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Feedback on long training courses

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1. INTRODCUTION

This document summarizes feedback received from the long training programs. These programs were organised in four partner countries; Finland, Hungary, Spain and Germany. The German training is still ongoing and will finish in June 2013, others were finished in early summer 2012.

The courses followed quite similar modular structure in all countries. In addition to structure, there was quite much similarity in terms of content even though national needs were carefully considered in training design. The Hungarian training was most extensive, 60 ECTS¹, others being close to 20 ECTS. A more detailed description on the trainings can be found in reports (deliverables) 4.1 and 4.2.

The feedback was collected mainly with questionnaires after each module. In addition to the student feedback, also other evaluation information sources were used such as National Steering Groups (Spain and Finland) and training manager observations (Finland). The feedback collected during the training helped training organisers follow whether training is going to the desired direction and, if needed, make changes to the content and training methodology. The summarized recommendations in the chapter 6 will hopefully help others to learn from UPRES experiences and know which aspects to consider when designing their own programs.

This document is structured so that programs and collected feedback is described country by country. At the end of the document there is a summary of all feedback and recommendations.

¹ ECTS, European Credit Transfer and Accumulation System enables transparency of teaching and learning in higher education. It is a system to describe learning outcomes and related workload as credits. For further information: http://ec.europa.eu/education/lifelong-learning-policy/ects_en.htm

2. FINLAND

2.1 Summary of the Finnish long term course

The Finnish UPRES-course (Finnish name "*Energia yhdyskuntasuunnittelussa*") was organised during academic year 2011-2012. The training program started in October and finished in June and it consisted of 8 modules, each of them having two face-to-face training days. In addition to these training days and excursions (several local and one abroad) the students made a project work in groups of 4-5 persons. There were 25 participants in the course.

The main learning objectives were:

- to provide students with latest knowledge on energy issues with special emphasis on renewable energy systems
- enable combining urban and regional planning expertise to knowledge on energy planning

For a more detailed description of the Finnish training program, please read deliverables 4.1 and 4.2

2.2 Feedback received from the students

The feedback was collected using a standard Aalto PRO questionnaire: in the form there are questions that are asked in every training and questions that can be constructed for each specific training program separately. The form was sent electronically to the respondents after first five modules and after the last module. The questions covered themes like overall satisfaction in the module, especially interesting topics, practical arrangements, feedback on individual experts presentation/role in the seminar and individual learning experiences. It was also possible to give general feedback in the open form questions.

In the training program there were 25 participants, but not all of them gave feedback. The average response rate varied from question to question from 10 respondents to one. This might be due to lack of time (the electrical form was sent after the trainees had left the seminar and gone back to work), it might also be that the form itself was too exhaustive which decreased motivation to answer.

In addition to the electronic form, feedback was collected in the middle of the program with a special feedback discussion session. There were special reasons for this activity. First, the training organisers wanted to have direct feedback from the participants; discussion would deepen and widen feedback and it would be possible to ask participants clarifying questions. Furthermore, the training participants would also have a chance to be more descriptive and give improvement ideas for the remaining modules. Finally, feedback discussion was believed to bring even more openness and positive dynamics to communication.

A specific time slot was reserved for this feedback discussion in module 4 (17. 1.2012). The participants were given a few simple questions they had time to elaborate individually for some minutes and then reflect in smaller groups. The answers were then discussed openly with the whole group. The questions were:

- In which elements we have succeeded in the training so far?
- What are the areas of improvement in the training?
- Wishes for the forthcoming spring period?

2.2.1 Feedback from the questionnaires

The average rate for the evaluated training sessions varied from 3,12 to 3,35 on the scale of 1-4, four representing highest satisfaction. In addition to the overall satisfaction, participants assessed also other elements of the training days: group work assignments, practical arrangements, facilitator and each lecture. Generally speaking, the students found training days giving, topics interesting and practical arrangements good.

For each lecture the trainees assessed the content in general, its necessity and the lecturer/trainer skills. The assessment rates were 2,67-3,77, most of them above 3. The rates varied quite a lot and

possible reasons can be found: The more training experience a lecturer has, the more sound his/her session is – experience gives confidence and enthusiasm brings energy to the lecture. Usually trainees notice this and such a lecture is easier to follow which again enables learning. However, if the content is found highly interesting and topical by participants, even lower trainings skills are compensated. One must also note that each trainee has personal preferences for trainers: some characteristics weigh more in their assessments than others and sometimes the “match” is not that strong.

After the first module the questionnaire was modified slightly to include questions on trainees own contribution to and learning activity during the sessions. First the students were critical on their own learning, but later in the module 5 they rated their own activity and learning higher, average was 3,22 when the lowest rate in the module 3 was 2,78. The lowest rates were given to *“I have learned to understand factors behind issues and their links between them”*, *“I have learned how to apply new things in my own work”* and *“I have been able to create new cooperative relationships within the group”*. This might be due to the fact that those phrases express high level learning: acquiring that level learning during two-day seminar was possibly seen as too ambitious goal. However, it is interesting to notice that the rates were higher later in the training. Perhaps this was due to increased self-confidence (experienced learning ability) and that actual learning had already taking place (understanding the concepts, being able to discuss on phenomena, constructing links between different phenomena etc.) The highest rates were given to *“I have learned new things”* and *“I have got new ideas and viewpoints”*. These remained high in all assessment questionnaires.

Also some general aspects of each module content was added to the questionnaire, such as how applicable, difficult, interesting and topical students found the module. Again the rate was relatively high, average being 2,96-3,25. The usefulness of the module was broken into subcategories: usefulness personally, for the current job role and for the organization in a long term. The rates varied from 2,77 to 3,18.

