



SUMMARY REPORT

SUMMARY REPORT ON INTERVIEWED EXPERTS'
OPINIONS & GUIDELINES CONCERNING THE
TOGETHER TRAINING PATH
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INTRODUCTION

The aim of this document is to report on the results of the interviews conducted with **11 external experts** in the area of organisation of thematic, energy-related trainings. The experts were invited to provide opinions and guidelines concerning:

1. proposed thematic content of the TOGETHER training path,
2. proposed structure of the TOGETHER training material,
3. organisation of Master Train-the-Trainer Workshop in Cracow,
4. organisation of a series of local trainings in 8 project countries.

Except for that, they were also asked some more general questions on how to develop a good quality training material, how to organise efficient trainings and how to get useful feedback from the trainees and keep them interested over longer period of time.

Gathered answers, which are summarised in this report, will help the TOGETHER consortium in the development of a good quality and useful **interdisciplinary and transnational training path**, which will address in depth all relevant aspects of energy management in public buildings and which will give the trainees new knowledge and skills, enabling them to improve energy efficiency in their buildings. The training material and overall training approach will be tested first during **Master Train-the-Trainer Workshop** planned in Cracow (Poland) in February 2017 and then - after necessary adaptation - will be used during a **series of local trainings** for building owners, managers and decision makers starting from April 2017. Experts' guidelines will be taken into consideration when developing **methodological guidelines** for both these types of events and conducting them.

The training path, which will be developed within the TOGETHER project, might be used not only by our consortium but also by other organisations working with local authorities and wishing to improve energy-related knowledge and capacities of building owners, managers and decision makers. Therefore, developed training material will be publically available and widely disseminated on the EU level to reach all potentially-interested parties, including local authorities and their partners.

PART 1 OF THE INTERVIEWS: BASIC INFORMATION ON THE INTERVIEWED EXPERTS

In total 11 experts representing 11 different institutions and 6 different countries took part in the interviews sharing their knowledge and opinions on the most effective ways of trainings' organisation, development of the successful training material & tools and thematic content of the TOGETHER training path. They all have expertise in energy-related topics and long training experience, therefore their inputs can be considered as very valuable.

Below there are shortly described silhouettes of the interviewed experts.



First and last name	Position and organisation	Experience related to the thematic scope of the project (capacity building, technical EE measures, financial EE measures, DSM EE measures)	Experience related to the training activities and development of training materials and tools
Cvetko Fendre	Higher professional school lecturer and energy manager; School center Velenje (SCV)	Involved in energy audits and establishment of buildings' energy management systems; familiar with various methods and technologies of rational use of energy; participating in the comprehensive energy reconstruction project implemented in SCV. Refurbishment was organised in 3 levels: organizational, awareness and technical.	Participated in various capacity building projects, many of which included training of different target groups (e.g. installers of small-scale RES) and development of supporting material and tools (e.g. Renewable Energy Didactic Testing Ground, web-based energy bookkeeping, etc.); works as a school lecturer.
Matteo Mazzolini	Director, Energy Management Agency of Friuli, Venezia Giulia, Italy	Responsibility for the development, coordination & verification of all agency's activities in the following sectors: energy efficiency, RES use, energy planning, energy training, energy contracting, energy financing, communication & information	Involved in the development and execution of different training schemes for professionals, civil servants and citizens. Each training scheme is supported by tools and didactic materials. Besides, the agency is regularly publishing the "Energy book series" and the "Passive house booklet".
David Struik	Project manager, ISOCARP	Coordination and execution of EU-projects in the areas of sustainable energy, nature-based development, redevelopment of industrial areas and local empowerment.	Participation in various training activities and development of training materials within different EU consortia; experienced in using different training means (workshops, lectures, online trainings, videos, platform websites, etc.)
Anilkumar Dave	Head of „Research and Technology Transfer department“; T2i	Involved in capacity building on innovation and technology adaptation, as well as in supporting R&D application (within national and regional grants) in the EE sector	Lecturer at the University of Venice, trainer on innovation management (minimum 400 hours every year)
Charlotte Klose	Member of the European and Energy Affairs team; City of Ludwigsburg	Involved in the development and implementation of many energy-related projects, including Livinggreen, Ensure (EU), Climate Neutral City, Energy efficient concept for the baroque Inner City of	Experience in organizing trainings for volunteers in Ludwigsburg's "Wissenszentrum Energie" (Energy Information centre)



		Ludwigsburg (national)	
Tamás Csoknyai	Associate Professor, Budapest University of Technology and Economics Department of Building Service and Process Engineering	Developer of the national regulatory framework for energy efficiency in building & the national building energy strategy; head of quality control unit of energy certificates at the Hungarian Chamber of Engineers; experience in capacity building, technical EE and RES measures, building energy monitoring and methodological development	Trainer and developer of training material for many short trainings and postgraduate courses organised for different interest groups (incl. professionals, building managers, decision makers and end users). Training areas include energy certifications, energy audits, technical EE measures, RES use, legislative requirements.
Jaroslav Miklík	Head manager; EB- ZET s.r.o.	Professional power engineer from 1967, energy auditor, inspecting technician	Since 1980 lecturer and trainer in the field of energy and electricity
Boštjan Krajnc	Director, Energy Agency KSSENA	Involved in several RES and RUE projects on national and European level and in preparation of a number of feasibility studies, energy concepts and other investment documentation for the municipalities.	Experienced in organization of education and training events, structured around topical issues regarding energy supply and energy use.
Vesna Bukarica	Senior researcher, Energy Institute Hrvoje Požar	Engagement in energy-related topics since 2003; participation in the establishment of the expert study for energy efficiency in Croatia at University of Zagreb; participation in the comprehensive project <i>Removing barriers to energy efficiency in Croatia</i> (UNDP); participation in many other energy projects, including international ones.	Lecturer at the course for energy advisors (2008-2013); Lecturer at university courses: Energy & Environment, Energy Management, Energy Economics, Engineering Economics; Lecturer at the courses for energy managers within European project EUREM Plus; Co-author of “Handbook for Energy Advisers”
Grazia Concilio	Associate professor, Politecnico di Milano	Research in: knowledge dynamics & learning processes in urban planning & design, innovative governance and knowledge in urban environments & smart cities; learning and behavioural changes in innovation processes; part of the team for the EU project Smart Campus; referent person for the Torre	Responsible for the 1st year of the Master Course in Environmental Architecture and Design at Politecnico di Milano; responsible for the Erasmus+ project “Community Participation in Planning”.



