.2 Technical Working Group 2 - Mutual recognition

Chair: Frantisek Doktor

Vice-Chair: Anna Moreno

Consultant (contractor): Katarina Svatikova (Trinomics)

EASME: Rebecca Kanellea

Participants: Bojan Milovanovic (HR), Rossella Martino (IT), Henri Le Marois (FR), Orlando Vitolo (IT).



3.2.1 Agenda

The agenda of the two sessions within this TWG was as follows:

Day 1

- Presentation of draft final report by Katarina, discussion of draft report and finalization of the outputs, recommendations and how to go forward with the topic;
- Discussion on recognition of non-formal and informal training;
- Discussion of how far we can go in formulation of a standard.

Day 2

- Discussion of members' current activities, i.e. presentation of four out of five new Horizon 2020 construction skills projects EE14;
- Exploration of possibilities for future cooperation;
- Summarization of the sessions, wrap up.

3.2.2 Key discussions

Draft final report

There was one new member in the group, hence a quick debrief of the work done so far by the TWG2 has been presented. Katarina then presented draft final report of this TWG and comments and suggestions on this draft as well as recommendations were collected.

The key conclusions from this discussion were the following:

- One of the values added of this group has been to find out what cannot be done with respect to mutual recognition of construction skills, i.e. mobility of workers. The difficulty of setting up such a system are the fragmentation of the construction sector, diverse professional structures and very little done at EU level with regard to standardization of these professions. Another value added has been that the work helped us outline possible scenarios for future actions.
- Recommendations for future actions:
 - To create European standards for learning outcomes for some of the professions;
 - Harmonise the qualification standards and formulate Units of Learning Outcomes (ULOs) in order to increase comparability;
 - Set up a minimum standard at EU level required for each profession, i.e. a kind of 'driving license' for a key set of competences which would be the minimum requirements to do the job. This action would not require further standardization.
 - the three above actions, in sequence, could solve the problem of the complexity and variety of MS qualification systems.
- Recommendation for the European Commission
 - To have a dedicated call to set up the standards, i.e. a European standard on professions - to develop a qualification scheme and develop a certification for that qualification scheme. The standards should be based on Units of learning outcomes.
 - To harmonise the use of subsidies connected to the qualification of people, i.e. give them a deadline to implement it by 2020/ 2025. For instance in Austria, there is a law whereby if public money is used for renovation, one needs to use certified workers; in France, there is a RGE system ("Reconnu Garant de l'Environnement", 'recognised as a guarantee for the environment' in English).
 - To develop a roadmap for the energy performance contracting (EPC), for example ask that by year x, the EPC has to be done by qualified workers, or relate the

requirement for a qualified worker to the amount of money - e.g. If you build a school or hospital, you need to use certified people, if something little, you are not obliged to use qualified worker.

- Certain percentage of social funds should be used for qualifying the workers in the building force, for formal and non-formal education. As this is a common problem in the construction sector, that workers are not going to the training.
- Train the builders on the building site and have a statement that this training is recognized as formal training (as normally not recognized if on a building site, as training needs to be done in training centers, with a few exceptions). Something should be done so that the building site can be recognized as a training site.
- Continuation of cooperation among the H2020 projects, as there is relevance for the subject of mutual recognition.

Recognition of non-formal and informal training

The group discussed the difficulty of attracting workers to the training centres. Henri gave a French example where the training was brought to the people rather than the other way around, via a mobile training centre. Since training is usually recognized only when done in a training centre (fixed location), the problem arises how to recognize skills acquired in these alternative training centres.

How far we can go in formulation of a standard

- Energy performance contracting (EPC) has been given as an example of how to oblige persons to qualify. Such a contract would have to be for example signed only if workers are qualified. This will ensure the return of investment foreseen by EPC.
- To obtain any kind of standard in qualifications, one needs EU level pressure on Member States as national authorities are under pressure from businesses to have less standards and regulation. Standardization could happen for example through CEN standards that each MS could/should adopt whenever public investments are foreseen (Austria example).
- Another discussed idea was to standardize only a number of common descriptors for skills and knowledge.
- RGE certification in France, for companies who want access to e.g. public money, zero interest rate for loans, and some other benefits. These benefits apply only if the work itself is done by the RGE certified worker themselves.
- Certify people who then work in certified companies. But the training needs to be good, to be recognized as 'good for environment'. You must look further on how they are being certified.
- So the European standard needs to be set on how you qualify the people. The renovation companies need to give you the list of RGE companies.