2.2.2 Feedback from the discussions

In terms of the successes, training participants felt that the experts have been good in the training. Trainees had learnt relevant terminology, their own ability to discuss energy issues had improved, even the local cooperation in their work organization had improved. They had also enjoyed discussions with different persons in the training and the “project clinic” working method (see annex 1). Furthermore they felt they had succeeded as learners: their commitment on the training had been high and willingness to learn energy issues strong.

What comes to the improvement areas, trainees felt that –as the topic was new to everyone- there should have been more time to discuss the issues that have been lectured and to digest the contents. This expresses motivation to acquire deep learning – not just memorizing things. Students also felt that time for the discussions should not be at the end of the day, but there should be discussion slots throughout the day when energy level is higher.

Student group had wishes for the spring 2012. They related both to the contents and to the working methods in the training. In terms of contents they wanted to learn for instance about local energy solutions, solar energy, geothermal heating, smart grids, traffic issues, life-cycle aspects and assessment of materials and buildings. With respect to learning methods, students had enjoyed the project clinic working method, also learning cafe method was proposed. They also wanted to have mixed groups to promote discussions with several persons. There had also been some experts whom the group wanted to hear more.

2.3 Feedback received from the NSG

In addition to the student feedback, it is important to mention the feedback that was received from the National Steering Group (NSG) especially before the training program was launched, but also during the first months of the training.

The Finnish NSG consists of members of state and private organisations having an important role on energy and urban planning (representatives of municipalities, regional agency, energy business organisations etc.). The Finnish NSG had had several meetings to discuss the project and the pilot training: during those meetings the group had given suggestions to the whole UPRES project and specifically to the training program.

During the meetings, the NSG members gave valuable suggestions on lecturers and topics to be covered in the training. Among these topics or themes the members emphasized the importance of understanding the current urban and regional planning logic and how it should be challenged to meet the climate change. Furthermore, the local and regional decision making process, economical factors and communicating energy issues and new planning solutions to decision makers were found critical.

2.4 Training managers' observations

In addition to the feedback from the participants, it is important to note that, especially in the long training programs, the training managers² usually make observations on the experts' role and presentations during the training, group dynamics and how the training is generally taken by the participants. This information is not easy to explicate, but it is one important source of information for the training manager to assess whether the training is going to the desired direction. When this information is combined to other sources of evaluation information, there is a stronger base for making analysis on the training and decision on possible changes.

During the training program, the training managers made some observations that have been taken into account in the recommendations chapter. In the Finnish training program there were two managers having different roles: one being an expert in energy issues and the other being a pedagogical expert and responsible for the overall management. Their different backgrounds and roles enriched observations.

2.5 Recommendations for future courses

Based on the feedback and observations, some recommendations can be outlined for future professional development programs.

2.5.1 Content

The Finnish training course was relatively demanding in terms of content: a lot of topics were lectured and reviewed. As result, students had not always enough time to digest and reflect what had been taught and to analyze its applicability to their own work. On the other hand, as the training was a pilot on a new professional competence area, "testing" different topics was essential.

With respect to contents, it is be advisable to:

- Focus on the most relevant topics. These topics could be selected with experts from both urban and regional planning and energy fields. Also profound information on the urban and regional planning processes and working practices would help formulating the focus of the training.
- Enable learners' integration of details into a wider context and theoretical knowledge into practical expertise and vice versa. (see paragraph 2.5.2).
- Ensure mastery of basic concepts and phenomenon. Provide students with a glossary of most important concepts.

2.5.2 Training delivery

In the Finnish pilot training there were some elements that proved to be effective, interesting and giving both for the students and training organizers. Already in the training design phase the importance of varying viewpoints, practical cases and excursions was considered strong. Also a positive and highly interactive training that is facilitated professionally was an objective.

However, it was quite soon noticed that –despite the importance of different topics and viewpoints and the original pedagogical approach- the emphasis was too much on the content, not enough on the learning even though the latter was the ultimate aim. It became clear that students needed more time to reflect and discuss, they also needed time to orientate themselves to lecture topics prior to the sessions. As a result, some adjustments were made: the lecturers were advised to reserve enough

² In Aalto PRO training manager (or program manager) is a person coordinating the whole program. He/she is responsible for the design, marketing, delivery and finances of the training. Training manager cooperates with experts, participants, possible steering groups and other relevant persons/bodies before, during and after the training.

time for discussions and questions. Furthermore, time was allocated for group and peer learning assignments in general (such as project case clinic, knowledge co-creation). Also number of short, detailed lectures was limited and emphasis was put on wider topics.

Based on the Finnish experiences some advice on training delivery can be given:

- Express learning objectives and design a storyline to support acquiring those. This can be challenging on a completely new knowledge area, but brings a reference point for training and learning activities.
- Have professional facilitator(s) to promote discussion, offer viewpoints, and stimulate discussions in the seminars. Facilitation can also enable application of knowledge to participants' own work.
- As a general principle, reserve time for discussions and digestion. Allow participants to ask questions, reserve enough time for learning assignments (especially if the content is new for participants).
- Promote active participation with peer-learning and knowledge co-creation: design and facilitate assignments where participants need to find information, reflect on that and present what has been learnt. Encourage curiosity! (more information for instance on the project clinic exercise in Annex 1)
- Offer conflicting views on a topic to raise discussion and wider understanding. One practical method for this is to organize panel discussion or debate where participants represent different aspects.
- If possible, provide students with learning material prior to the training sessions. This helps orientating to the topics. Make sure the training material is available for students electronically.
- Bring practical context with excursions and cases. Encourage not only describing the case or visiting excursion sites, but also reflection and analysis.