		Guaceto Living Lab and consultant of ENOLL.	
Endrei Balázs	Project manager, East-Trade	Head of all activities connected to sustainable environment; 7 years of in-depth experience in energy sector.	20 years of experience in training delivery (above 1000 days); Accredited Train-the-Trainers; areas of expertise include: energy brokering, smart metering, advanced technologies, renewables, building assessment and redesign, project management in Hungary, Italy, Poland, Croatia

PART 2 OF THE INTERVIEWS: THEMATIC CONTENT OF THE TRAINING PATH

2nd part of the interview was focused on the proposed thematic content of the TOGETHER training path. Participating experts were asked to evaluate the proposed list of topics concerning technical, financial and DSM energy efficiency measures that might be applied in public buildings and to give their opinions if the list is comprehensive enough or something is missing. They were also asked to prioritise the information and skills that need to be transferred to the target groups (public building owners, managers and decision makers).

Below there is a summary of the experts' answers on this topics.

Question 2.1: Please have a look at the proposed list of topics that we plan to cover within the TOGETHER training path (Annex 1). In your opinion, is it comprehensive enough or something is missing? Which topics are especially important (e.g. because there is a knowledge gap) and which are less important?

Most of the interviewees find the proposed list of topics comprehensive enough. It can be noticed, however, that they have quite different opinions on which of the topics are more and less important, depending on their professional background and experience. E.g. some find technical topics irrelevant, while others find them very important. Only **Cvetko Fendre** from SC Velenje and **Tamás Csoknyai** from the Budapest University of Technology highlighted that all thematic parts (technical, financial, behavioral and analytical), as well as all related topics are equally important. This is because only by acting in a comprehensive manner one can achieve significant reduction of energy consumption, reduction of carbon footprint and improvement of the comfort for the building users. Moreover, different thematic parts can be of different relevance for specific target groups addressed by the TOGETHER trainings. For example, facility managers may be more interested in technical aspects than behavioral change or financing. Decision makers, on the other hand should know more about financing, while HR staff could be educated about human aspects and DSM. Therefore it is necessary to prepare comprehensive training material, including all key messages, and then personalise training



packages for specific target groups and their professional backgrounds, initial knowledge and needs. This opinion is shared by the TOGETHER consortium.

Except for the overall comments on the thematic scope of the TOGETHER training path, the experts also had some suggestions on the missing topics that might be included or existing topics that might be further elaborated or re-focused:

- Technical part of the training:
 - ✓ new development and trends in the EE sector, including current research and new ways of interaction with devices (e.g. 4.0, social web, IoT)
 - ✓ water consumption issues as a part of the overall resource efficiency concept
 - ✓ integral approach to energy refurbishment (in the light of the nZEB standard obligation for public buildings)
 - ✓ concept of green buildings, which goes beyond only energy aspects of the buildings
 - ✓ EE interventions in historic buildings
- Financial part of the training:
 - ✓ financial tools implemented by the European Commission, including ELENA, JASPERS and JESSICA
 - ✓ preparation of good quality tender documentation
 - ✓ financial opportunities connected with national legislation (for local trainings - e.g. earning money from delivering RES-based electricity to the grid, opportunity of renting roofs for PV panels, etc.)
- Behavioural part of the training:
 - ✓ energy e-infopoints in frequently visited parts of the building, including presentation of real-time data from energy monitoring system (raising awareness of employees, visitors and other building users)
- Analytical part of the training:
 - ✓ energy bookkeeping in an institution
 - ✓ effective organization of building's energy management
 - ✓ central control & supervision of the energy management systems of buildings/rooms, including BMS (heating, cooling, airing, lighting, indoor microclimate and temperature, moisture, CO₂ concentration)
 - ✓ EMAS system

It needs be remembered that each thematic module should to be comprehensive enough but not too long or detailed for project/training purposes. Shorter courses with practical exercises work better than long and very technical lectures.



Question 2.2: Taking into consideration the leading theme of our training path (*integrated technical, financial and DSM measures that may be implemented in public buildings to improve their energy efficiency*), what kind of information should we forward in the 1st place and what skills should we build? What are the most important needs of public building owners, managers and decision makers in this aspect?

Again, different experts had different opinions on the prioritisation of information and skills that need to be transferred to the trainees. **Tamás Csoknyai** from the Budapest University of Technology highlighted that these should be adapted to the specific needs of the specific target groups of our trainings, e.g.:

- for facility managers the most important skill would be the ability to distinguish between the technical factors and the human factors influencing energy consumption. Depending on the technical characteristics of a building, humans may have large or rather minor influence on this consumption. The managers should be also capable to recognize and recommend what technical measures can help the users to be able to influence energy consumption (e.g. realization of a controllable heating).
- building owners and decision makers should be aware above all of tariff options, available financial incentives and legislative framework. In addition, they should know a little bit of everything to be able to communicate with all involved actors.
- HR staff and personnel interacting with different building users should be responsible for influencing their behavior. They should get skilled about behavioral aspects and demand side management.