Discussion on members' current activities

Members of the group discussed what they will do in their starting Horizon 2020 construction skills projects and whether any synergies can be exploited. The four (out of five) projects discussed were:

Net-Ubiep project: Coordinated by ENEA; countries involved: IT, ES, SK, LT, HR, NL, EE

- To define profiles of all people involved in the building chains, architects and engineers who need to use the BIM (but related to energy performance of building), Construction and the producer, building manager, public administration providing building permits.
- For each of the four targets they define the profile and run a pilot training action to verify that the training was useful.
- Workshop and focus groups with public administration
- Training for engineers
- E-learning for technicians
- Relevance to TWG2: Establish this role at EU level, altogether 13 countries represented, the results would be considered for standards development

BIMplement: Coordinated by Alliance Villes Emploi; countries involved: FR, NL, LT, ES, PL, BE

- To prepare the change of competencies to anticipate market change, in the construction areas
- Some of the employment houses are working on the changes in competences for 10 years.
- To create a qualification scheme related to the entire value chain
- Select and test the process in 50 different work places (construction or innovation), 30 places in France and 20 in the other 4 countries.
- The tests will provide feedback to produce a methodology guide for BIM training.
- BIM for them is a tool for training and the purpose of training (so train people to work together and to use the tool)
- They will be formulating the units of learning outcomes
- Relevance to the TWG2 - comparison

NEWCOM; Coordinated by AT energy agency; countries involved: AT, HU, SK, NL

- Developing several training programmes
- One WP where they want to facilitate the comparability of ULOs, going to mutual understanding of qualifications in MS that would help companies
- They want to define a common set of descriptors in different languages
- They will test it in NL, who has a database on this.
- If it works, further work could be done to develop a European database, which could allow for a comparison of qualification standards for a minimum of transparency

Fit-to-Nzeb; Coordinated by Dragomir Tzanev, BG; Countries involved: BG, CZ, RO, IE, EL, AT, IT and HR

- Aim to increase competences and skills working in the field of retrofitting to nZEB levels
- Elaborate a set of required technological competences related to EE in building renovation, try to develop new training programmes at all levels
- Review the national education plans for relevant professions if they exist
- And try to introduce relevant changes
- Try to certify schemes
- Relevance to TWG2 - Recognize the solutions across a number of countries

3.2.3 Action points and next steps

- Katarina will go through the draft final report and incorporate the discussions from the two sessions during this EU exchange meeting. She will then send it around with comments for specific input and leave the group to make additions.
- Deadline for the revision of the report has been set at one month, hence the input should be received by Katarina at the end of June.

3.3 Technical Working Group 3 - Innovative training methods and incentives

Chair: Helder Goncalves

Vice-Chair: Peter Op't Veld (not present)

Consultant: Simonas Gausas (Visionary Analytics)

EASME: Amandine Lacourt

Participants: Charalampos Malamatenios (EL); Elisa Sirombo (IT); Javier González (ES); Valentina Kuzma (SI); Savvas Vlachos (CY); Peter Op't Veld (NL); Marjana Šijanec Zavrl (SI); Attila László Zoltán (HU); Helder Gonçalves (PT); Irmeli Mikkonen (FI); Loeva Labye (FR); Karolina Loth-Babut (PL); Hristina Spasevska (FYROM); Henk de Poot (NL); Martijn van Bommel (NL).



3.3.1 Agenda

The agenda of the two sessions within this TWG was as follows:

Day 1

- Intro (9:45-9:50) about what has been done and what we are going to do during this event;
- Overview of final results of the specific survey (as part of the below-outlined presentations, Simonas Gaušas, Visionary Analytics);

- Presentations (including subsequent discussions with participants, (9:50-11:15):
 - Javier González, BUILD UP Skills Pillar II project CONSTRUYE 2020 (Spain), Training materials (mobile app) and beyond - participant satisfaction results;
 - Helder Gonçalves, BUILD UP Skills Pillar II project FORESEE (Portugal), Training materials used in building envelope insulation, solar thermal, PV and wind systems;
 - Peter Op 't Veld, BUILD UP Skills Horizon 2020 project PROF/TRAC, Training methods - Flipped classroom (mixed classroom- and ICT-based training) innovations.
- Closing of Day 1 and preparing for Day 2 (11:15-11:30).

