

ENACT
Energy Auditors Competencies, Training and profiles
O3|
ENACT Integrated System

O3A2| ENACT Program and System Validation Report

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1. INTRODUCTION

The document is aimed at reporting, comparing and analysing the validation actions carried out in all partners countries (IT, ES, PT, PL), highlighting the main actors involved, activities realised and evidences collected. More specifically, the present document describes the piloting process and gathers the results obtained during the implementation of relative activities in Poland, Portugal and Spain; it integrates them with the main evidences collected within the wider (in goals, scope and activities) Italian piloting. This is done to allow a comparative analysis of piloting evidences in order to: carry on ENACT fine-tuning, build an integrated fine tuning plan, lay the foundation of the valorisation strategy, at both European and national levels, of ENACT system, program and resources (as reprised in ENACT Recommendations document, available in the project website and in the European Dissemination Platform).

2. ENACT PILOTING PROCESS AND ACTIVITIES

Consistently with the project plan, scope and architecture, piloting activities have been planned and realised in Italy and in the other countries in a differentiated manner, although within a common conceptual and methodological frame:

- ▶ In the **partners countries** (ES, PL, PT), the piloting process has been aimed at validating national ENACT professional schema, training programme and learning system. More specifically, the goal of the activity was to collect stakeholders' feedback in order to validate the ENACT profile (further to previous activities carried on in the previous steps of the project), training programme and system, assess their opinion about the system functionalities, the effectiveness of the programme and aspects missing or that should be improved (if any);
- ▶ In **Italy**, a focused and wide piloting action of the overall ENACT training programme and learning system was carried out with professionals of different Italian regions and included the delivery of the ENACT training program. Due to the relevance and extent of the Italian ENACT piloting (featured by greater and different timeline, tasks and resources employed, as well as inputs and expected outputs), the ENACT piloting has been described in a standalone report, available in the project website and in the European dissemination platform

Italian piloting activities has been coordinated by AISFOR and realised by AISFOR and RENAEL. The coordination of pilot activities in Poland, Portugal and Spain was under the responsibility of INCOMA, with the support of AISFOR, project coordinator. Project partners were individually responsible for adequately implementing the necessary actions at national level for obtaining the evidences required, according to the formats, timeline and methodology defined in the abovementioned Operative Plan and for preparing the corresponding National Report. The Piloting

Operative Plan describing the goals, methodology, inputs and evidences to be collected is annexed to the overall Operative plan of the third project intellectual output.

2.1 Pilot Set-up: system, resources, assessment frame

ENACT system set-up activities has been carried on, as described in the “System set-up” describing its technological and methodological choices, dimensions and features as well as its architecture, branches and courses created main learning areas and tools. The ENACT system set-up has foreseen the creation of two main branches:

- + the Italian one (enactplus). According to the features of the Italian piloting, foreseeing the fruition of the overall program and units, additional personalisation and set-up activities have been carried on per each learning outcomes and units (including the learning tests and the customers assessment); *System Set-Up*
- + the European one; his second is articulated itself in:
 - one common “European” course, English-based, integrating all the english resources collected, shared, integrated and “ENACT personalised” by partners at the previous project activities;
 - one course for each partner country (learning areas, tools and resources in the partners language).

Each group of piloting participants has been given the access to both European and proper national course access. At the piloting completion (June 2016) users have been migrated and associated with a single common account named " enact-en "on a European subsidiary of ad hoc configured platform and, at the same time that Enactplus, with the second level domain called" Enact "(<http://enact-ais4fad.talentlms.com>) where it was held.

The ENACT system set-up document, and the annexed guidelines and other supporting resources are available in the project website and in the European dissemination platform.

Program architecture has been integrated in the learning areas, by identifying: course information, navigation supporting resources, course modules and learning unit description. The set-up activities have been also related to: *Pilot Set-Up*

- the **participants** selection and, in the Italian case, the **trainers** selection (and their coordination);
- the definition of the piloting **assessment frame and tools**: templates annexed to the Operative plan for the not Italian countries; the overall ENACT piloting evaluation frame (as described in the document “ENACT assessment frame” annexed to the partners ECVET MoU) has been personalised and the itinere and ex post tools developed;
- the integration of the english and country-based available learning and support resources in each ENACT course;

- for the Italian branch, per each learning unit the **learning and supporting resources** has been developed and integrated:
 - o starting from the learning resources transferred and enriched in the previous stage and integrated within the European level ENACT course (Italian participants has also been allowed to access the European training course);
 - o enriching and personalising these resources according to the relevant national scenario (and language solution)
 - o using a commented slide methodology and technical solution (allowing the fruition and learning tracking).

At the Italian level, the qualification frame has been extensively validated in the previous project stages. However, the scientific coordination of Italian trainers (aimed at preparing the customised learning resources per each learning outcome) as represented another relevant opportunity to validate the profile and curriculum. The rich evidences collected by participants on professional and training effectiveness have furnished further validation base.

Italian pilot

As regarding the ENACT system, program and resources, participants has been attending the overall ENACT program, articulated in 10 modules and 35 learning units with and overall duration of 80 hours and delivered by asynchronous distance learning methodologies. Per each learning unit (and at the module completion) participants has also done the learning test (allowing the application/validation of the ECVET system) and the satisfaction evaluation questionnaires. Finally, participants have participate to the social interaction area ENACT 2.0.

