New competences for the construction sector to achieve NZEBs

Assist.prof. Bojan Milovanović
University of Zagreb,
Faculty of Civil Engineering, Croatia
Introduction

- the most **challenging aspect** of reducing energy use in the building sector lies in increasing the rate, quality and effectiveness of building renovation since the current rate of renovation is only 1.2 % per year.

- **Lack of adequate construction skills**
  - important barrier that hampers the development of NZEBs and effective renovations.

- **Improving the skills is of key importance**
  - of middle- and senior-level building professionals,
  - various trade professionals
Practical experience

• many construction mistakes happen
  • greatly affect building’s energy performance and the appearance of construction damage.
  • particularly when details and joints are considered,
WHAT ARE OUR GOALS?

CREATING JOBS & GROWTH, BRINGING DOWN GREENHOUSE GAS EMISSIONS, SECURING ENERGY SUPPLY

“CONSUMERS BY DEFINITION, INCLUDE US ALL. THEY ARE THE LARGEST ECONOMIC GROUP, AFFECTING AND AFFECTED BY ALMOST EVERY PUBLIC AND PRIVATE ECONOMIC DECISION. YET THEY ARE THE ONLY IMPORTANT GROUP WHOSE VIEWS ARE OFTEN NOT HEARD.”

JOHN F. KENNEDY, 15TH MARCH 1962

Putting energy efficiency first

Demonstrating global leadership in renewables

Delivering a fair deal for consumers

Energy Efficiency in Buildings - for a Better Tomorrow / Zagreb/ Croatia /26-27 September 2018
Any calculation is only as good as the actual planning and construction. The influence of quality is often neglected!!!
Recorded construction failures in Croatia
Construction mistakes discovered using infrared
The lack of quality is often caused by the lack of competences!

• new knowledge & skills related to nZEBs.
• These include
  • new materials and products,
  • the integration of RES,
  • new systems or processes,
  • the use of Building Information Modelling (BIM) tools
  • Cross craft
  • ...

Energy Efficiency in Buildings - for a Better Tomorrow / Zagreb/ Croatia /26-27 September 2018
EU aims to equip the next generation of construction sector workers with the skills and knowledge needed to ensure building and renovation projects meet stringent energy efficiency requirements.
Amendment of the EPBD II

(10) According to the Commission's impact assessment, renovation would be needed at an average rate of 3% annually to accomplish the Union's energy efficiency ambitions in a cost-effective manner. Considering that every 1% increase in energy savings reduces gas imports by 2,6%, clear ambitions for renovation of the existing building stock are of great importance. Thus, efforts to increase the energy performance of buildings would contribute actively to the Union's energy independence and, furthermore, have great potential to create jobs in the Union, in particular in small and medium-sized enterprises. In that context, Member States should take into account the need for a clear link between their long-term renovation strategies and pertinent initiatives to promote skills development and education in the construction and energy efficiency sectors.
(6) In Article 10, paragraph 6 is replaced by the following:

"6. Member States shall link their financial measures for energy efficiency improvements in the renovation of buildings to the targeted or achieved energy savings, as determined by one or more of the following criteria:

(a) the energy performance of the equipment or material used for the renovation; in which case, the equipment or material used for the renovation is to be installed by an installer with the relevant level of certification or qualification;"
Upskilling towards energy efficiency and sustainable energy should be done throughout the entire value chain of the buildings sector

• (including designers, architects, engineers, building managers, technicians, installers and workers including apprentices).
BUILD UP Skills: The Challenges

- Deficiencies in the training programmes
- Need for professional training of trainers
- Outdated training materials and facilities
- Monitoring of training demand
- Engagement of stakeholders
- Communication: improving the image of the construction sector
- Broad endorsement campaign for the Roadmaps
• Upgrading or setting up large-scale qualification and training schemes in these areas goes hand-in-hand with initiatives that:
  • increase the demand for skilled building professional,
  • create new job opportunities and
  • boosting Europe's economic competitiveness.

• Central European Initiative Member States
  • several initiatives exist to upgrade professional competences in NZEB design and construction.
BuildUP Skills

• Against this background, the EU launched in 2011 the **BUILD UP Skills** initiative
  • developing national qualification platforms and roadmaps, and
  • providing training in the field of energy efficiency and RES in buildings.