Day 2

- Intro (10:30-10:35) wrapping up Day 1 and briefly introducing Day 2;
- Overview of final results of the specific survey (between below-outlined presentations, Simonas Gaušas, Visionary Analytics);
- Presentations (including subsequent discussions with participants) of the following training infrastructures, materials or methods (10:35-11:20) (order may change):
 - Elisa Sirombo, BUILD UP Skills Pillar II project I-TOWN (Italy), working groups on cases, workshops and mock-up construction training and e-learning - progress and lessons learned;
 - Savvas Vlachos, BUILD UP Skills Pillar II project WE QUALIFY (Cyprus), Training infrastructure - organizing workshops in energy efficient buildings for the first time;
 - Loeva Labye, project "On-site training" (Formation Intégrée au Travail) (France), Training infrastructure on cross-craft training (e.g. airtightness) is brought to construction sites.
- Presentation of the database and its accompanying deliverables (more detailed analysis of main types of training infrastructures, training materials and training methods as well as TWG3 report covering each of the said training elements) including discussions focusing on expectations of participants regarding the above-mentioned outputs (11:20-12:20, Simonas Gaušas, Visionary Analytics);
- Closing of Day 2 & next steps (12:20-12:30).

3.3.2 Key discussions

A few universal factors determining the success of a training course emerged from discussions among participants in the group, including:

- **Combination of different elements of training** to reach the most effective result and the highest impact of a training course. Combination can be different, for example: project CONSTRUYE 2020 combined mobile application for learning theory with workshops to get practical skills; project I-TOWN combined theoretical training based on problem-solving approach with workshops and mock-up construction training; PROF-TRAC combines face-to-face classroom training with ICT training;
- **Trainers.** Qualification and experience of trainers is the key determinant of the quality of training. To deliver effective training trainers should also have excellent social skills. Such

trainers are thus hard to find. For example, project CONSTRUYE 2020 had established a bank of trainers where it registered all suitable candidates to make sure there is sufficient number of trainers in the project. Furthermore, many projects (e.g. SWEBUILD) relied on the logical chain: trainer trains workers (mentors) and then they train their colleagues. However, this often proved difficult due to limited time and resources available to mentors (usually depends on company policy) and insufficiently developed culture of mentoring (depends not only on company policy, but also on a person/ mentor);

- **Balance between theory and practice.** Based on usual demands of participants and experience of projects, more time should be devoted for practical activities (incl. site visits) and less for theoretical training. Participants (esp. workers) have limited patience and more often wish to learn hands-on. For example, H2020 project PROF-TRAC started the course for trainers with 50% of lectures and 50% of interactive training and then switched to 25% lectures and 75% interactive training. The project WE QUALIFY had devoted 70-80% of hours for classroom training, however during evaluation many participants emphasised the need for more time for hands-on practical training. To conclude, theoretical (esp. face-to-face) training is very important (e.g. from experience of PROF-TRAC it cannot be fully exchanged with ICT training), but it should take less time than practical training (the usual balance is 1/3 for theoretical and 2/3 - for practical training);
- **Rich versus poor theoretical training.** Poor theoretical training is the one which is completely based on one-way communication of a trainer based on a MS Power Point presentation or similar training material. The project I-TOWN is an example of a rich theoretical training where a problem-solving approach is used by forming few groups of participants to solve some particular problems in the form of case studies (e.g. sustainable management of construction site, reading technical sheets). Since "I will show you/ show me" often is a dominant way of knowledge transfer among workers, modern demonstration sites seem to be indispensable element of rich theoretical training;
- **Accessibility.** Quality of theoretical training very much depends also on quality of training material - ideally, it should be presented in the language of the workforce (as many of them have difficulties in using materials in foreign language) and be accessible in terms easy-to-understand, based on practical situations-based, and richly illustrated. Furthermore, training material should always be tested/ piloted with the target group before it is developed/ mainstreamed to ensure it is widely used by workers. For example, training material such as mobile applications or e-learning cannot always be a viable solution as some workers may not have the required devices and/ or may often have preference to traditional practical and not ICT-based learning;
- **Quality of practical training.** It should be noted that not all hands-on training is ideal. For example, if it takes place in production facilities of a very specialised company it may produce very limited results. This is due the fact that these facilities may rely only on one type of technology (e.g. systems of one producer with limited functionalities and/ or very specific configuration) and participants will not be able to practice with other systems and get more holistic picture of the available equipment;
- **Cross-craft skills.** Few projects (e.g. CONSTRUYE 2020, BUS Pillar I France, SWEBUILD) have emphasised the importance of workers learning links between their and other crafts. It has