2.5.3 Participants in the training

Following the original project idea, the training was primarily offered to urban and regional planning experts. Already during the design phase there was discussion whether the training should be targeted also to energy experts – providing them knowledge on urban and regional planning would be useful. Having this group in the training would have required changing the content focus quite dramatically and as the design was nearly complete, no changes in the participant recruitment was made.

During the training the idea of a more heterogeneous group got more support. It was understood that, in order to make real changes in the energy efficient urban and regional planning, these two professional groups would need to learn each other's approaches, working practices and professional language. A training program could be one platform to encourage that activity.

Having participants from various organizations is necessary, too. It is not only municipalities that have an important role in designing energy efficient urban areas, but also other actors and organizations are important as well. These could be for instance consultation companies, regional actors, energy companies etc.

Our advice would be to create a heterogeneous group. It enriches learning even though learning facilitation and content design might be more challenging. Professionals with different backgrounds and from different organizations bring positive diversity.

3. HUNGARY

3.1 Summary of the Hungarian long term course

In September 2011 The University of Debrecen started its long training program with 16 students. The program was extensive, 60 ECTS in total. 15 completed the course which means that they passed all exams and fulfilled all obligations – they got the “absolutorium”. 10 of them already passed the final exam, submitted the diploma work and after the viva voce got the diploma. The rest of the group will have the viva voce at the end of the 2012 autumn semester ((Viva voce can be done in two years after the completion of the course).

The overview of the long course disciplines can be seen in the following table:

Module	Discipline	credit
Fundamental	Energy demand management	4
	Fundamentals of urban design	4
	City management	6
	Urban climatology	4
Specific	Energy conscious building retrofit	4
	Environmental protection	8
	Power supply	4
	District heating and cooling	4
	Geothermal energy	8
	Solar energy	4
Diploma project		10

Figure 1: Modules and their ECTS extent of the Hungarian long term course

3.1 Feedback received from the students

The student feedback was collected using a questionnaire. Out of the 16 students, 12 answered the questionnaire. Following issues were asked from the students: content of the modules, quality of training material, module's proportion in the whole program (should have been more – should have been less). Students were also asked whether the program improved their position in the labour market and if the training broadened their knowledge.

Module contents

With respect to content of the modules, the feedback was positive: lowest points being 3.2 and highest 4.7 (1=most negative, 5= most positive). Solar energy, geothermal energy, building retrofit and urban climatology got the highest marks. District heating, urban design and urban management, utilities got the lowest points.

Quality of the training material

Hungarian students were satisfied with the quality of training materials: highest scores were close to 5 (4.7 and 4.8 for solar energy and building retrofit). Even the lowest points were beyond 3: students were less satisfied to material in modules of urban climatology, environmental protection, communal power supply and district heating.

Module proportion in the program

Students were relatively satisfied to individual module's proportion in the whole training program: modules points were close to 3 (1=should have been less, 5=should have been more). Energy management, solar energy, urban design, urban climatology, environmental protection and communal power supply were the most "balanced" modules, while the proportion of geothermal energy, district heating, urban management, utilities, building retrofit and communal power supply should have been higher.

Improving position in the labour market and increasing knowledge

Hungarian students perceived that the program had improved their position in the labour market, average being 3.9, (1=negative, no improvement, 5=positive, improvement). They also felt that the program had substantially increased their knowledge on the subject area, points 4.5 (1=lowest, 5=highest).

Interview

In Hungary one student was interviewed as well to give deeper perspective on the success of the training program. Even though the feedback is only from one student, it is well in line with the questionnaire results.

The program has high relevance for engineer and urban decision makers as they are not well informed about the impact of their decisions on urban energy consumption. Thus, the training managed to raise awareness: the architects and urban designers with their planning decisions can have an impact on environment, urban energy consumption and urban microclimate.

The course managed to raise awareness on the whole subject area. As such it did not offer that much directly applicable practical tools and knowledge, but instead managed to present problems and solutions in a more general, theoretical way. Going deeper into single modules and practical solutions should have required more time – having a general overview on urban energy issues and having guidance on what should be considered was the strong element in the program. However, some practical exercises could have been useful still, for instance a homework on some planning question or energy concept for a district.

3.2 Recommendations for future courses

The Hungarian case was quite different from the other partner countries: the extent of the academic course was much higher than in any of the other countries. Also arranging an ad hoc training to increase the number of students gave a valuable perspective on the strong and weak points of each program type. Based on these experiences, below is some discussion and comparison of these different options.

Comparative evaluation of different courses

Debrecen University organised different courses: two academic ones and an ad hoc training as shown in the figure.

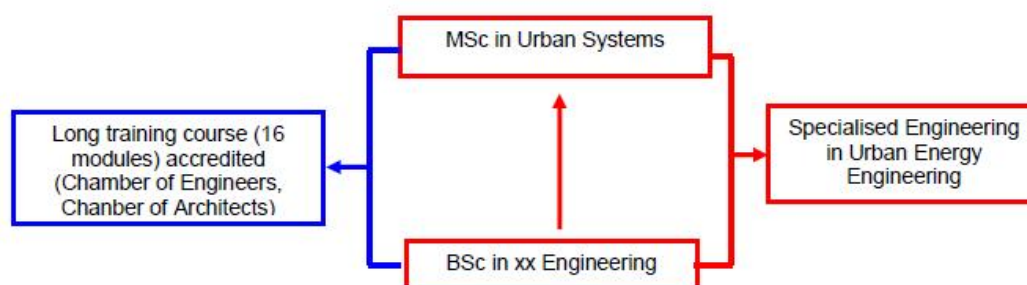


Figure 2. Training paths and examples of Hungarian training programs

Running three different versions of the training showed there are needs for all those training types.