• The scope of the initiative has been expanded to other building professionals under **Horizon 2020**
  • projects mainly developing multi-country qualification and training schemes.
Energy Efficiency in Buildings - for a Better Tomorrow / Zagreb/ Croatia /26-27 September 2018
Training materials

www.croskills.hr

Manual for workers
• 6 different manuals

Manual for trainers
• 7 different manuals
• 6 manuals with specific topics for workers
• 1 manual with common topics

Training materials are freely available to help architects, engineers and other professionals better design and build nZEBs.
Croskills

- Ordinance on the system of training and certification of construction workers which install building elements that affect building’s energy efficiency
  - (OG 67/2017)
Register

- Online register
  - Register of training centres
  - Register of trainers
  - Register of certified workers

- Official register of the Ministry of construction and physical planning

http://seminar.croskills.hr
Why Register

• a means of generating **new business leads**
  • Registered members can use the annual CROSKILLS logo in their promotional material

• creates a **direct link between training and employment opportunities**
  • A platform for all construction workers to join the Register and display their training and skills.
  • Search the Register for construction workers who are trained in quality low energy building

• „**control” tool** for investors and supervising engineers
Project end...

• As the project comes to a close, we faced the challenge of getting employers and employees to use the training
  • it’s one thing to raise awareness, but another to translate this awareness into concrete action
  • Consumers are the real change agents in this process - if there is no demand from the market, there will be no demand for training

• Issues
  • missing culture of continuing education and training among craftsmen
  • Lack of appropriate LLL on nZEBs among civil engineers, better situation (but not great) among architects.
Continuation of the efforts

- developing new competences are continued through the Horizon 2020 projects
- developing multi-country qualification and training schemes
FIT-TO-NZEB project aims to increasing competence and skills of the building professionals in the field of retrofitting to NZEB-levels in the target countries through the unique educational programmes developed by the consortium, which will contribute to both the quality and the scale of the deep energy building renovations.
The logic behind it

• Covering the full scale of the academic & VET system (EQF levels 2-7)
• Complementing and providing sustainability of BUILD UP Skills projects
• Local capacity for trainings on deep energy retrofit (DER)
• Broadening of the geographical scope and large-scale networking

© Passive House Academy
Achieved so far

- Elaborate a set of required technological competences related to DER;
- Develop new training programmes employing the newly elaborated technical competences;
- Review the national educational plans for the relevant professions and introduce changes;
- Develop demonstration and practical training models;
- Train and certify a sufficient number of trainers.
Network for Using BIM to Increase Energy Performance

www.net-ubiep.eu
Project goals

- Defining competences required and develop appropriate training materials
  - to properly introduce BIM for energy performance evaluations to ALL professionals and technicians which participate in the building process

BIM – building information management

Better management of the information during the whole life cycle of the building is absolutely necessary in order to avoid mistakes and have trustful information at any time / when an intervention is necessary.
Net-UBIEP: Target groups

- Four target groups have been selected according to their role in current building processes:

  - Public Administrations
  - Professionals (Engineers/Architects)
  - Technicians (Installers/Maintainers)
  - Tenants/Owners Building Administrator
Net-UBIEP qualification models

Seminars on BIM implementation strategies

Classroom courses on energy performance implementation in BIM

E-learning courses on the use of BIM in the life-time of the building

Seminars on improved energy performance and plant management using BIM
Join us...

• University of Zagreb Faculty of Civil Engineering
  • doc.dr.sc. Bojan Milovanović bmilovanovic@grad.hr
  • doc.dr.sc.Ivana Burcar Dunović iburcar@grad.hr
• Anna Moreno Net-UBIEP coordinator netubiep-project@enea.it

• Facebook: @netubiephr

• Register as a stakeholder at www.net-ubiep.eu

Energy Efficiency in Buildings - for a Better Tomorrow / Zagreb/ Croatia /26-27 September 2018
Conclusions

• In the field of energy efficiency increased control and quality assurance is needed to improve the quality of works.

• Hands-on experience is a really important part of the learning process.
  • combining standard classroom training with practical courses

• By engaging with as many stakeholders as possible and broadening our training offer, we can ensure that our model is sustainable.

• Need to create stronger demand for qualified (skilled and knowledgeable) workers.
Divjak: Za uspostavu regionalnih centara kompetentnosti oko milijardu kuna iz fondova EU-a

Ministrica znanosti i obrazovanja Blaženka Divjak pozvala je srednje strukovne škole i županije, kao njihove osnivače, da se jave na raspisani javni poziv za uspostavu regionalnih centara kompetentnosti u strukovnom obrazovanju, za što je iz fondova EU-a osigurano oko milijardu kuna.