At the **other national levels**, in order to ensure that relevant qualitative and quantitative evidences would be obtained, partners were required to undertake **two different actions**:

Partners countries pilot

- on the one hand, Consortium members shared the ENACT qualification scheme and training program;
- on the other hand, they provided stakeholders' access to the ENACT system and its resources.

A strong emphasis was put on the need to realise both types of activities in order to involve a representative number of stakeholders, especially considering that these activities employed different methodologies and tools.

Indeed, the sharing of the ENACT qualification scheme and training programme was conceived to be implemented through meetings, focus groups and/or individual interviews - in presence or at distance - using telephone calls and/or Skype, among others deemed adequate. Guidelines for in presence and at distance activities were provided in the O3-A2 Operative Plan (annexed to the

overall IO3 plan) and, whereas meetings and/or focus groups were the methods favoured by the Consortium to share, validate and collect feedbacks from stakeholders, each partner individually assessed the methods that were more effective according to the regional/national context.

On the other hand, in order to access the ENACT system and its resources, each partner country was given a username/password by AISFOR that partners provided to the selected piloting target. Each user used the mentioned login details to enter and navigate the system, access the learning outcomes and the resources provided and complete an evaluation questionnaire according to the template included in the Operative Plan.

In what concerns the different inputs to implement the abovementioned activities, Consortium members were required to make available to stakeholders a set of relevant documents that allow them to acquire insight on the different aspects to be evaluated and consequently provide appropriate feedback, namely:

- ENACT Energy Auditor profile and qualification scheme;
- ENACT training programme;
- ENACT programme learning units (abstracts as text file);
- ENACT system presentation (a template was provided and then customised by each partner individually at national level);
- ENACT system and materials (system translated into partners' national languages and materials uploaded in partners' country-level course).

Additionally, Consortium members had the possibility of facilitating other customised materials, in which case a copy was included in the National Report prepared by the corresponding partner.

Moreover, it is also important to highlight the different types of stakeholders targeted by piloting activities in Poland, Portugal and Spain. Indeed, validation activities were addressed to:

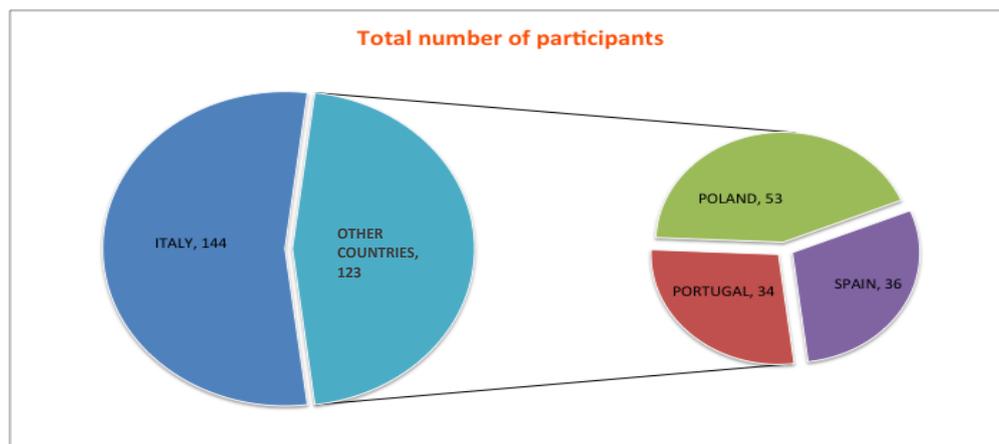
- 1) Qualification institutions;
- 2) Certification institutions;
- 3) Professionals and end users;
- 4) Research and learning centres, as well as VET schools and Universities;
- 5) Students and other potential users of the ENACT program, according to the entry level defined at each partner's national level;
- 6) Energy agencies, private companies and associations working on the energy field.

As mentioned before, the results of activities implemented by each project partner were gathered in a National Report according to the template included in the Operative Plan, and detailed the main outputs and evidences obtained.

The results obtained and the tools used during national validation activities will be described in this section, whereas a more critical analysis will be included in section 3 of the current document, also detailing fine-tuning and valorisation aspects and conclusions.

2.2 Participants

A total of **267 participants** were involved in piloting activities: **144 participants** in Italy and **123 participants** in Poland, Portugal and Spain, as shown in the following picture.



This figure reaches and surpasses the minimum established in the project proposal and Operative Plan, which states that **each partner was required to involve at least 15 participants in these activities**; the same at the **Italian national level (144 participants instead of 45)**.

The enlargement of the participants number and of the regions involved is related to the great interest shown to the initiative and, consistently, **its relevance in terms of learning and professional needs** also with reference to the employment (and training needs) potential impact of the ongoing approval of the European standard on Energy Auditor (11627) and of the national/regional policies and programs related to the improvement of the “energy efficiency” system. These themes, also reported in the first section of the evidences analysis, par. 3.1) have represented the ENACT profile main scenario (as in the first project outputs) and, at the same time, represent the main valorization frame, as further deepen in the ENACT Recommendations (available in project website and European dissemination platform). The participants enlargement as been approved at each national level and from the all Consortium considering the precious opportunity (without modifying project timeline and budget) to collect wider and richer feedbacks on all the relevant dimensions, including the training and job effectiveness and potentials.