proven as a key element, especially in large construction sites or projects involving multiple occupations;

- **Length of training.** Participants (esp. professionals) have very limited time available for training. For example, in the project FORESEE, training for three or four days was too long time off work for participants and their employers. The solution is to shorten time for training (e.g. splitting few days course into few shorter modules spread over few weeks) or moving training infrastructure to on-site training. In case of the latter, the French project "On-site training" offered a unique solution - a portable training facilities (i.e. in a truck) that can be easily transported across construction sites (30 in total). Such a mobile training facility focuses on cross-craft training such as airtightness and accommodates 6-7 persons at the same time. Important requirement - in order to get construction/ renovation projects companies have to agree in advance to train their employees on-site via this project (with the mobile training infrastructure). This ensures that more workers can attend training courses even if they have very limited time available;
- **Cost of training.** Some training material (e.g. mobile apps, serious games, demo material) can be very costly to develop. The high cost can be reduced via partnerships with providers of relevant construction products (e.g. project CONSTRUYE 2020 partnered with providers to provide demos of biomass boilers) or IT companies. If projects offer apps or IT platforms to participants, they should be free of charge and easy to use to reach decent number of users. Another solution found by project I-TOWN is to record videos of training in workshops and with mock-ups (i.e. full-scale demos such as drywall or insulation systems). Participants who cannot attend the training due to limited time or distance, can watch these videos and at least partly gain the relevant skills. Those who attended training can use videos to repeat what they have learned;
- **Quality control.** Quality of training should be consistent across territory of the country, training providers, etc. If quality differences are too high, demand for such training may drop drastically. Certification is thus a key element in ensuring quality of training. It is also important for participants as it improves their employability - e.g. a certificate may help them to find new job more easily. Mutual recognition of certificates across EU Member States is critical. However, it may lead to a number of anxieties including fear of a brain drain (for countries with high emigration of educated workers) and fear of unemployment of qualified nationals (for countries with high immigration rates). Mobility of workers should balance-out these and other anxieties if not in the medium than in the long term. Countries should make adequate investments in developing skillset of their construction workforce.

Participants were also asked how to further improve the TWG3 database on training activities.

Suggestions were few and included the following: insert webpages of projects into the database; upload the database into Google Docs™; embed the link to projects in the IEE database; refer to project factsheets; link the database with training materials repository developed in PROF-TRAC project; and make sure contact details of project coordinators are provided in the database;

Discussions also focused on the final report of the group - participants' expectations regarding its structure, content and style. To sum up the report should: be very descriptive; summarise collected information (database, presentations and discussion material); follow the initially suggested structure (i.e. definition, major characteristics, innovativeness and assessment for training infrastructures,

materials and methods); contain recommendations regarding next steps in the form of ideas, suggestions, lessons learned (as objective as possible); contain less text and more tables, graphs; contain summary of each project (e.g. final assessment statement). The report should be ready by mid-July.

3.3.3 Action points and next steps

Firstly, the database on training activities of BUS Pillar II/ Horizon 2020 Construction Skills projects need to be finalised considering expectations and needs of TWG participants. The aim is to also collect links to major outputs from all projects and include these both into the database and into the training material repository developed in the H2020 project PROF-TRAC.

