Key factors to nZEB and basis for national training programs. Assignment
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Aspects that interact with an nZEB definition

Source: Principles for nearly Zero-Energy Buildings BPIE
Aspects that interact with an nZEB definition

• To be clear in its aims and terms, to avoid misunderstandings and implementation failures.
• To be technically and financially feasible.
• To be sufficiently flexible and adaptable to local climate conditions, building traditions etc., without compromising the overall aim.
• To build on the existing low-energy standards and practices.

To be ambitious in terms of environmental impact and to be elaborated as an open concept, able to keep pace with the technology development.
• To be elaborated based on a wide agreement of the main stakeholders (politicians, designers, industry, investors, users etc.).
• To be inspiring and to stimulate the appetite for faster adoption.

Source: Principles for nearly Zero-Energy Buildings BPIE
Keys
Learning from the main barriers

• Many professionals in the buildings sector **have limited knowledge** and skills in energy efficient building design and nZEB principles.

• **Lack of collaboration between the different disciplines and professionals.** Most of the available trainings focus on one specific target group and on one technique or concept.

• **Lack of harmonized certification and qualification schemes** with mainstreamed training materials for building professionals on nZEB. Lack of skills-mapping and qualifications for the specific subject and target groups.

• **Training materials** for education and post-initial education are created on an ad-hoc basis without consensus on an underlying qualification framework. Training materials for education and post-initial education should be coordinated and updated for a life-long learning process.
Active learning approaches in front to traditional ones

- People build up their own meanings, based on what they already know and how they see the world around them.
- Different people give different interpretations to the same thing, may retain different aspects and may act differently on the basis of the same information.
- There are many ways through which people can learn without someone else passing on pieces of expert knowledge.
- Learning is a social activity and a lot of learning is tacit.
- Learning is dynamic and context-bound and, therefore, good learning depends on meaningful learning environments.
Quality learning environment

It should be **motivational** for the learners,
It should be **rich and reflective**,
The provision should be **tailor made, learner centred** and attuned to the **specific learning needs** of the adult learning.
The provision should **respect the background** of the adult learner and the knowledge and experience of the adult learner should be used as **resource in the learning process**.
The provision should be offered in a **flexible manner** in terms of duration, time, and place.
The learning should be both **relevant** for the adult learner and – potentially – other stakeholders (e.g. employers, societal organisations).
Specific keys: NZEB

• Subject: cost-optimal and NZEB calculations can result in new and more strict requirements in MSs, which in turn can lead to more precise or more detailed methods for calculating the energy requirements, or at least some additional parts of the calculations to deal with solutions involving advanced and innovative technologies.

• Experts that have developed REAL NZEB are required in courses.

• Methods and software to design NZEB.

• Working on multidisciplinary groups, important:
  • Time to work together in person. (to know each other, perspectives,..)
  • Relevant experts to give feedback about the work done in the course.
The Learning Pyramid

- Lecture: 5% Average Retention Rates after 24 hours
- Reading: 10%
- Audio Visual: 20%
- Demonstration: 30%
- Discussion Group: 50%
- Practice by Doing: 75%
- Teach Others: 90%

Source: National Training Laboratories, Bethel Maine
Basis for the development of national training programs
PROF / TRAC pilots

Objective
To organize and coordinate seven national training programs pilots developed in Denmark, The Netherlands, Spain, Italy, Czech Republic, Croatia and Slovenia during the project. To ensure that national programs are consistent with the project strategy and they all meet the requirements set.

Target groups
The pilot national training courses have been aimed at engineers, architects and managers.

Course format. The training has taken place in both face-to-face education in selected cases, by webinars.

Tasks. National responsibilities for the pilot national training courses:

✓ Together with the trained trainers, to develop and to implement the national training programs
✓ To provide the IVE with course content in English (at least the index) and to implement corrections pointed out by IVE to ensure that national programs are consistent with the project strategy
✓ To include the courses in their existing training portfolio
✓ To arrange the recognition (certification or accreditation) of the training if necessary according to the national framework.
**GUIDE:** Basis for the development of National training programs

This educational guide is available for training providers to be used as a support to design the pilot actions (courses).
Basis for the development of National training programs

OBJECTIVES: Specific

LEVELS OF TRAINING

In PROF/TRAC training, the **multidisciplinary groups** of participants need special consideration: individuals have specific and often really deep knowledge in one special field, but very superficial knowledge in other professions.