Stakeholders' profile was varied and in line with the different types of stakeholders defined in the Operative Plan. Indeed, stakeholders involved encompass:

- **Educational actors** – professors and academics from Higher Education Institutions and VET teachers with expertise on topics related and relevant to the project, namely energy efficiency and energy management. In the Italian piloting, part of them has been actively involved as ENACT trainers that realised the ENACT Italian learning resources, starting from: the ENACT curriculum and learning outcomes architecture; ENACT learning resources developed and shared by partners in the previous project stage; distance learning methodological frame employed for the ENACT piloting.
- **Students** from Higher Education with knowledge on energy and buildings, who at the same time are potential beneficiaries of the ENACT programme;
- **Companies** and **Professionals** working in the energy sector, including energy auditors, energy managers and experts on energy certification of buildings, who provided market-based feedback and are also potential beneficiaries and end users of the ENACT programme. This the main target involved within the Italian piloting have been represented by this target in order to strength the robustness of results on terms of both professional (and employment potential) and training (and employability potential). In this target cluster are included also **energy agencies** (representatives and/or professionals), **private companies and associations** working on the energy field;
- Representatives of **public institutions and regional administrations** with specific expertise and intervention on the different aspects related to professional qualifications and the energy sector.

All targets have been also involved in the first piloting activities (within ENACT communication and promotion activities) as well as during and after the piloting deployment, supporting on going fine tuning and evaluation evidences analysis.

2.3 Activities and methodologies

At the **Italian level**, after the system & resources set-up and participants selection, the piloting activities have begun. Some days before the starting of the ENACT program, participants were sent by email all the relevant information; they attend the overall program (10 modules, 35 learning units) in the period April-June 2016. Participants (technical and training) support and participation monitoring has been delivered along the overall piloting timeline. Participant interaction has been promoted within the ENACT forum. Participants satisfaction questionnaires has been delivered per each learning unit, per each module and at the course completion. Learning assessment test has been delivered per each learning unit and per module (so to deliver the Ecvet credits – and certificate - associated at each module).

For a deeper analysis of the Italian piloting activities, please refer to the Italian Piloting Report, available in the project website as well as in the EU dissemination platform.

At the **other countries level**, as above reported, Consortium members were required to implement **two different activities**, one aimed at engaging in a **debate with stakeholders** in order to obtain feedback on the ENACT qualification scheme and training programme; and the other intended to grant **access to the ENACT system** and obtaining corresponding evidences.

However, each partner selected on an individual basis the methods most suitable to their national and/or regional context. Indeed, the Operative Plan provided the guidelines for partners to implement the two different activities, using both in presence (such as meetings, focus groups or interviews) and at distance (for example, using individual interviews over the phone or a videoconference system) communication tools.

Furthermore, the timing of the activities to be undertaken was defined by project partners. Indeed, each Consortium member had the possibility of carrying out the activities in one single session (presenting and engaging on a debate on the ENACT qualification scheme and training programme and the accessing the system and collecting evidences on the system) or in different moments (for example, in one session presenting and debating on the ENACT qualification scheme and training programme and presenting the system and then allowing stakeholders to access the system according to their convenience. However, this would require a subsequent follow-up in order to ensure that their filled in the evaluation questionnaire on the ENACT system and also to collect qualitative feedback that would arise from a debate on the system).

It is possible to conclude that all validation activities capitalised on the organisation of the Second ENACT Multiplier Event (in separated and dedicated sessions), which addressed the same project outcomes targeted by pilot activities, that is, the ENACT training programme (O2) and system (O3). This allowed Consortium members to generate synergies and ensure stakeholders' involvement.

Indeed, considering the obvious constraints in terms of time and resources that stakeholders are able to allocate to project actions (being Multiplier Events or other activities directly related to the implementation of intellectual outputs), the definition of different methods to combine both activities allowed partners to comply with both project actions while not doubling the number of requests to stakeholders. Despite achieving an adequate number of stakeholders involved and obtaining relevant feedback on the different aspects required, some partners expressed some difficulties faced to engage institutions and receive feedback with the level of detail they expected, which is a clear sign of the time constraints mentioned before.

Consortium members implemented face-to-face meetings at national level on the same day of the Second Multiplier Event, thus complementing these activities with communication with stakeholders via e-mail. Indeed, in Poland and Portugal the contacts maintained via e-mail after

the onsite meeting allowed stakeholders to access the system and fill in the corresponding evaluation questionnaire. Additionally, in Portugal, the ENACT qualification scheme and training programme was also shared via e-mail. In Spain, system access and debate was included as part of the face-to-face meeting and stakeholders were then given the opportunity to further navigate the platform individually, outside of the meeting.

Therefore, it is possible to conclude that all **partners favoured face-to-face meetings** to obtain feedback on the ENACT profile and training, **in some cases complementing the meetings with at distance communication** (e-mail). Whereas **system presentation was done mostly in presence**, system access and feedback was implemented both in presence and at distance.