Master level course

Pros of Master level training program are deep and detailed training material, high number of contact hours, cons are typically the lack of practical experience and the length (and cost) of the training. Master programs suits best to students who do not want to interrupt their studies but instead want to continue just after having completed the Bachelor degree. Certainly some of them spend a few years in the practice between BSc and MSc, however their number is lower. It is a question of the future where and how they can use their knowledge on the labour market since the first group will complete their studies in 2014.

Specialised Engineering training

Pros of Specialised Engineering training are that most of the students have practical experience, the training is run parallel with their work and it is shorter and cheaper. Majority of these students have regular income facilitating to pay the fee. Cons are the lower number of contact hours and the extra effort necessary to learn parallel with the everyday work. Most of the students have a specific interest and motivation to make use of their new knowledge on the labour market. Nevertheless it must be noted that the participants are in the best case medium level staff members of a local authority – or younger colleagues or people who intend to work in or for local authorities (Recently the question became open due to the shift several competences from local authorities to regional state offices.)

Those who complete specialised engineering training likely have ideas, dreams; they intend to make use of their brand new knowledge learnt during the training. However their position does not facilitate to implement their knowledge in the practice just after completing a course. The actual task of these professionals is defined by senior officers, depends on financial and market conditions. The implementation requires time, senior officers should be convinced and after all, concepts, plans, budgets should be approved by elected bodies of settlements therefore first results cannot be expected before 2014. Among the students of the first specialised engineering course 2-3 have the chance that their diploma project will be realised in short time.

Comparing the two options of academic training there is no definite answer which pro compensates which con? – it depends on the individuals and the actual situation of the labour market and frequent changes of legal framework.

Elective modules

The third long course version *with elective modules* (and only with elective modules) has a specific pro for those practicing professionals who are already well trained/experienced in one sector of the UP-RES subject area (e.g. district heating or urban design or deep refurbishment of buildings or solar technology). They should not spent time with topics of which they may be better experts than even the teacher, they can select the complementing topics which leads to a complex knowledge, discovery the interrelations of the multidisciplinary subject area. Complexity is guaranteed in case of university training since the programme of the course is given. Complexity is expected in the case of ad hoc courses if the participants have experience in one sector and select complementary modules.

Nevertheless it was shown by practice that some participants were not well informed what is the importance of a given module although the content of each module has been explained in the announcement (or they did not have and time to join more modules even if the fee was regressive: specific fee per module was less if more modules were attended). The low number of participants at the urban climatology module (which is a new discipline in engineering training) may be explained by the fact that the participants did not understand what is its importance from the points of view of passive cooling and natural ventilation of buildings. Those who joined to this module (as well as students of academic training for whom this discipline was obligatory) spoke however with great enthusiasm of this subject area. Providing this gap of information will be bridged a less experienced beginner or somebody who intends to change his/her profile can join each module in order to have a full picture.

Besides of the above mentioned problem the cons of ad hoc training with elective modules are the logistic problems originated from the need of flexibility due to the changing number of participants module per module and that this kind of training does not provide university degree. However it is acknowledged by chambers of engineers.

To run only one version of the training might result in more impressive number of students, to run different versions leads to sharing of the number between courses and requires more effort, on the other hand more lessons are learned.

Now MSc in Urban Systems as well as Specialised Engineering in Urban Energy are and remain organic part of the programme of Debrecen University. Depending on the number of enrolled students other Hungarian Universities will be encouraged to launch specialised engineering training on one hand and new ad hoc courses will be announced, on the other hand. Priority is given to Specialised Engineering course in Debrecen.

4. SPAIN

4.1 Summary of the Spanish long term course

The Spanish pilot UPRES-course was hosted by the Catalan Chamber of Architect's Continuous Professional Development Institution "Escola Sert" as a market adaptation and a progress towards the project's objective to reach professional practitioners in municipalities and planning offices. The training content was prepared in base of the training needs analysis, the discussions with the project partners, the input from the National Steering Group, and adapted to local conditions. All physical and organisational infrastructure was provided by Escola Sert, such as teaching facilities, support in marketing, subscription of participants, etc.

The training program was delivered in the academic year 2011-2012, starting on 24.10.2011 and finishing on 06.06.2012. It was structured in ten modules with an extension between 12 and 18 hours each, summing up 150 hours face-to-face teaching with an additional minimum of 50 hours home and project work. The content started with a general introduction to Energy and Urbanism, then developed strategies for energy reduction in the main energy consuming sectors: buildings and transport, and finally entered into Urban Energy Planning strategies with special focus on introduction of Renewable Energy Sources, DHC, CHP and taking into account not only technical but especially legislative and economical aspects and innovative management and business models.

The delivery method comprised of face to face classes on Monday and Wednesday afternoon (18:30h - 21:30h) with the possibility to assist on-line in-time and also differed for people from outside Barcelona or with time restrictions. A participative approach was achieved by exercises and homework in most of the modules, several site visits and experiences on existing pilot projects. The coordination of the key modules was assigned to most acknowledged experts in their field in Catalonia, and specialists were invited for the single classes of each module, counting on a total of 39 teachers for the 50 evening sessions. The continuity and enhancement between the different classes and modules was guaranteed by the overall coordination through SaAS and the presence in all of the classes.