Representatives of all these target groups, however, should be capacitated to assess the current situation of their buildings, identify potential improvements and execute them (within their area of expertise and scope of influence).

There were also some suggestions from the interviewees on what information and aspects should be stressed within different thematic modules:

- Technical modules in general: The technical training should focus on practical aspects, like setting goals, analysing initial situation of the building, selecting optimum technical EE solutions, ensuring efficiency of all steps of the implementation process, correct exploitation/use of the systems, etc. rather than on presenting different technologies and types of equipment. Especially that technologies and their technical details change quite rapidly and for specific projects municipalities often hire external consultants. Still, the building owners and managers should have enough knowledge of different technical measures to be able to talk to these consultants, clearly explain their expectations and monitor their work. They also need to understand what technical improvements are needed, feasible and how they should be done.
- Module on energy auditing: it is necessary to highlight the important role of energy audit and to teach trainees how to use its results in their energy efficiency pursuit. Many



people think that an energy management program starts and ends with an energy audit, but in fact it is only one of the key steps to reach energy savings. Implementing audit's recommendations requires persistent activities over a period of years and this will pay dividends that will increase every year. In addition, after the 1st comprehensive audit made for the facility, a system for on-going monitoring should be put in place and more targeted audits should be carried out over time.

- Module on available financing schemes: trainees should be familiarised not only with the EU programmes financing specific EE interventions & investments but also with the technical assistance facilities like ELENA.
- Module on changing users behaviours: topic of energy saving should be clearly linked to the topic of financial savings. People need to understand how much energy costs and how big financial savings can be achieved with different types of energy efficiency measures, including change of habits and behaviours. Building users also need to be instructed how to use energy economically and supported in this process (by enabling them to do so, implementing procedures, introducing incentives, etc.).
- Module on energy management systems & tools: it is necessary to highlight that energy management is the most important tool for meeting organisation's energy objectives and a starting point for all future EE interventions. It MUST be introduced in a buildings as usually public buildings owners & managers don't know how much energy is used there, what are the costs and how these costs can be lowered. Therefore, first information that should be communicated is the need to be aware of energy consumption and related costs in the building. From that starting point, we need to move forward to establishment of organizational structure for energy management – someone needs to be responsible for monitoring energy consumption. That "energy manager" needs skills how to monitor and analyze energy consumption and where to look for solutions. Usually public sector employees don't have in-depth technical knowledge, but they need to be able to recognize that improvements are needed and possible, and then to engage technical and financial experts that will further develop energy efficiency improvements under the supervision of the energy manager.

Question 2.3: Do you have any suggestions on how we could focus the content of the trainings to make the knowledge & skills built applicable in different local situations?

Following experts suggestions a training plan needs to have well defined training goals and should be based on thorough evaluation of the trainees' initial knowledge, skills, professional background, training needs and specific conditions that they operate in. The trainers should focus on practical aspects related to different EE solutions rather than on the theory. They should introduce real-life cases and good practices, as well as invite participants to think and adapt proposed concepts and measures to their local situation.

The whole training path should follow some key messages (e.g. the cheapest energy is the energy saved; by acting together we can achieve more; integrating measures leads allows for



synergy effect, etc.) that would guide both the trainers and the trainees throughout the training process and keep them focused on what is important.

The training material prepared should be applicable on the local level, therefore transnational training approach should be later adapted by relevant partners to address and emphasise these aspects which are especially relevant in the national, regional and local context (taking into account *inter alia* typical local building types, structures and technical building systems, energy and investment costs, available financing incentives and legislation). Of course, there are also parts/chapters/sections that can be relevant for all countries, like EU legal framework, best practices and technical measures. Probably the best way would be to set in each main section a sub-section that should be developed for local circumstances by local experts. And above all, the materials should be available in the national/local language.

David Struk from ISOCARP also highlighted the necessity to organise the training and the training material in a way that allows for interaction and learning not only from the trainer but also from other participants. In this way the participants will be able to understand better how different solutions work in different environments, what technologies and measures would be applicable in their particular situation, etc. This is also a way of establishing networking that may continue beyond the project duration.

PART 3 OF THE INTERVIEWS: STRUCTURE OF THE TRAINING MATERIAL

3rd part of the interview was focused on the development of a good quality training material. Interviewed experts were asked what should be the features of a good training material and what types of material & tools proved to be especially efficient according to their experience. They also gave some hints on what to avoid when developing the TOGETHER training material.

Below there is a summary of the experts' answers on this topics.

Question 3.1: In your opinion, what are the features / characteristics of a good training material/tools?

According to the interviewed experts, the training material and tools shall be well adapted to the purpose of the training (in this case - teaching building owners, managers and decision makers how to optimize energy consumption in their buildings and how to involve building users in this optimisation process) and to the specific needs of the trainees. Most of the interviewees agree that the trainings should be carried out using a combination of different training methods (plenary lectures, exercises, on-the-job trainings, study visits, etc.), therefore different types of training materials and tools should be developed (including printed and on-line materials, ppt slides, case studies of good and bad practices, e-learning modules, carbon footprint calculators, videos, interviews with key stakeholders, questionnaires, etc.).