The Italian piloting has been mainly carried implementing distance learning and distance communications (skype, emails) with trainers and with participants. In the other countries, as previously reported, it is also possible to observe **that the majority of activities were implemented face-to-face**; only in Portugal 29 participants has been involved in distance learning activities. Meetings were the preferred face-to-face activity and e-mail was the preferred at distance communication tool and complemented face-to-face activities.

It should be added here that in the cases of Poland and Spain, all attendees to face-to-face activities aimed at carrying out the ENACT programme and system validation were also contacted during at distance communication tools (e-mail). Therefore, considering that each stakeholder was primarily involved in an onsite meeting and that communication via e-mail was complementary, these persons were considered as attendees to the onsite meetings.

In Portugal, however, both situations occurred: a face-to-face meeting with stakeholders was organised on the same day of the Second Multiplier Event and at distance communication was maintained with stakeholders not participating in the mentioned meeting, which should be considered not as follow-up communication but as a separate action.

It is also important to highlight here that even though Consortium members were required to implement two activities (focus groups with target and stakeholders as well as guided system access), they had the possibility of implementing both activities simultaneously, thus taking advantage on the synergies created. Due to the wider goal and scope of the Italian piloting, targets and stakeholders have been involved:

- along the overall piloting lifecycle, starting from the participants and trainers selection actions to the final evaluation activities in many different
- participants have been actively participating to the complete ENACT program, accessing all the ENACT program units and resources (including the learning testing and the customer satisfaction ones) and system tools (including the social area ENACT 2.0).

For a deeper analysis of the Italian piloting activities, please refer to the Italian Piloting Report, available in the project website as well as in the EU dissemination platform.

2.4 Evidences collection

According to the activity Operative Plan, Consortium members were expected to collect feedback on the main ENACT outputs: the ENACT profile (O1), training programme and resources (O2) and system (O3). As mentioned before:

- the Operative Plan supporting the not-italian piloting included guidelines on the different aspects to be considered, namely proposing questions for each type of result to facilitate the implementation of the pilot activities. Operative plan and guidelines/templates are annexed to the overall piloting plan;
- the complete piloting evaluation system (in itinere and final; learning and satisfaction) for the Italian piloting is reported in the Italian Piloting Report, available in the project website as well as in the EU dissemination platform.

Even though some questions were common to all project results, such as aspects that were missing and aspects that could be improved, specific aspects were included for each output, namely:

- the adequacy of the ENACT qualification scheme to the labour market needs and the national/regional qualification framework;
- the ENACT ECVET system, the organisation of learning units and learning outcomes compared to the regional/national context and requirements;
- the duration of the ENACT curriculum, its entry-level criteria and assessment methodology, especially when compared to the regional/national context and requirements;
- the ENACT system accessibility and resources available.

Consistently with the piloting evaluation frame and tools defined, evidences has been collected:

- within not-italian piloting, during the debates with relevant actors. Feedback obtained via e-mail and the evaluation questionnaires on the system complemented the results obtained;
- within Italian piloting, on the bases of in itinere and final learning and satisfaction questionnaires. Interactions with participants – also within ENACT 2.0 – and with trainers complemented the results obtained.

3. EVIDENCES COMPARATIVE ANALYSIS

Evidences obtained on the ENACT program, system and (learning & supporting) resources were very positive, both within Italian and not Italian piloting. The next paragraphs deepen the comparative piloting evidences analysis for each main ENACT result dimension (profile; program; system and resources).

This analysis has supported the ongoing fine tuning action (with special reference to the Italian piloting), allow to define a common fine tuning plan (as in the next chapter 5) as well as contribute to the definition of the ENACT valorisation strategy and frame both at national and European level.

3.1 ENACT profile

The evidences obtained on **the ENACT profile** demonstrate that it is **positively assessed** by stakeholders and **adequate to its purposes** and that it is an **important source of market homogenisation and regulation** to what is an essentially unregulated sector.

As already stated, the same enlargement of the number of participants and stakeholders involved (and their composition) confirm **ENACT training and employment relevance**. Its modular and **learning outcome-based architecture** as well as the modular **ecvet-based assessment** further improve its relevance and potential impact because allow to effectively deal with the present diversity within different national/regional qualification frames and labour market demand.

Despite the labour market differences in Poland, Portugal and Spain, stakeholders from all countries agree that **the ENACT profile should focus not only on the residential sector** but also addresses other sectors, such as the industry. Again, this would increase the possibilities of professionals and provide an answer to the labour market demand.

Furthermore, in Spain there is also a **current existing labour market demand for other professional figures** related to the energy efficiency sector (namely, the energy manager), which could be a potential valorisation for the Consortium.

3.2 ENACT program and resources

The effectiveness of the **ENACT training programme** has been confirmed, within the wide Italian piloting, also taking into account the very high perception of participants of the positive learning achievements and relevant professional potentials gained by attending the course (a deeper analysis is reported in the ENACT Italian Piloting Report).

A positive evaluation of the ENACT program has been confirmed by stakeholders involved into the not-italian piloting; they mainly highlighted as very interesting and distinctive aspects its **modular structure**, the inclusion of **technical and transversal aspects**, such as marketing and communication strategies, its features/opportunities in accessing by **distance learning** systems.