The pilot course counted on 27 participants completing the whole pilot course and up to 10 additional participants for specific modules, so that the overall number per module was between 27 and 37 students, with an average above 30 students.

4.2 Feedback received from the students

The student's feedback was collected directly after every afternoon session through a simple standardized questionnaire used for all courses of the CPD institution with only two parameters to be scored from 1 to 5 (lowest to best scoring): quality and relevance of the content on one hand, and expertise and teaching capacity of the teacher on the other. Furthermore, particular comments were possible. Due to the simplicity of the questionnaire and the quickly introduced habit to complete it during the last minutes of the session, the return was nearly 100% of the participants during the course.

The overall evaluation was more than positive, reaching a scoring of 3.96 concerning the quality and relevance of the teaching content, and a scoring of 4.02 concerning the expertise and teaching capacity of the teachers. According to the experience demonstrated by the responsible from Escola Sert, this is a very satisfactory scoring for a pilot course. The experience from SaAS taking part in Master courses in other CPD institutions strengthen this, where in acknowledged Master courses even after years of improving and extending learning contents and methods, the threshold of 4.0 is not reached in the majority of courses.


Pilot Course 2011-2012 Evaluation - Spain		 UP-RES Urban Planners with Renewable Energy Skills	Quality and relevance of the training content	Expertise and teaching capacity of the expert
M1	AN INTEGRATED VISION. SUSTAINABILITY IN REGIONAL AND URBAN PLANNING		3.95	4.15
M2	ENERGY. THE EXISTING ENERGY MODEL AND MARKET OUTLOOK		3.27	3.68
M3	BUILDINGS. ENERGY DEMAND REDUCTION STRATEGIES IN NEW BUILDINGS AND REFURBISHMENT		4.01	4.16
M4	MOBILITY. ENERGY CONSUMPTION REDUCTION STRATEGIES IN URBAN AND INTERURBAN MOBILITY		3.88	4.08
M5	URBAN PLANNING. ENERGY DEMAND REDUCTION STRATEGIES IN THE URBAN METABOLISM		4.01	4.08
M6	ENERGY RESOURCES. RENEWABLE ENERGY TECHNOLOGIES IN THE URBAN SCALE		4.04	3.75
M7	ENERGY DISTRIBUTION: DISTRICT HEATING AND COOLING		4.27	4.25
M8	NEW MANAGEMENT CONCEPTS IN THE ENERGY MARKET		3.88	3.86
M9	ENERGY MANAGEMENT. NEW MODELS IN CONTRACTING AND MANAGEMENT		4.17	4.28
M10	WORKSHOP. THE RIGHT SCALE FOR EVERY ENERGY CONCEPT		3.92	3.83
AVERAGE			3.96	4.02

Figure 3. Numerical feedback on the Spanish training program

The overall satisfaction of the participants was very high and they expressed to have been impressed by the expertise and high quality information received in the classes and site visits. Also, the work in groups of three participants in the modules 3, 5 and 7 was highly appreciated and fruitful, although it faced a certain resistance when it was introduced, as students – especially those being integrated in a working environment, where afraid of not being able to establish cooperation with other students due to time constraints and distances.

The comments written in the evaluation questionnaires, given in personal discussions as well as during the final feed-back session at the end of the pilot course pointed out the following main issues:

Module 1. The session on the water cycle was not focused sufficiently on urban planning, but on general concepts and the building level. The session on quality of life in an urban context: health, confort, security, others was found very innovative and interesting and got the highest scoring of the module with 4.6 points out of 5.

Module 2. The two afternoon sessions on energy transformation technologies was perceived as too technical and too detailed, and too much knowledge on physics and mathematics was required. On the other hand, the first session, developed by the responsible of energy studies and planning in the Catalan Energy Institute, was found very interesting and gave a good overview of the Catalan energy situation and policies and the worldwide tendencies.

Module 5. This module treated the core of the course introducing urban energy planning and was perceived as such. The participants found it very dense and would have preferred to extend some of the classes as the high level lecturers seemed to have much more things to explain than time to do so. Also, there was not enough space for discussion.

Module 7. This module succeeded through the direct information from the two main DHC network operators of Barcelona, coordinated by one of them and counting on sessions of both directors, with very lively presentations and guided visit of the installation. The very practical, economical and technological approach was appreciated.

Module 10. The final project work conceived for module ten was found to be very useful, as the participants themselves were asked to come up with real cases from their working environment. Compulsorily, the groups were to be established with at least one participant from a public

administration, and the aim was to improve an existing urban plan or to implement district energy networks, neighbourhood networks, or to focus on whatever seems to save most energy in the municipality. The results were very satisfactory and interesting and ambitious works were presented.

In general, the participants worked much more than the supposed fifty hours at home, and all of the coordinators of group home work (modules 3,5,7 and 10) were surprised at the engagement of the participants. For sure, the good working environment established in the course, among other possible reasons built by the continuous presence of the director of the course in every afternoon session to welcome the lecturers, moderating the dialogue between teachers and students, giving continuity to the discussions, gave motivation to the participants in getting involved in the matter.

As general negative comment, the course was found to be very focussed on the supply and especially energy distribution side, and too little on the demand reduction side, looking for passive approaches and measures for more sustainable urban planning. The focus was intentionally put on these issues as in an existing urban fabric it was found difficult to work with passive approaches like width of roads or height of buildings, but perhaps to give a more complet knowledge to the students, it would have been needed to give this abilities as well.