Secondly, the final report of this working group needs to be drafted. The final report will include background section describing this group as well as specific sections focusing on definition, major characteristics, innovativeness, assessment and recommendations for major types of training infrastructures, training materials and training methods.

3.4 Technical Working Group 4 - Market acceptance

Chair: Dragomir Tzanev (BG)

Vice-Chair: Jan Cromwijk, (NL)

Consultant: Rob Williams (Trinomics)

EASME: Santiago Gonzalez

Participants: Christiane Conrady (LU), Mantas Jonauskis (LT), Per-Johan Wik (SE), Georg Trnka (AT), Jiri Karasek (CZ), Tomas Funtik (SK), Richard Bayliss (UK), Andro Goblon (SI), Horia Petran (RO), Marie-Pierre Establie d’Argencé (FR), Dorota Pierzchalska (PL), Yvonne Morsink (NL), Irmeli Mikkonen (FI), Sonja Gajic (HR), Asa Douhan (SE), Emilio Miguel Mitre (ES, external), Liesbeth Boef (NL, external)

3.4.1 Agenda

The agenda of the two sessions within this TWG was as follows:

Day 1

- Feedback and review of Business plan and value proposition
 - a. Four presentations - Jan, Dragomir, Mantas and Jiri
 - b. Discussion

Day 2

- How to scale up pilots as market demand increases
 - a. Jan and Richard presentations
- Learning from TWG4
 - a. What did I learn
 - b. What would I recommend for myself

3.4.2 Key discussions

The key discussions sparked by the presentations on both days can be summarised as:

Learnt

Time was dedicated to self-reflection (‘What did I learn?’, ‘What is a recommendation for myself?’):

- Many of the challenges BUILD UP Skills coordinators face have the same ingredients, but the recipes for success always need a variation in “seasoning”.

- However, projects share many more similarities than expected, especially regarding methodologies.
- Risks / evidence of duplication - there should be some balance between initiatives of local use and learning from best practice.
- Performance indicators are only measuring the project period. Adopting a long term perspective is important for evaluating 'sustainability' of the projects. BUILD UP Skills actions need to be placed in a much longer timeframe (10-15+ years). For example, the market for nZEB renovations will become in many countries a mass market around 2030.
- Therefore, the analysis done and lessons learnt in the BUILD UP Skills projects need to be reviewed and maybe also updated for the period after 2020 - An update of the roadmaps for 2020-2030 is needed.
- BUILD UP Skills projects have moved from a research stage to an implementation stage, which calls for additional players - e.g. more from construction industry and final users. This in turn also results in the need for implementation and selling skills. Creating business models (especially value propositions) is key here. Also the power of storytelling is important to consider for this.

Recommendations to oneself

- Making use of business modelling in the writing phase of a new proposal (to get a much sharper dissemination and communication strategy)
- Involving manufacturers in future projects were the key items listed.

Recommendations to the EASME and other relevant (EU) policymakers

- The EU gives a high importance to sustainability of the actions. We learned that most of the consortia are not experienced in bringing products/results to the market, to sustain their actions. Therefore, in future EU Exchange Meeting type-of gatherings, professional training/advice/scaffolding on bringing results to the market will be highly appreciated.
- To promote change management (to change construction)
- Most of the BUILD UP Skills roadmaps are ending around 2020. By then only for new buildings the market has evolved to a mass-market. There is a need to reflect on the long-term nature of the action. Updates of the roadmaps are needed to cover the still in its infancy renovation market. BUILD UP Skills should continue - if stopped now, good work will be lost.

3.4.3 Action points and next steps

In order to produce a draft final output by mid-July, the following actions were discussed:

Rob W (Trinomics)

- To group and summarise the table of drivers and barriers,
- To add the bullet points listed above as the conclusion to the report.
- To structure the report in the form of a long executive summary, with the detail as annexes.
- To circulate the draft that results from this.

All TWG members:

To review the draft and provide comment / input.

4 Feedback from participants

This section presents the results of the 32 feedback forms collected from participants on Day 2 at the end of the EU Exchange Meeting. The feedback received is primarily very positive as spelled out in the following paragraphs. The forms managed to collect some qualitative feedback (i.e. comments, suggestions) that helps understand what the highlights were and what was not so good.