The **modular approach** (learning outcomes- and ecvet- based), coupled with the existence of an **entry-level test** and the definition of (or the possibility of defining) **different entry levels based on beneficiaries' previous knowledge and expertise** allow a wider and effective path to the adaptation of the ENACT training programme according to the participant profile. Indeed, stakeholders (especially the ones from Portugal and Spain) suggested the customisation of the ENACT training programme, which ultimately would allow beneficiaries:

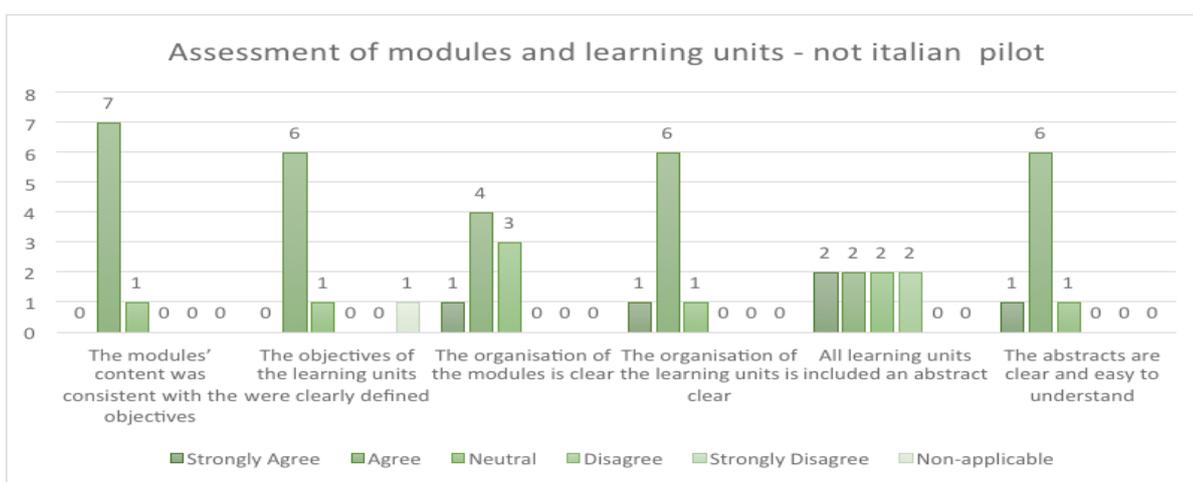
- to have recognised previous knowledge and/or professional experience, thus making the training more attractive and personalised;
 - to integrate the ENACT fruition with other education and training paths.
- ENACT training, in fact, cannot be sufficient in terms of training hours to provide students with all the knowledge, skills and competences necessary to perform energy audits, especially if a participant that does not possess relevant previous knowledge and/or experience. In that sense, it should be highlighted that the purpose of the ENACT training programme is not to replace tertiary education but to provide the minimum competences for every participating country, thus building beneficiaries' capacities to carry out effective energy audits and assessing skills for that purpose.

This aspect will also allow a dynamic alignment between training entry level and professional certification (with reference nowadays to 16247) entry level, between education and job systems.

In general, according to the answers to the questionnaires, **all modules were accessed, as well as all learning units and the corresponding materials and resources.** The assessment of modules, learning units, materials and resources has gained in both piloting a very positive feedbacks.

The analysis of the Italian piloting evidences has allowed, learning unit per learning units (and then module per module and aggregated course) to correlate the positive feedbacks on the unit/module among diverse assessment item, so to better ground the **evaluation of the perceived learning (and employability) effectiveness.**

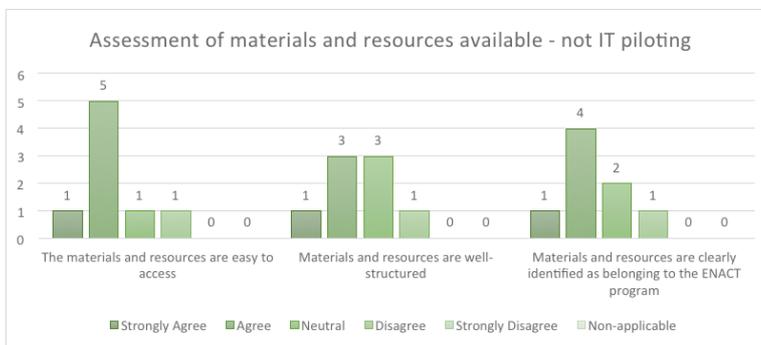
In the not-italian piloting as well modules' content was considered to be consistent with the objectives, which were clearly defined. The organisation of the modules and learning units were also positively reviewed by survey respondents. Abstracts were easy to understand and were provided for the majority of learning units – only two survey respondents disagreed with the statement provided.



The evidences gathered within the Italian piloting with reference to the ENACT program articulation also address two other relevant dimensions:

- the **units/course duration**. It has been assessed, in 70% of cases, as balanced and in 27.7% of cases too long; however, the time spent by participants has been, in average, longer than the planned. A deeper analysis has been undertaken to correlate, analytically per units, subjective (experience, competences,...) and objective (unit contents, methodology,) dimensions. Also in the not Italian piloting, The number of training hours was considered to be insufficient to provide students with all the knowledge, skills and competences necessary to perform energy audits, especially if a participant that does not possess relevant previous knowledge and/or experience. However, the purpose of the ENACT training programme is not to replace tertiary education but to provide the minimum competences for every participating country, thus building beneficiaries' capacities to carry out effective energy audits and assessing skills for that purpose.
- the **supporting materials enrichment and/or contents deepening** with special refer to some modules (and relative knowledge, skills, competences system) considered as more critical and/or farer from the vertical specialisation of the professional profile (methodology, project management, financial and incentives).