Very remarkable and important was the figure of two participants as "delegates", selected by the Catalan Young Architects Organisation, free of charge. One was responsible for the contact with lecturers and the overall smooth development of the course, particularly taking care of sending the presentation template and a reminder to the lecturers, looking for an in-time delivery of their presentations some days before the class so as to facilitate the downloading from the learning environment by the participants, welcoming the lecturers and reminding them of correct invoicing, taking care of the availability of the compulsory assistance list for the participants and the evaluation sheet for every class, storing the presentations in the server, etc. The other delegate was exclusively responsible for ITC issues, assuring the operability of the system and especially the on-line transmission. During the sessions, she was taking care of the chat with the external participants following at distance, gathered their questions and asked them to the lecturers or presented their doubts for discussion to the participants.

The on-line transmission was regularly chosen by three participants coming from outside the Metropolitan Area of Barcelona, and only assisted personally to the site visits and exercise presentations / discussions / evaluations. Others used the on-line transmission only in particular circumstances, as in case of illness or just to review the sessions after some days.



Figure 4. Delegates in the long course presenting and discussing their homework in module 7, DHC networks

4.3 Feedback received from the interest groups

The pilot course results were presented on 16th October 2012 to representatives of the most involved stakeholders concerning training in Sustainable Building Design and Energy and Urban Planning, among them:

- Xavier Martí and Rudy Scholz, Ministry of Territory & Sustainability, Generalitat de Catalunya
- Xavier Arola, Director of Division Building and Equipments, Generalitat de Catalunya
- Marta Arrufí and Fernando Arranda, Catalan Housing Agency, Generalitat de Catalunya
- Cristòfol Querol, Head of Studies Department, Public Housing Agency Barcelona (PHMB)
- Ricard Perich, Technical Director of the Public Housing Agency Sabadell (VIMUSA)
- Monica Bonafonte, Director of Escola Sert, Catalan Chamber of Architects (COAC)
- Xavier Cipriano, Building, Energy and Environment Group, CIMNE – Terrassa
- Dani Calatayud, professor at the Polytechnic University of Catalonia (ETSAV-UPC)
- Felip Neri, General Director of Aqualogy Facility Management (AGBAR)
- Toni Solanas, President of the Group: Architects versus Sustainability (COAC)
- Pau Casaldaliga, Head of Department R+D+I, Pich-Aguilera Architects, others

The feedback was very positive and the main results considered as of high interest in order to conceive further training offers in the field, especially in the Mediterranean countries with similarities among them concerning climate and socio-economic fabric of the population. The practical approach was found crucial and the need for an on-line transmission to offer the training to a larger audience, independent from space, and perhaps from time, was emphasized.

4.4 Recommendations for future courses

4.4.1 Content

The training content in future editions should be similar to the pilot course as it was well structured concerning introduction / demand side / supply side / energy distribution and final workshop, but the following improvements are to be considered:

- **Emphasize on urban revitalisation.** It is obvious that in the current economical context in the Southern European Mediterranean countries no or only very few new urban developments are to be implemented in the coming years. On the other hand, the objective of 20% energy efficiency increase is the most behind and with the actual business-as-usual tendencies unreachable of the 20/20/20 objectives. Therefore, urban revitalisation needs to be the main focus of energy related issues in urban planning, looking for innovative measures to improve the existing urban fabric's energy performance.
- **Emphasize on passive measures to reduce energy demand.** The introduction of passive measures to improve a city's energy performance is of course a difficult issue, as most parameters are already fixed and built environment. Widths of streets, height of buildings, etc. are not discussable, but different other, perhaps less influencing parameters are still to be considered, as shading devices in urban spaces, by-laws for facilitating exterior insulation of façades, etc.
- **Reduce the importance of the distribution networks.** In the pilot course, clearly a too high emphasis was laid on the energy distribution. Although the implementation of DHC networks is considered to contain a high potential of energy savings and security in supply and easier shift to RES, the weight this issue was given in the first edition could be reduced.

4.4.2 Training delivery

In the Spanish pilot training, the main elements like face-to-face lessons, but with easy access to the trainers and possible interventions from the participants' side, the fact that most of the lecturers were active and recognized practitioners, the introduction of practical cases and different site visits, proved to meet the expectations of the trainees and to achieve the expected results by the trainers.

Based on the Spanish experiences some advice on training delivery can be given:

- Provide students with learning material prior to the training sessions. This helps orientating to the topics, upload additional information sources to the e-learning environment for those interested in details or further development of specific issues.
- Bring practical context with pilot case studies and guided site visits.
- Promote the use of the forum of the e-learning environment so as to enhance the knowledge exchange between participants, and to create a contact platform that lasts longer than the training period itself.
- Implement group works in order to increase participation of all trainees and promote social and professional interaction and exchange of view-points.
- Use whenever possible cases and projects brought up from the participants themselves, focussing on their own municipalities or job context, as the motivation to develop solutions for these real case studies where they are involved in is very high, and encourages the snowball effect of spreading their knowledge among colleagues and entities they are engaged with.

4.4.3 Participants in the training

As the pilot training was finally hosted at the Catalan's Architecture CPD Institution Escola Sert with its specific marketing channels and focus, all of the participants except one were architects, some of them specialised in urban planning. Even though an important effort was made to reach particularly public administration employees, an important number of practitioners subscribed for the training. In future, marketing should be widened up to other professions involved in urban planning, as energy and infrastructure experts, geographers, and also politicians and non-technical decision-makers.