It is very important to make sure that the training material is simple enough to be easily understood also by non-technicians, non-financiers, etc. (unless we make a training targeted at



specific professionals). The texts shouldn't be too long and should be structured in an easy-to-follow manner. It is worth to spend time on getting good pictures, infographics, graphs, etc. to illustrate different technologies and concepts.

The material should also focus on current topics and be interactive as much as possible, giving some tasks and food for thought for the trainees.

Short material introducing the content of the training and its main thoughts/key messages should be made available to the trainees before the event. In this way they will be able to follow the training path more easily and to prepare in advance their own questions/problems to discuss. Complete set of training materials should be made available on-line after the training for reference purposes.

Question 3.2: In your opinion, what are the features / characteristics of a bad training material/tools? What should we avoid?

Interviewed experts also shared their opinions on the most common mistakes done when developing a training material, which make it inefficient and not appreciated by the trainees. First of all it should be avoided to use only standard papers and ppt slides based on standard literature, as well as to present theory without examples of its application in practice. It is also necessary to ensure a good final editor who will take responsibility for the quality of the final outcome. This is because it often happens that different partners/contributors deliver different parts of the material and at the end they receive a patchwork of incoherent information, often with different formatting, level of detail, etc.

Another common mistakes are:

- too long and poorly structured writings, with a lot of theory and very few practical examples;
- material that is not written in the wording of the audience, e.g. including too much technical details for a decision maker, too much human aspects for a technical expert, etc.
- self-standing statements and repetition of already publicly known facts;
- incorrect or out-dated information and data;
- reusing existing materials developed for other purposes without proper adaptation to the actual objectives and needs;
- lack of references when reporting or mentioning official figures;
- not involving the trainees and making them think.



Question 3.3: In your opinion, what type of training materials/tools are especially efficient? Guidebooks, ppt presentations, case studies, exercises, other?

All of the above-mentioned types of training materials & tools are considered efficient if they are well prepared. People still like traditional materials, like booklets, ppt presentations, etc., however to ensure that they learn new skills also some more interactive tools are essential. Therefore, it would be recommended to use a little bit of all types, especially if the number of contact hours is limited compared to the knowledge that we want to provide.

PPT presentations are practically a must, as well as the case studies. The **presentations** should not be overloaded with information and should include pictures, graphs, etc. illustrating introduced concepts (it is nice to have them later on-line with the recording of oral presentation). The **case studies** should include both examples of good practices and of bad ones, as learning about others' mistakes is also valuable for the trainees. Good practices should be described with sufficient level of details to allow replication. **Guidebooks** are particularly good for trainers but one should be careful with their length and level of detail. For teaching DSM and behavioral aspect **exercises** are recommended. **Brochures** are good for decision makers. For end users online **interactive teaching materials** including exercises and serious games can be suitable.

Besides the training forms listed above, the experts suggested to consider also:

- providing descriptions of relevant procedures (instead of presenting only ready solutions);
- showing application of ICT and other tools, instruments and sensors in practice;
- carrying out the lab workshops, e.g. on different types of RES (heat pumps, solar collectors, photovoltaic systems, etc.);
- working with different computer programmes and tools (e.g. predefined sheets for cash flow analyses of energy efficiency projects)
- development of check lists supporting practical application of new knowledge and skills;
- giving links to more detailed thematic material that a trainee can consult when needed.

It is important to remember that trainings must be interactive and trainees must be actively involved. They should not be listeners only but should be assigned with certain tasks (coming up with a solution to a problem, analysis of energy bills, simple financial calculations, etc.).

Question 3.4: Can you give any examples of exceptionally good training material/tools that we could use as a source of inspiration?

Among the training materials and tools that the interviewees like the most and find especially useful and well designed, there are:

- “Civil Akadémia” training material (its scope is very close to the planned content of the TOGETHER training path, however it is currently available only in Hungarian)



- CEPH training course for Certified Passive House Designers
- Gate21's game showing the role of different stakeholders in achieving energy efficiency
- AEE fundamentals of measurement and verification. Applying the IPMVP
- PPT on implementing smart ICT concepts which was given during training organised within CIP Smart Build project and combined with practical tests and measurements in the reference classroom
- EUREM education (<http://si.eurem.net/display/euremsi/EUREM>)
- SEAI approach: http://www.seai.ie/Your_Business/Public_Sector/

It was also suggested by Anilkumar Dave from T2i to get familiar with the TEDx videos, which show how to lecture in an efficient and interesting way.

The above-mentioned resources should be used as reference when developing the TOGETHER training material and preparing for the trainings.

PART 4 OF THE INTERVIEWS: TRAININGS' ORGANISATION

4th part of the interview was focused on the organisational issues. Interviewed experts were invited to provide some suggestions and advice concerning trainings' organisation. They were asked *inter alia*:

- about their opinions concerning the most and the list effective training methods,
- about the most important things to remember and things to avoid when organising the trainings,
- about their best and worst training experience,
- about their suggestions concerning keeping the trainees interested & focused on the trainings, as well as getting their feedback and checking long-term capacity improvement,
- about their suggestions concerning train-the-trainer approach.

Below there is a summary and main conclusions from the experts' answers.

Question 4.1: In your opinion, what are the most and the least effective training methods? Which of them are especially efficient and appreciated by the trainees and which can be considered as "too fancy"?

Apart from their opinions on the most and the least effective training methods, the interviewees shared here also some more general considerations concerning trainings' organisation, including the general understanding of a training (in relation to other types of capacity building events) and the different approaches that might be adopted by the training organisers.