Meeting organisation

The contractor's work concerning the meeting's organisation has been rated better than ever before reflecting the hard work made by the consultants who have each time carefully considered the feedback received from previous EU Exchange meetings. In a scale of *1- not useful at all; 2 - mediocre; 3 - neutral; 4 - good; 5 - very good*, the overall meeting organisation has been considered with the highest score namely 'very good' (63% of responses) and 'good' (32% of responses). The meeting venue was appraised - particularly the breakout rooms and not so much the plenary room (since it had a column obstructing the view)- and so was the accommodation at the hotel in general. Receiving a more detailed registration confirmation including the parallel sessions that one has subscribed to, would be a plus.

Plenary sessions

Plenary sessions were mostly good (50% of responses) and very good (34% of responses). There are no clear favourite presentations this time, as all plenary sessions have been rated very similarly. However, it has been suggested that some speakers were either repeating stuff the BUILD UP Skills coordinators already know about or were (slightly) off-topic.

Technical Working Groups

All TWG sessions and ongoing work were rated as either 'good' or 'very good' (two highest scores). In the absence of comments, and given the small sample, it is hard to assess why some TWGs are rated better than others. It is also not straightforward to assess what the strengths are in the way the groups are being managed, and what could further improve. However, a skilful facilitator seems to be key to guide the groups. Overall, most of the TWG members think their deliverables are going to be useful or very useful. Comments suggest that the database that TWG3 is going to produce is possibly going to be one of the major outputs of the work that has been done by these groups. From the forms it is understood that most of the TWG members are willing to actively participate in finalising the deliverables due mid-July 2017.

Parallel sessions


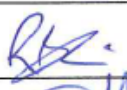

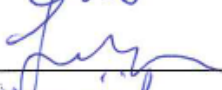



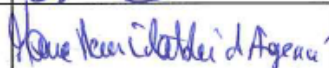
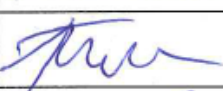
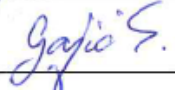
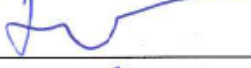
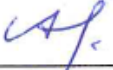
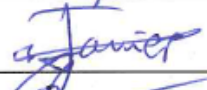


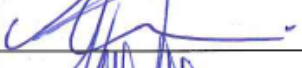

The parallel sessions / workshops were rated as being good (50% of responses) to very good (36%). From the feedback received, we conclude that presentation skills of the speakers and the content presented matter to the BUILD UP Skills audience. One comment suggests that presentations were too process-focused, and that some more attention could have been given to materials developed.

Site visit & dinner

The site visit and dinner were rated between 'good' (40% of the responses) and very good (33%). From the feedback collected it seems that the sustainable, innovative building technologies that the BUILD UP Skills

coordinators could learn from and see first-hand, were up to the standards. The restaurant choice of the contractor received some criticism. The majority seemed to have appreciated the choice for a restaurant catering local, organic, quality food, and located in a pleasant and convenient location. However, some explicitly disliked the food (not specified what was not good about it), the quality of it, and found the restaurant too pricy.


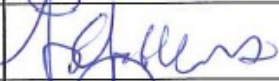


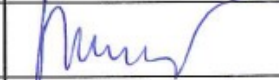
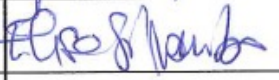

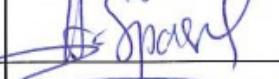


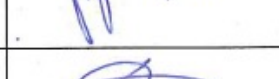



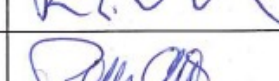
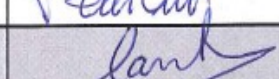
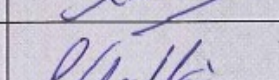
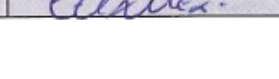
Annex 1 - List of participants