At least in the actual Mediterranean economic context, the training offer needs to reduce subscription costs to be affordable and to achieve the critical mass of students to allow the start of the training. It is suggested to reduce costs by 20%, minimum, what means to reduce content by 20%, especially in the modules treating with DHC that were overrepresented in the pilot course.

In case it is not feasible to continue the long course due to economic constraints and lack of students, the design or large scale implementation of small courses should be considered to provide at least minimum training especially to public administrations (none of the Spanish participants got any economic contribution from the employers, and no working hour compensation, not even part time). This short courses may either condense the long course training content, giving an overview over all relevant issues (UK model), or focus on specific issues, that are offered in compact seminars, similar to the Finish long course model.

5. GERMANY

5.1 Summary of the German long term course

In Germany the pilot training started in June 2012 and will finish in June 2013. It is offered in cooperation with the German Institute for Urban Studies (Difu). The program is structured in 8 modules:

- Module 1: Basics and Introduction to the System of City and Technical Infrastructure
- Module 2: Basic Conditions and Characteristics of Energy and Energy Efficiency
- Module 3: Physical and Technical Background / Forms of Energy / Energy Sources / Buildings
- Module 4: Definitions and Fields of Application/ Application Limits of RES
- Module 5: Basic Economic Data
- Module 6: Creating a Concept
- Module 7: Legal Framework for the Implementation of Energy and Climate Policy, as well as Urban Planning related Objectives
- Module 8: Implementation measures - Best and Worst Practice with Examples

Each module consists of two days with 8 hours per day. In addition, the students will do individually homework and take part in an excursion. The detailed contents of each module can be found in Deliverable 4.2.

By now (February 2013) the first five modules have been completed with an average of 11 participants per module. The 16 participants are from municipalities (4), public utilities (3), consultancies and planning offices (4), universities (3), planning associations (1) and housing associations (1).

For each of the following five modules already 11 students have registered.

5.2 Feedback received from the students

Feedback was collected using AGFW seminar questionnaire during each module. The participants got the questionnaire in the beginning of each module, so that they could fill feedback in directly after every lecture. The questionnaire contains questions about content, practical relevance, presentation and presentation documents for each lecture as well as evaluation of the organization of the event and the opportunities for exchange of experiences.

In the training program there were 11 participants in average per module, but not all of them gave feedback. The average response (first five modules) rate was about 7 (64%). This return could be reached because the questionnaire was distributed in the very beginning of each module.

Modules:

The feedback on the first five modules shows a high satisfaction with the whole program: Almost all interviewed persons indicated that they were pleased (“good”) or very pleased (“very good”) with the content and organization of the courses. Noticeable are two main results: First, the small difference of the contentual parameters corresponds with the topics of the courses. That means, not every thematic aspect fits with the interests or professional background of the each participant. Secondly, the best rated parameter “Exchange of Experience” proves the importance to pair actors with different professional background up.