David Struik from ISOCARP highlighted that there is a different understanding of a training workshop in different countries. In some a training/workshop is characterised by a lot of interaction and small groups, while in others it is more of a lecture with a lot of participants and a rather top-down approach (presentation plus some discussion afterwards). It seems that most of the interviewees share this 1st point of view (as the TOGETHER consortium), thus highlighting the need for approaches activating the trainees and involving them as much as possible in building their own capacities.

Therefore, among the most effective training methods, there were listed those that involve interactions between the participants and the trainer, as well as among the participants themselves. They include:

- short lessons with one clear objective and an exercise building one specific capacity;
- roundtable discussions;
- case study analyses followed by a problem solving task;
- game playing;
- on-the-job training, i.e. allowing the participants to bring their own projects and cases to discuss (then they are highly motivated to listen & learn, and they often keep having contact afterwards to solve their problems).

The exercises should be preceded only by some short presentations introducing the topic and levelling up participants' basic knowledge.

The least effective training methods, on the other hand, are those that include only simple lectures and asking 1-2 questions from the audience. The participants are not invited to contribute to their own capacity building and easily get distracted from the *ex cathedra* and too long presentations. In case of longer trainings, the participants would soon become overloaded with information and - without being able to address new knowledge to their own experience - they will remember only 10% of what was told after the 3 days, and even less after 1 month.

Regardless of the above, a very important comment on the selection of the most appropriate training method was given by **Tamás Csoknyai** from the Budapest University of Technology and Economics. He believes that all methods can be effective if they are well positioned, designed and implemented. Different training parts need to be well thought and adapted to the needs of the trainees, while the training material must be of good quality. A mix of different training methods would reach higher satisfaction and result, but of course requires more work and time to prepare.

What needs to be remembered, as highlighted by **Vesna Bukarica** from Energy Institute Hrvoje Požar, is that the training is not about providing the information on the right solutions and making people remember those solutions. It is about capacitating people to find solutions to different problems themselves. Therefore, trainings with no interaction and problem solving exercises will just not be efficient.



Question 4.2: What would you consider as 5 most important things to remember when organising the trainings?

Many useful guidelines were given in this part addressing different aspects of a training, including selection of the trainers, selection of the training methods, development of the training content, as well as purely organisational issues like choosing the appropriate room.

Guidelines concerning the trainees...

- In order to organise an efficient training, it is necessary to know the audience well and understand their needs and expectations. The training should be adjusted both to their initial knowledge and to what they should learn as a result and how this could be applicable in their everyday work and life.
- It is worth to consider some preliminary preparedness of the trainees to spend less time on lecturing and more on practical exercises.
- It is worth to consider having attendants from different background (e.g. energy advisors, construction companies, municipalities, etc.). This would be very useful during the exchange of experience rounds and exercises. On the other hand, it would be much harder to adjust the training content.
- The training groups shouldn't be bigger than 30 people. Only then it is possible to ensure interaction and give each participant necessary attention.

Guidelines concerning the trainer...

- Very important for the success of the training is the quality, readiness and enthusiasm of the trainer. Organisers should choose a trainer who has adequate thematic expertise, training experience and is rhetorically good. He/She should also easily communicate with the public and be able to engage them in discussion and exercises.
- Still, it needs to be remembered that trainees are there for the content, not the presenter.

Guidelines concerning the training content...

- The training content needs to be adjusted both to the professional background of the trainees and to the objectives of the training.
- The training content should address current/actual topics.
- Local circumstances should be taken into account when developing the training content: language, national legislation, climate, customs, building stocks, etc.
- It is necessary to emphasize the most important messages that the trainees need to take from the training.
- It should be avoided to constantly repeat the same information.



Guidelines concerning the training methods...

- The organisers should think well about the interesting and effective ways of passing the information to the trainees and engaging them in practical exercises. The audience remembers the training better if it is engaged during the sessions.
- It is important to ensure mix of training methods, including both short lectures and exercises. In each case theory should be supported by practical work. It is not a problem (but rather an advantage) if something is taught twice if the methods are different.
- It is important to ensure interaction and let the trainees to do something themselves (discuss, sketch, brainstorm) instead of just listening.
- It is necessary to ensure effective visualization of more complex concepts.
- Among the training methods, which should be considered, there are: showing practical examples of good and bad practices, group exercises & discussions, tests, measurements, experiments, etc.
- Another useful method would be to provide a certain point of view, think out loud and provoke the trainees to think back - to give their points of view.
- Trainees should be allowed to bring their own projects and problems to the training. Working on them would increase the knowledge and capacities that they need in their everyday work.
- It is also worth to use different opportunities available to make the training more interesting. E.g. a training for public building managers/users could be held in a model public buildings, where they could get familiar with different installations and devices and the correct ways of using them.

Guidelines concerning the training material...

- The trainees should be provided at least with some printed training material.
- The organisers should not rely only on ppt slides but should provide also some additional material to be used during the training, that would help to activate the trainees.

Guidelines concerning gathering feedback and training evaluation:

- It is necessary to gather feedback from the participants, both regarding their knowledge levels and their assessment of the training.
- Regarding participants knowledge and capacities, it is worth to ask them to fill in self-evaluation questionnaires before and after the training in order to verify what has been learnt.
- It is also worth to consider organising short test or exercise (e.g. project work) at the end and giving nice "diplomas"/small awards for completing it.
- Getting feedback on organiser's performance is of utmost importance. This is the only way that he can improve for the next time.



- After gathering feedback from the trainees, it is necessary to carefully analyse it and draw conclusions. What could have been done better? How to correct the training if the lesson has not been learnt?