Trainings must find the **balance** between deepness and comprehensiveness, **specific** and **general contents** considering the participants’ background. This balance can vary course by course.
Basis for the development of National training programs

CROSSCUTTING TRAINING
This level develops skills which are necessary competences of a successful professional but can be independent from the profession.
The cross-cutting level training is about to organize and complement this knowledge, make the participants more aware about the tools, skills can be used, and the aspects of their importance. As a starting point, the Methodology for skills mapping (guidance document) identified the following cross-cutting skills:

- Communication
- Information management
- Collaboration (teamwork & facilitation)
- Quality assurance
- Sustainable architectural design
- Integrated design
- Sustainable building materials
- Sustainable installation materials
- Environmental (indoor) quality
- Economics
- Procurement

SPECIFIC TRAINING
Specific training level develops the profession-specific knowledge and skills.
Training should be tailored focusing on the identified skill gaps.
This level can be further subdivided according to:

- Training in professional skills related to the construction sector
- Training in new professional skills
- Training in future construction
Basis for the development of National training programs

SCOPE

WHAT?

The content for the **specific scope** of the training is defined by skill mapping method, which aims to find the most important knowledge- and skill gaps among the NZEB professionals by country.

The **general scope** of the whole is NZEB knowledge in the related professions, skills, techniques, best practices, among the professionals working in this area.
Basis for the development of National training programs

SCOPE

HOW?

The **ambassadors** are responsible for finding the best way of action, and test it in the framework of pilots. **YOU** will:

- find the **best trainers**, 
- choose the specific **course formats** to be implemented, 
- develop the **content** for each course and the overall structure of trainings to fill in the national skill gaps identified in their country.
Basis for the development of National training programs

SCOPE

WHERE?

The pilot actions until now had taken place in Denmark, The Netherlands, Spain, Italy, Czech Republic, Croatia and Slovenia.

Each of these countries has their ambassador and the specific skill gaps identified during the skill-mapping.

After the project duration, a roll-out effect is expected to other European countries, so in the end, the target location is the European Union itself.
Basis for the development of National training programs

TARGET PUBLIC AND PRIOR KNOWLEDGE

How to address different profiles in the same course?

OPTION 1: Representatives

OPTION 2: Questionnaires

OPTION 3: Teamwork training

OPTION 4: Competition

OPTION 5: Brainstorming about skill maps
Basis for the development of National training programs

TRAINER

EXPECTATIONS

What is it expected from the trainers?

- According to the identified skill gaps, elaborate and specify the required training material
- to select and adapt specific education material addressing special needs of a training according to the national situation and circumstances (climate, building technology, building and cultural traditions)
- It is not necessary to engage accredited trainers for the training programmes
Basis for the development of National training programs

CONTENT

1. The relevant gaps are identified; the trainings need to fill these gaps.
2. As a first step, the trainer should gather the relevant available material with the help of the repository, which are relevant to the gap.
3. Structure it according to national needs, conditions (climate, economy, etc.) and needs assessment
4. Then make an overview, and design the training considering the specific training methods available and aspects to consider
Basis for the development of National training programs

STRUCTURE
Designing the training structure is the trainer’s responsibility, too. The training should add up from a compulsory part and a facultative part.

TRAINING FORMAT

- There should be a minimal number of attendees, e.g. for a presentation, 30 participants are suggested as a minimum.

- Final goals must be very clear in order to adapt the course content. These need to be based on the national skill gaps identified.

- The trainings must cover the gaps for each profession.
Basis for the development of National training programs

**MONITORING AND EVALUATION**

**Indicators**

- number of participants
- composition of participants (by profession and gender)
- existing educational level EQF and EHEA
- participants’ working experience not related to NZEBs (years)
- participants’ working experience related to NZEBs (years)
- improvement in educational level EQF by skills
- Previous participation of PROF / TRAC trainings
- Other training participations
- Ethics (type of data stored, where it is stored, why it is stored, access rights — who?, how long will it be kept?, security and data disposal, informed consent, number of people asking for data removing)

promote women participation
Basis for the development of National training programs

Documentary proof

- List of channels for dissemination
- Pictures
- Scanned signed lists of attendees
- Materials: presentations, tests, etc.
- Scanned signed certificates of attendance
- Ethics
- Gender
Basis for the development of National training programs

ANNEXES
Annex 1. Questionnaire quality, fields of interest
Annex 2. Templates of course (course programme)
Annex 3. Template for the certification (attendance certificate)
Overall conclusions and recommendations from previous courses
### How to address different profiles in the same course?