The vast majority of survey respondents agreed that the ENACT materials and resources are well-structured and easy to access. Furthermore, the ENACT visual identity was also positively perceived, with a large majority agreeing that materials and resources are clearly identified as belonging to the ENACT programme.



In both piloting, the quality of materials and learning resources available has been receiving a very positive evaluation, confirming the great efforts deployed by the Consortium during the implementation and setting-up the ENACT training programme, system and resources (also with reference to the program architecture and the base of learning resources developed within the second project intellectual output).

3.3 ENACT system

Evidences obtained on the ENACT system were very positive, both within Italian and not Italian piloting.

In the first one (Italian piloting), the system (structure, navigation and tools) and the methodological approach employed for the ENACT distance learning has been performing as planned and has been positively evaluated. The effectiveness has been confirmed by both learning results (test successfully achieved) and by the *in itinere* and *ex post* satisfaction evaluation, where many items has been dedicated to the system and the distance learning. Deeper evidences analysis as well as improvement suggestions are reported widely, in the ENACT Italian Piloting Report.

In the second one (not Italian piloting), ENACT system has been presented in a dedicate in presence session and/or accessed directly by the participants. As already reported, many portuguese participants accessed autonomously the system; in the other countries, country level credential has been used, also supporting the plenary and guided demonstration.

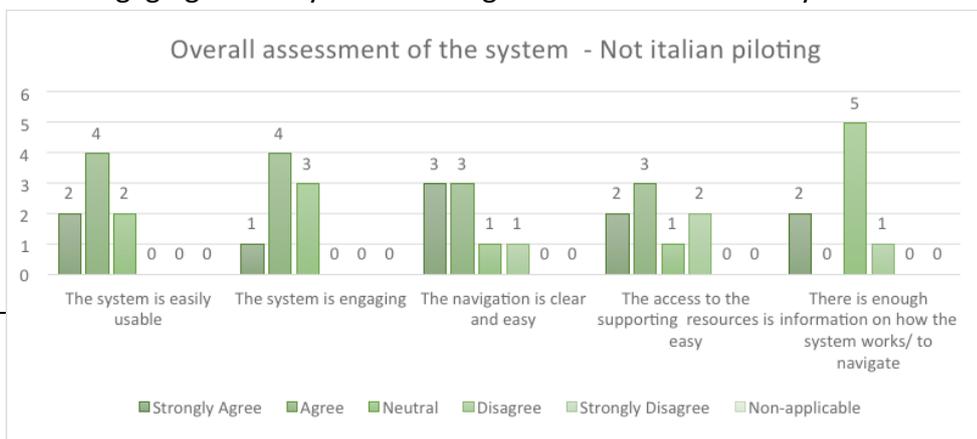
*In the not-italian piloting, system feedbacks has been collected within the stakeholders meetings/demos and by on line questionnaires. A total of 8 system evaluation questionnaires were collected, representing **more than 45 navigation hours on the ENACT system**, according to the data from and answers to the questionnaires. On the other hand, statistics related to the platform performance corroborate the number of navigation hours indicated above and it is possible to observe that users that have not completed the questionnaire navigated for a relatively short period of time (approximately up to 30 minutes). In all countries, at least one user completed the entire course. Furthermore, and according to the statistics automatically generated by the platform, it should also be highlighted that stakeholders in Portugal accessed the common ENACT course in English only, whereas stakeholders in Spain and Poland accessed both the common and the national courses.*

portuguese participants accessed autonomously the system; in the other countries, country level credential has been used, also supporting the plenary and guided demonstration.

The fact that **the ENACT system can be easily accessed through the internet** was praised and stakeholders suggested that a **direct link to the platform** should be included in the ENACT website. Spanish participants considered the

system responsive and usable (and “intuitive”); polish ones mentioned some difficulties, also referred to the request to have the **access to the system in their own language** (polish stakeholders were in fact “discouraged” to a certain extent by the fact that the platform interface is available only in English, despite the fact that courses in partner countries’ national languages were developed).

Answers obtained on the overall assessment of the system stress that survey respondents considered the ENACT system to be engaging and easy to use. Navigation was clear and easy for the vast majority of users (only one disagreed) and, in general, information available on how to navigate the system is



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sufficient (only one disagreed).

Other interesting “system-related” evidences emerged from the both piloting; a part from some minor **technical issues related to the audio/video usability** (within Italian piloting); Italian participants highlighted the multichannel opportunity, with special refer to **mobile learning**. This aspect has been confirmed also by stakeholders involved in the other countries, that refer the need to **make the platform more compatible with the different internet browsers and/or mobile devices**.