Guidelines concerning the organisational issues...

- Each training part should be brief & concise, and the organisation - flawless.
- The training should have a clear structure. Its beginning and ending should be in line with the trainees' travel opportunities.
- It is necessary to ensure adequate training room - with enough space, light and fresh air.
- It is necessary to provide good quality and rather light meal - designed to keep participants fresh and active during the whole training.
- All trainings in a training path should be organised according to the same format.

Question 4.3: What would you consider as 5 most important things to avoid when organising the trainings?

During the interviews the training experts also listed some most common mistakes done by trainings' organisers. These should be avoided when developing the TOGETHER training path.

Mistakes concerning the trainees...

- Organising a training for too professionally diverse participants.
- Getting seduced to go for too high numbers of participants, which makes it impossible to organise efficient practical exercises and exchange of experience. In such cases usually the training takes a congress format with little interaction.
- Underestimating the trainees and training them on what they already know.

Mistakes concerning the trainer...

- Choosing trainers who are not experienced enough in the topic.
- Choosing trainers who have poor training skills and poor ability to interact with the audience.
- Not ensuring that the trainer is well prepared for the training.
- Involving one trainer in too large part of the training. He/she needs to be fresh.
- Lecturing without enthusiasm - if a trainer doesn't show that he/she believes in what he/she is lecturing, that he/she is insecure and lacking experience – it will not work.

Mistakes concerning the training content...

- Setting too generic objectives and too extensive topics.
- Focusing on topics which are no longer actual.



- Not adapting the content to the trainees existing knowledge and needs (it often happens that the organisers/trainers stick blindly to the pre-defined lectures without assessing their target group's specific needs).
- Not prioritizing the content.
- Too many detailed, technical information.
- Too much of the same information.

Mistakes concerning the training methods...

- Top-down approach.
- Using only one training method.
- Lack of interaction between the trainer and the trainees (as well as between the trainees themselves).
- Lack of practical examples, exercises, contact with real cases, etc.
- Lack of time for discussion.
- Too difficult exercise or test at the end.

Mistakes concerning the training material...

- Lack of training materials.
- Reuse of existing materials without proper adaptation.

Mistakes concerning gathering feedback and training evaluation...

- Missing or unclear follow up.
- Missing or too rare checking of the trainees' progress (the risk is that the organisers understand too late that the participants are not learning).

Mistakes concerning the organisational issues...

- Organising too long trainings, with long programmes and multiple topics (in such cases people usually leave earlier and miss the part with the most interaction - exercises, debates, networking drinks).
- Having too ambitious plans for the available timeframe, which results in prolonging the anticipated timing from the agenda.
- Choosing unfit room - too small, too hot, with poor ventilation.
- Overall poor organisation.



Question 4.4: Please shortly characterize your best training experience.

In this parts the interviewees shared memories of their best training experience. The answers provided help to draw further conclusions and guidelines on the organisation of efficient and well-received trainings. Again, it can be seen that the experts consider as especially valuable those trainings, where they have been involved in some practical, sometimes untypical, exercises. They liked the trainings which supported new knowledge and skills by demonstrating real cases, involving participants in different exercises and experiments, etc. It was also important for them to have good communication & interaction with the trainers and with other trainees.

Below there are listed some useful citations.

"The best sessions I had was with max three short talks and then multiple small roundtables. Attendants could bring their own project to discuss. By bringing their own case attendants were highly motivated to listen and learn. They kept having contact with each other afterwards, to work out their problems. This was a good example of on-the-job-training." (David Struik, ISOCARP)

"Mediation class at University. Very experienced trainer, good rhetorically, used a lot different methods, organised frequent breaks (knew when breaks are necessary). The training was well structured and there was enough time for questions." (Charlotte Klose, City of Ludwigsburg)

"The best training I have ever been was in 1985 at Fryšták. It was at agricultural cooperative Slušovice. The teacher, rooms, study materials, just everything was perfect" (Jaroslav Miklík, EB-ZET s.r.o.)

"2 day conference on photovoltaics - excursion with a tour of best practices with more than 200 participants" (Boštjan Krajnc, KSSENA)

"As a young engineer, I was at one international course about clean energy solutions. During the whole training, we have had only few lectures, and afterwards we formed groups and spend a whole day working on solutions for different problems that were assigned to us. E.g. we had to find solutions how to make hotel where we were staying in more energy efficient, make technical and financial calculations. Afterwards, each group presented results and the best solution was selected. Winners got a symbolic price, like bag of candies. It was useful, we learned a lot and we had a lot of fun." (Vesna Bukarica, Energy Institute Hrvoje Požar)

"With students coming from all over Europe we were able to make them understand the concept of URBAN (SMART) SERVICE PLATFORM by dividing them into groups and making them experience (each group one) the several public services in Milan (metro, bus/tram, car sharing, bike sharing, and taxi) for going from A to B, and by asking them to share their experiences each other by discussing together. This slot was part of a one week course on Smart Cities also including standard teacher/student sort of lectures, meetings with the Manager of the Smart City Unit of the Milan Municipality, an



encounter with a coder who developed one of the most successful crowd mapping platform in Italy, half day visit of the ENEL Milan center for energy management and distribution in Milan." (Grazia Concilio, Politecnico Di Milano)

Question 4.5: Please shortly characterize your worst training experience.

The interviewees were also asked about their worst training experience, which will help the TOGETHER consortium understand what training practices are considered unwelcome. Bad experiences reported were mostly related to the incompetent trainers and boring, long lectures without any practical examples or exercises. The interviewees also participated in the trainings where the audience already had higher prior knowledge than the knowledge transferred.