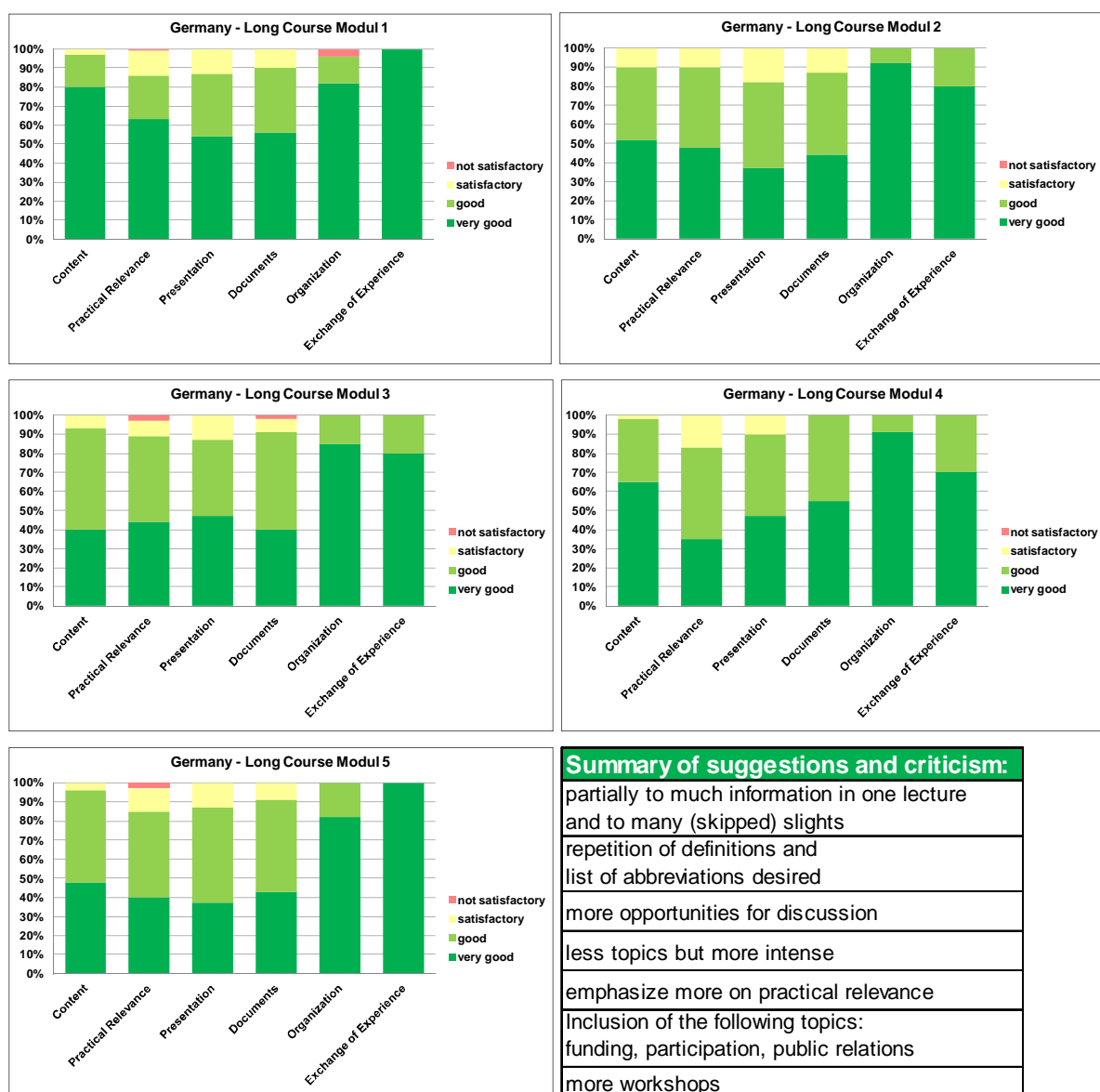


Figure 5. Numerical feedback on the German pilot training course

The participants of the courses remark several suggestions and criticism as follows. The organiser implements the proposals in the next courses.

6. SUMMARY OF THE FEEDBACK AND RECOMMENDATIONS

Based on the feedback results, the UPRES training participants were very engaged to the training and satisfied to the contents and delivery methods. The original perception UPRES partners had on the need for this type of training program was proved and justified during these pilot programs. Unfortunately the European economic crisis set obstacles on the training implementation: the number of students was lower than expected and pricing of the programs became challenging. The crisis will probably challenge continuation of these programs in the near future as well.

To summarize the feedback results from the training delivery viewpoint, it can be said that the training participants appreciated discussions with high level experts and other training participants, practicality of the contents which was supported for instance by excursions, site visits and pilot cases. At the same time, these were also the issues students wanted to have more.

The recommendations for the training delivery can be summarized as follows:

- Avoid heavy information sharing – promote discussions, different viewpoints, learning together, practicality. Make sure there are persons to facilitate learning.
- Ensure availability of training material prior to the training sessions and after the training. High quality material can be used as “handbook” and reference material once training is complete.
- Encourage students to create an “alumni” network, facilitate communication with e-learning platform, if possible.
- Use whenever possible cases and projects brought up from the participants themselves, focusing on their own municipalities or job context.
- Encourage learners from different backgrounds participate in the training: urban and regional planners, energy and infrastructure experts, geographers, and also politicians and non-technical decision-makers.
- Encourage participants to give feedback during the training. Keep the training structure flexible to allow changes during delivery.

The course contents were selected based on the discussions within the partnership but also on the national needs and results of the training needs analysis. Therefore there was a national “taste” in the pilot trainings even though common elements were included as well. The future trainings should respect the local needs as well, thus giving recommendations on the contents can be questioned. Nevertheless, some suggestions can be given:

- Provide students with a general picture or an overview to the issue of urban planning and energy.
- Have sufficient emphasis on urban refurbishment/revitalisation as urban development will focus on already existing, not new, urban areas due to the economic crisis.
- Although the implementation of DHC networks is considered to contain a high potential of energy savings and security in supply and easier shift to RES, the weight of this issue should be considered.

The feedback and recommendations above are based on the questionnaires, discussions with the training participants, NSG’s suggestions and training managers’ observations. These training evaluation methods were best available during the pilots. However, to measure impact of the training, other methods should be used such as interviews of participants and their colleagues/superiors. It would be interesting to know participants’ perceptions on what has changed in their working practice as a result of the training, have they been able to use and share with colleagues the knowledge and competences acquired during the training, is there more discussion, co-operation and co-planning between different experts and organizations, and have some new needs appeared in terms of energy-efficient urban planning. All these are quite typical questions on the impact of training. Unfortunately, our UP-RES project does not allow us enough time to go deeper into these questions and find answers.

7. ANNEXES

Annex 1: Project clinic exercise in the Finnish pilot training

In Module 4, a project clinic was organized. Five top experts of RES and urban planning participated in the clinic as facilitators. Each expert had a 30 minute round table discussion around their own expertise topic with respect to project groups' case topics. The objective was to offer different viewpoints and consultation to the project cases. The day before the actual project clinic exercise, the project group participants had prepared questions to each expert. The prepared questions and given answers should help the group to progress with their project case.

Each group spent half an hour to discuss the issues related to their own project work. At the end of the day, all participants had discussed with each top expert about the opportunities and barriers of integral RES and urban planning and implementation. They also made a summary of the discussions for their own use.

The expert profiles were:

E 1: District heating and cooling

E 2: District heating and cooling and energy business management

E 3: decision making processes in municipalities, management, urban planning

E 4: Energy systems and economics, research activities

E 5: Urban and regional planning, planning as expertise

Recommendations for running a project clinic:

- select experts that have different profiles from each other: this enables rich communication and different approaches to the discussed topic
- The size of clinic group discussing with the expert should not be too big, not too small either: optimal size is about 5-6 persons. This allows active participation for everyone.
- make all participants prepare themselves to the clinic activity: specify the role of expert and expectations to him/her; allow students/clinic participants prepare questions beforehand; communicate the objective of the exercise
- have someone facilitating the clinic activity: communicating the purpose and objectives, time management, group rotation, summarizing activity