Other ENACT system evidences are related to:

- the, the **possibility of downloading learning materials and resources and/or their re-fruitation**. This aspect emerged within the Italian piloting and has been confirmed, especially, by stakeholders in Spain. Moreover, the ES piloting participants addressed the fact that units (and related materials) can only be accessed when completing the previous units and modules. That is, it is not possible to access a specific unit (or material) and the learner must complete the whole course up to that point. However, it must be taken into consideration that some learners’ previous knowledge may be recognised and validated and, therefore, it may be the case that these learners will not need to go through all units. Indeed, stakeholders were interested in obtaining information about and understand what would happen or how the learner may be granted access to certain units without needing to access/complete the previous ones;
- the employment of some **traditional (in presence) sessions** and, more generally, the need to deepen the technical experiential practice to complete an energy audit.

4. ENACT FINE TUNING PLAN

According to the outputs and results of piloting activities briefly described, it is possible to conclude that participants and stakeholders involved in the different national levels agreed on:

- a positive evaluation of ENACT three main results (profile, program, system and resources)
- some main fine-tuning and/or valorisation aspects, although some aspects slightly differ in each national/regional contexts.

The current section includes the main conclusions in terms of fine-tuning of project outputs, that is, the identification of specific aspects to be adjusted and that will contribute to ensure their effectiveness and their further valorisation and other recommendations that support project sustainability.

The width (in terms of activities, time and participants) of Italian piloting and its evaluation approach, based on a continuous monitoring and in itinere evaluation actions, has allowed to

implement many fine tuning actions during the same piloting timeframe. These actions are reported within the Italian piloting report; some examples are: the alignment of learning outcomes, learning materials and duration for each unit during the pilot set-up; minus technical fruition aspects; interaction support within the ENACT 2.0.

During the last partner meeting in July 2016 partners:

- shared the **fine tuning actions undertaken** during the piloting process;
- assess the changes realised (and the other needs/evidences arised from pilot) and the potential need to modify the **Memorandum of Understanding**. They agreed on:
 - o the changes implemented haven't modify the program architecture, the learning outcomes articulation, content and goals as well as the assessment system. Consequently, the interventions on ENACT that have been realised haven't modify the partners Memorandum of Understanding already defined in the previous project stages;
 - o the opportunity **to update and annex a new ECVET certificate** to be delivered at module completion (and at the end of the course). Incoma, supported by AISFOR, has then finalised the new MoU with the updated annexes. Partners has then signed the new MoU and annexes.

With ECVET reference they also shared the opportunity to develop a new supporting resource related to the communication to participants of the most relevant ECVET dimensions;

- evaluated the impact on the three ENACT results (profile, system, program and resources) and define a shared **further fine tuning plan** to be implemented at the project completion, also supporting some of the valorization paths defined within the ENACT Recommendations.

Here following the further fine tuning plan. The following fine tuning plan has been developed starting from the evidences collected within the Italian piloting, integrated with the ones reported in the National validation plan as well as to their synthesis in this present Report, as also agreed in the last partners transational meeting.

Consistently with ENACT results and resources and with the piloting foci, suggestions for the improvement of project outputs range from considerations to the ENACT profile (mostly in what concerns the need to focus on other sectors and other relevant professional figures) to suggestions in terms of action to undertake on the ENACT system and program.

As already reported, ENACT profile was positively assessed by stakeholders involved in validation activities. Even though labour market demand varies

ENACT profile and curriculum

in partner countries and relies on government incentives and actions, this is an emerging sector and the ENACT profile shows potential for adoption in partner countries, especially considering the European policies on energy efficiency and the commitments and goals defined at national level to achieve and comply with European policies.

On the other hand, regarding the results obtained on the ENACT training programme, stakeholders highlighted its modular and online nature and the inclusion of technical and transversal aspects, such as marketing and communication strategies. Furthermore, the existence of an entry-level test and the definition of (or the possibility of defining) different entry levels based on beneficiaries' previous knowledge and expertise was also considered to be adequate.

This is confirmed by the evaluation evidences collected from Italian trainers as well as from participants, in terms of perceived learning effectiveness and job potential. Moreover, as already reported, the ENACT profile and curriculum fine tuning has been realised within the validation of the IO2 and the setting up of the third intellectual output (ENACT system, program and resources).

The **profile fine tuning** is then related to the need of:

- supporting on time its integration within the national/regional qualification frame and the European professional standard, both in terms of learning outcomes architecture and of entry level;
- dynamically align these fine tuning actions on a bot national and European perspective, allowing higher degree of job mobility and employability.

These actions also represent the base of the ENACT valorization strategy because they define an organic and common frame.

ENACT program has been identified on the bases of the just mentioned profile and related qualification schema. Program definition has been based on learning outcomes approach, correlating per each unit the KSC matrix, the methodologies and the contents (and their depth and width). This approach has also allowed to define the ECVET credits relative to each module.

**ENACT
Program**

ENACT program has been validated:

- within the Italian piloting per each learning unit (and module), by monitoring and assessing both the learning effectiveness (unit learning test) and the participants "reaction" and comments;
- within the not Italian piloting by presenting and sharing with stakeholders the overall program and its analytical structure (units, resources, methodologies, and so on).

In both piloting, as already stated, a general appreciation has been given to the program structure, the modules/units contents, methodologies and resources. However, some improvement suggestions have emerged, common to the two piloting (of course, the Italian piloting has provided a deeper evidence and richer details).