Below there are listed some useful citations.

"A 'workshop' of 4 hours with a programme of 14 speakers. Nearly all speakers were reading their presentation from paper. The first speakers were politicians with other agendas (city promotion, presenting their policies) than training the attendants. There were also a lot of speakers presenting knowledge about energy systems without reflection on effectiveness and applicability for the local situation." (David Struik, ISOCARP)

"The worst training I ever had was a training for verification of energy auditors. The trainers were horrific! They were without any experiences. Everybody in the room knew more than they knew." (Jaroslav Miklík, EB-ZET s.r.o.)

"Many so-called trainings where you only sit down and listen to theoretical lectures with no case studies and no interaction." (Vesna Bukarica, Energy Institute Hrvoje Požar)

"A training course on Environmental Impact Assessment made of modules supplied by several trainers all keeping the discussion at very theoretical level. No tools focus, not case discussed." (Grazia Concilio, Politecnico Di Milano)

Question 4.6: What would be your recommendations concerning following training aspects:

- **keeping participants interested and focused on the topic (especially in case of longer-term training programme)**

In case of longer training programmes it is necessary to present the entire educational process with specific objectives and final competences obtained. The participants need to know why they are participating in the training and what they will get from it. It is also important to remember that the 1st training session is crucial. If the trainers make the participants interested, engaged and focused, they will more probably continue this way till the end of the training program. The end itself should include giving some prove of new knowledge and capacities



gained, e.g. a diploma or some training points (which in some countries are necessary e.g. to get promotion).

Another important suggestions for raising and keeping participants interest were following:

- engage the trainees in different activities, give them challenges, pose questions (and do not leave without having them answered), give regular updates. Make them eagerly waiting for the next training session.
 - allow the trainees bring their own projects/problems to the training;
 - use different training methods (short lectures, case studies, practical work, team work, exercises) and a range of media (e.g. small training videos);
 - make presentation of the content intense, but not dull. Certain questions must remain open before the break so that the participants didn't leave. The breaks themselves should be interesting.
 - give participants interesting "homework", e.g. provoke them to try to implement what they have learnt and to share experiences afterwards (e.g. at the next training session).
 - divide the participants into small groups (approx. 10 persons). They will get to know each other better and more willingly interact next time;
 - ensure good training conditions (adequate temperature, fresh air);
 - do not keep the trainees in the class for the whole course;
 - ask the participants to actively engage in the further development of the training course, e.g. asked them to collect cases for discussion, to prepare parts of the course (transform them into trainers for a short while).
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- **gathering feedback from the participants**

An important part of each training is gathering feedback from the participants in order to learn if they were satisfied with it and if their knowledge and capacities really increased. Most of the interviewees suggested using traditional questionnaires for this purpose, disseminated either in paper or on-line. The questionnaires should be collected both before the training (trainees expectations, initial knowledge & capacities) and after the training (trainees satisfaction, obtained knowledge & capacities). It is also possible to do a small questionnaire/test after each training module. This is rather a conventional method but works fine.

When developing the questionnaire it is important to keep it concise and short. All questions should be clear to the participants.

Some experts suggested also going into more personal contact with the trainees and asking them about their opinions in direct conversations during the breaks or after the training. Most people are honest about what they liked or disliked. Another methods for gathering feedback are open discussion and little games. What is important is not to leave anyone behind and gather information from all the participants.



It is also worth to consider to discuss the results of the evaluation with the trainees to let them know that their opinions count and that the training will be better adjusted to their needs.

- **checking participants' capacity improvement (knowledge, skills) in the long term**

This topic was considered very challenging and difficult to cope with. Again, development of questionnaires before, during and after the training was suggested. But in order to check participants' capacity improvement in the long term it would be necessary to continue interacting with them over a longer period, e.g. checking if they apply new knowledge and skills in their everyday work, organising a follow-up event/training building on the knowledge gained and involving participants in sharing it, etc. This is possible in some cases (e.g. within bigger projects) but not all of them.

Some more suggestions were given on checking participants' capacity improvement directly after the training path (or even within its duration):

- now and then give some question (test) to the floor and check if everything said earlier was clear. Sometimes ask directly and sometimes make it hidden;
- ask participants to answer simple quiz questions after each training module to follow if the new knowledge is transferred);
- prepare some real-life tasks, e.g. analyze energy consumption in your building, plan energy efficiency improvements for the next year (including budgeting), etc. When these tasks are done, then they should be presented and discussed by the whole group and evaluated by the trainer;
- transform the participants into trainers for a while. Ask them to develop a strategy for a course, a module and to give a presentation. Ask them also to identify cases relevant to the core subject of the training course;
- organise discussion on real cases and see whether the participants use the arguments that you have already presented to them. Make them analyse cases following the approach, principle, theory, norm (or set of norms) that you have already presented to them.

Question 4.7: With regards to the planned Master Train-the-Trainer Workshop in Cracow, what would be your recommendations? What skills and capacities of future trainers shall we build?

Many of the interviewed experts had some prior experience with the train-the-trainer method, therefore they were able to give some useful hints for the Cracow workshop. First of all, they highlighted that the organisers should focus both on passing new knowledge related to different training modules and on teaching and testing different training methods & tools.

Regarding the training content, it should be adapted to the initial knowledge and professional background of the trainees (and future trainers). The lectures and exercises should focus on the



topics that are less familiar to them and it should be avoided to repeat information that they already know. Therefore, a pre-training questionnaire/assessment of training needs is a must.