<table>
<thead>
<tr>
<th>Country</th>
<th>Workshop Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANVAK Denmark</td>
<td><strong>Workshop.</strong> Design competition: Teams consist of 2 architects and 2 engineers.</td>
</tr>
<tr>
<td>TVVL The Netherlands</td>
<td><strong>Workshop:</strong> architect + consulting engineer</td>
</tr>
<tr>
<td>ATECYR Spain</td>
<td>Interdisciplinary <strong>workshop</strong> case (Architect, Mech./Elec. Eng., Execution Eng.)</td>
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<tr>
<td>CNAPPS Italy</td>
<td>Different professionals work together to design a common nZEB building (during the <strong>workshop</strong>): architects, engineers, energy project managers</td>
</tr>
<tr>
<td>CKAIT Czech Republic</td>
<td>Participants of each course are the mix of architects, engineers, technicians and during discussion and communication trainings they change experiences and knowledge.</td>
</tr>
<tr>
<td>HKIS Croatia</td>
<td><strong>Workshop</strong> containing representatives of all professions: Architects, engineers (mechanical, electrical), building owners (managers)</td>
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<tr>
<td>ZAPS Slovenia</td>
<td><strong>Workshop:</strong> Establishing teams 1+1 or 1+1+1</td>
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</tbody>
</table>
Lessons learnt

**Study tours** are well received by building professionals all over Europe.

**Co-organising** with other organizations improves visibility and gives direct access to different target groups.

Propose workshops in a **time frame available** to self-employed people (evenings or short 1/2 days).

The **background of the professionals** is quite heterogeneous, so it is recommendable a short presentation of themselves (round).
Assignment
ANNEX 2. TEMPLATES OF COURSE

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<td>PROFILE RECOMMENDED</td>
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<td>EXPECTED OUTCOME</td>
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<td>TRAINING METHODS</td>
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<td>REQUIRED READING</td>
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<td>SUGGESTED READING</td>
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<tr>
<td>COURSE TITLE</td>
<td>Interdisciplinary approach and cross disciplinary teamwork for nZEB design</td>
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<td>TARGET GROUP</td>
<td>Architects, engineers (mechanical, electrical), building owners (managers)</td>
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<td>ENTRY QUALIFICATIONS</td>
<td>EQF 6 and 7</td>
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<td>OBJECTIVE(S)</td>
<td>EPBD (energy performance of buildings): the basic knowledge of the energy related EU directives related to nZEB.</td>
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<td></td>
<td>The knowledge of national regulations and calculations - application to nZEB</td>
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<td>nZEB design issues – basics</td>
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<tr>
<td>CONTENTS</td>
<td>All training materials prepared according to IDES-EDU programme. Preliminary materials available as e-learning materials.</td>
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<td>EXPECTED OUTCOME</td>
<td>Assuming basic concepts of team work on nZEB.</td>
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<td>Exchange of experience.</td>
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<td>Mutual understanding and awareness of of cross disciplinary team work on nZEB designs</td>
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<td>Increased skills in nZEB design</td>
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### TRAINING METHODS (RECOMMENDED)

- Preliminary preparation of attendees based on e-learning course materials provided by training provider.
- Face-to-face lectures.
- Workshop with solving practical examples based on existing case studies.
- Discussion and brainstorming.

### REQUIRED READING

IDES EDU based materials prepared in advance by training provider.

### SUGGESTED READING

Materials from PROF/TRAC training material repository.

### EQUIPMENT REQUIRED

Overhead projector and computer, own laptop for each participant, WI FI connection

### REQUIRED PREPARATION

Preliminary preparation of attendees based on e-learning course materials provided by training provider

### TRAINER(S) PROFILES

Academics from universities and specialists from technical practice

### VENUE

HKIS or one of Croatian Universities

### DATE


### INTERDISCIPLINARY APPROACH

Within the workshop multidisciplinary teams will work together on design issues for nZEB.

Not only giving their opinion within their own discipline but also try to think as a professional in a other discipline.

### MANAGEMENT

Participants of the second edition will pay a normal course fee
Expected results

Seven National training programs description

- Venue and dates for the first round
- Training program: content, format, duration...
- Multidisciplinary approach selected
- Trainers proposed or profiles Remember parity rule
- How the existing training courses will be financed? payment of attendees, public subsidies ...
- Is a national recognition (certification or accreditation) expected?
Thank you for your attention

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