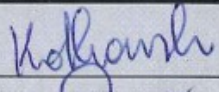

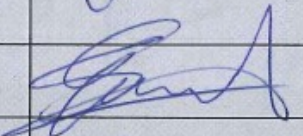
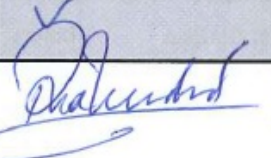
LAST NAME	First Name	Organisation	Signature
ATHANASIOU	Dimitrios	European Commission - DG Energy	
BAS MARIAN	Laura	PATER	
BAYLISS	Richard	CITB	
BOEF	Liesbeth	OTIB	
CARAPELLA	Giovanni	FORMEDIL	
CROMWIJK	Jan	OTIB	
DOKTOR	Frantisek	ZSPS	
DOUHAN	Åsa	The Swedish Construction Federation	
ESTABLIE D'ARGENCE	Marie-Pierre	Alliance Villes Emploi	
FUNTIK	Tomas	SKSI	
GAJIC	Sonja	HUPFAS	
GOBLON	Andro	Construction Cluster of Slovenia	
GONÇALVES	Helder	LNEG	
GONZÁLEZ	Javier	Labour Foundation for Construction	
HORVARTH	Roman	European Commission - DG GROW	
JONAUSKIS	Mantas	Regional Innovation Management Centre	
KAMENDERS	Agris	Riga Technical University	
KARÁSEK	Jiří	SEVEN	

KELEMEN	Viola	ÉMI	
KUZMA	Valentina	CCIS - CCBMIS	
LABYE	Loeva	Alliance Villes Emploi	
LE MAROIS	Henri	Alliance Villes Emploi	
LOTH-BABUT	Karolina	The Polish National Energy Conservation Agency	
MAJTNER	Tomas	SPS	
MALAMATENIOS	Charalampos	CRES	
MARTINO	Rossella	FORMEDIL	
MATOLCSY	Károly	ÉMI	
MELANDRI	Daniela	Energjada	
MIGUEL MITRE	Emilio	GBCe (Green Building Council España)	
MIKKONEN	Irmeli	Motiva Services	
MILOVANOVIC	Bojan	University of Zagreb - Faculty of Civil Engineering	
MORENO	Anna	Enea	
MORSINK	Yvonne	Kenteq	

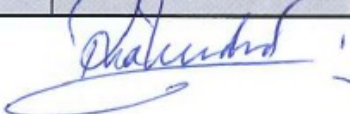

JOUREBY CHRISTIANZ MGENEDAY



O'BRIEN	Elisabeth	LIT	
OP 'T VELD	Peter	Huygen Ingenieurs & Adviseurs	
PETTRAN	Horia	NIRD URBAN-INCERC	
PIERZCHALSKA	Dorota	The Polish National Energy Conservation Agency	
ŠIJANEC ZAVRL	Marjana	ZRMK - Building and Civil Engineering Institute	
SIROMBO	Elisa	Politecnico di Torino - POLITO	
SMULDERS	Peter	OTIB	
SPASEVSKA	Hristina	University Ss Cyril and Methodius	
TERPSTRA	Doekle	UNETO-VNI	
TRNKA	Georg	Austrian Energy Agency	
TSOUTSOS	Theocharis	Technical University of Crete	
TZANEV	Dragomir	EnEffect - Center for Energy Efficiency	
VITOLO	Orlando	FORMEDIL	
VLACHOS	Savvas	Cyprus Energy Agency	
WIK	Per-Johan	Energy Agencies of Sweden	
ZOLTÁN	Attila László	Hungarian Coordinating Association for Building Machinery	
GONZALEZ HERRAIZ	Santiago	EASME	
KANELLEA	Rebecca	EASME	

KOTKOWSKA	Agata	EASME	
LACOURT	Amandine	EASME	
ARTOLA	Irati	Trinomics	✓
GAUSAS	Simonas	Visionary	
RADEMAKERS	Koen	Trinomics	✓
SVATIKOVA	Katarína	Trinomics	✓
WILLIAMS	Rob	Trinomics	✓
CARR	Adama	GOPA Com.	✓
CERNA	Veronika	GOPA Com.	

VAN DE VEERDONK PIM KENTEQ
 Henk de Poot Technopolis
 Markijn van Bommel ISSO


 Zuur


Annex 2 - Pictures from the site visit to the Innovation Centre for Sustainable Building (Innovatie Centrum Duurzaam Bouwen - ICDuBo) in Rotterdam