It also needs to be remembered that most probably during the Master Train-the-Trainer Workshop there will be not enough time to raise all issues and teach the participants all that they need to know. Therefore training modules and topics should be prioritized and complete set of details should be available in a training manual. The manual should contain all knowledge to be transferred to the target groups. If it is too challenging, the training manual doesn't have to be necessarily ready for the Cracow meeting - just its parts that will be tested and discussed.

Regarding the training methods and tools, different training formats (lectures, roundtables, games, exercises, etc.) should be introduced, tested and discussed by the participants. By standardising the format and the training material, future trainers will have a better base to start their future training activities. The trainees should also get useful guidelines how to lecture and train the trainees most efficiently - no sitting on chair, no standing in one place, ensuring fluent and frequent interaction with the audience, reacting on time, presenting complex arguments clearly, assessing participants progress, etc. They should improve their presenting and teaching skills and be capacitated to select the teaching methods that fit the best the needs of the target group and the topic.

PART 5 OF THE INTERVIEWS: AVAILABLE RESOURCES ON EE MEASURES & SOLUTIONS THAT MIGHT BE IMPLEMENTED IN PUBLIC BUILDINGS

At the end of the interview participating experts were asked to suggest useful resources concerning technical, financial and DSM EE measures that might be used as a reference when developing the TOGETHER training material & path. Many interesting projects, guidelines, tools, etc. were proposed, including:

- projects: European Young Energy Management Championship, U4Energy, Install+RES (IEE), Future Public Energy (INTERREG IIIa), SmartBuild (CIP).
- guidebooks: Energy: Management, Supply and Conservation (Beggs, C., 2002), EI-Education guidebook on energy intelligent retrofitting (EI-education, 2008), Energy efficiency in households. Guide (EnerBuilding, 2008), Energy Audit of Building Systems – An Engineering Approach (Krarti, M., 2000).
- guidelines and training modules: GreenBuilding Guidelines and Technical Modules (GREENBUILDING, 2008), GreenLabelsPurchase: making a greener procurement with energy labels (GreenLabelsPurchase, 2006).
- data sets and statistics: Annual European Union greenhouse gas inventory 1990–2009 and inventory report 2011 (EEA, Copenhagen 2011), BP Statistical Review of World Energy 2010, Geothermal energy barometer (EurObservER, 2007), Key World Energy Statistics (International Energy Agency, 2010).

All suggested resource were carefully analysed and the most relevant of them were included in the TOGETHER library.



ANNEX 1: LIST OF TOPICS INCLUDE IN THE TOGETHER TRAINING MATERIAL & PATH

Energy efficiency in public buildings			
Technical energy efficiency measures / aspects	Financial energy efficiency measures / aspects	DSM energy efficiency measures/aspects	Other energy efficiency measures/aspects
<ul style="list-style-type: none"> • Energy audit • Energy performance certificates • Energy monitoring • Thermal retrofitting of the envelope • Change of the heating source • Installation of RES • Modernisation of internal installations for heat and electricity distribution, including: <ul style="list-style-type: none"> ✓ installation of TRV on radiators or IRC • Modernisation of internal installations for hot water preparation & distribution • Modernisation of internal lighting • Modernisation of HVAC systems, including: <ul style="list-style-type: none"> ✓ installation of VSD to standard motors in FCUs and AHUs of 	<ul style="list-style-type: none"> • EU and national financing programmes/schemes • ESCO scheme (EPC) • PICO scheme • Revolving funds • Other innovative/alternative financing schemes (e.g. on-bill financing, green bonds) • Economic assessment of the investment/action • Financial assessment of the investment/action • Economic/financial performance indicators (for monitoring economic/financial impact of the investment/action) • Development of business plan and budget of the investment/action • Ensuring bankability of investment/action • Tendering procedures • Green Public Procurement • Purchasing groups 	<ul style="list-style-type: none"> • <u>Behavioural DSM</u> • Behavioural science/psychology related to the consumers habits/practices • Consumption patterns • Rebound effect (Jevons paradox) • "Knowledge-attitude-practice" (KAP) gap • Communication with building users' (methods, tools, tips, communication campaigns) • Changing behaviour of building users (methods, tools, tips, incentive schemes) • Living Lab approach and user driven approach • Split incentive approach • Systemic approach • Communication & networking platforms (e.g. for sharing data on real-time 	<ul style="list-style-type: none"> • EU and national legal frameworks, including legal requirements concerning new and renovated buildings • Building standards (passive buildings, zero-emission buildings, etc.) • EE in public buildings as a part of wider municipal energy planning strategies



<p>HVAC systems</p> <ul style="list-style-type: none"> • Heat recovery in HVAC systems • Purchase of energy efficient equipment • Small investments/repairs, including: <ul style="list-style-type: none"> ✓ installation of external solar shading • Technical performance indicators (for monitoring results of implemented technical measures) 		<p>energy consumption)</p> <ul style="list-style-type: none"> • Low-cost and no-cost energy saving measures • Analytical DSM • Collection and analysis of the consumption data, including: <ul style="list-style-type: none"> ✓ available methods of energy data collection ✓ available smart metering technologies ✓ conducting data analysis ✓ ensuring data security • Standard energy management systems (e.g. based on ISO 50001, EN 16001, EEA) • Smart energy management systems (e.g. based on smart meters) • ICT • BEMS • Other technical possibilities for demand-side management of the equipment • DSM performance indicators (for monitoring results of implemented DSM measures) • Social Audit (in terms of 	
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		collecting and elaboration of qualitative data related to energy consumption)	
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