In terms of the **ENACT programme**, stakeholders suggested the **further development of some modules and units**. Indeed, it was stressed that in some cases, existing learning materials and resources largely surpass the degree of depth required in that specific module/unit. This material could, therefore, be used to increase the number of training hours on that specific topic. According to the suggestions of Polish stakeholders, this is the case for HVAC systems, RES, building, and communication and marketing.

On the other hand, Portuguese stakeholders highly regarded the **development of a module on technical systems** (heating, cooling and preparation of sanitary hot waters), as well as highlighted the need to **include a greater approach to NZEB buildings** (nearly zero energy buildings) and explain its current state of the art in Europe.

Suggestions related to technical aspects were also covered by Portuguese stakeholders. Two specific remarks were made:

- Since one of the competences of the auditor will be the analysis of lighting and equipment in the residential sector, which is not foreseen in the current Portuguese legislation, stakeholders suggested that the calculation is made not by the current methodology for the residential sector, but through the planned 5R1C model EN ISO 13790, a model which has been adopted for the residential sector by some countries including France.
- Energy audits should be performed using the actual data, for example, taking into account the actual consumption of the dwelling or the real thermal characteristics of the building elements. Using generic values (as used in the certification when there is no information about what is there) will not be feasible for a more accurate analysis.

More generally, the need to **enrich learning and supporting materials and/or contents deepening** with special refer to some modules (and relative knowledge, skills, competences system) has been suggested within the Italian piloting as well with special reference to the modules considered as more critical and/or farer from the vertical specialisation of the professional profile (methodology, project management, financial and incentives).

Another fine-tuning aspect is related to the **units/course duration**; both pilots feedbacks calling for an enlargement of training hours. As already stated, however this fine-tuning dimension need to be balanced with subjective variables (such us competences degree and participant profile) and objective variables (such us contents depth and methodologies). The duration fine tuning already realised within the Italian pilot set-up confirmed this balance dimension; in fact, it has not

impacted the ecvet credit system recognized for each module (because of the balance between duration, methodology, complexity).

Finally, a focus on strengthening the course guidance to support the job market and professional opportunities valorisation has been highlighted within the Italian piloting.

The **program and curriculum fine tuning** is then related to the need of:

- program enlargement with special refer to “technical” contents (already available as supporting resources);
- learning and supporting materials enrichment and/or contents deepening;
- duration “balanced” review;
- activities aimed at furnish job guidance.

ENACT system was also positively evaluated, especially with reference to its usability and its web-based features. The **ENACT system will require some adjustments** to reach its full functionality potential. On the one hand, the system needs to be **more responsive, user-friendly and appropriate to be used on mobile devices**. Indeed, it is important to take into consideration the increase in the use of mobile devices (not just cell phones but also tablets) and, consequently, users’ needs to be able to access the system using multiple platforms.

**ENACT
System and
Methodologies**

In what concerns the need to make the system more user-friendly, one should also add the existence of different sensibilities. Whereas stakeholders in Spain considered that the platform was adequate, stakeholders in Poland experienced some difficulties in navigating the system, which could be addressed by providing an introductory document with some explanations on the platform. Moreover, it should also be pointed out that part of these difficulties experienced in Poland may be justified by the **language barrier**. Indeed, stakeholders in Poland suggested that the system interface should also be available in partners’ national languages – even though ENACT foresees a common course in the English language, a national course was developed in partners’ national languages; the platform interface, however, is available in English only.

On the other hand, stakeholders from all target countries also mentioned that it would be interesting to have the **option to download learning materials and resources** so that they could be accessed offline afterwards.

One interesting fine tuning (and/or improvement and valorisation) area is related to the (re)definition of the distance learning approach, solutions and tools. The ones employed in ENACT (asynchronous distance learning, supported by high quality multimedia SCORM learning object, integrated with additional supporting and learning resources and with social area) has been

evaluated with a relevant positive grade. However, some suggestions and improvement areas have been identified.

Participants of the Italian piloting has expressed the potential of integrating ENACT system and program with **experiential methodologies** (in presence and/or in distance learning). The in-depth analysis carried out within the Italian piloting (supported by the fruition of the overall ENACT program from 144 professionals) highlighted that this aspect is particularly referred to the more **“experience/job” based learning units and modules**, such as the ones related to audit methodology, Project management, financial issues and incentives. This aspect has been confirmed also by several stakeholders, that agreed with the need to **provide a more practical approach to the ENACT training programme**, even though still maintaining the level of theoretical knowledge. This would also be an advantage and a positive differentiation for ENACT in what already is a saturated market in partners’ countries.

Moreover, stakeholders also suggested that an aspect that could be considered and assessed in the **final exam** was the implementation of a complete Energy Audit by students. Actually, the final exam has already been defined within ENACT overall program and methodological plan; however, it has not been tested, due to the experimental dimension of the piloting realised.

The **system and distance learning methodologies fine tuning** is then related to the need of:

- improving the access tool usability, with special refer to the **multi-language** dimensions;
- integrating multichannel solutions, with special refer to the **mobile learning**;
- improving the participants **interaction** (among them and with trainers) and collaborative learning solutions;
- defining blended learning solutions and/or improving **experiential learning methodologies**, with special refer to some ENACT modules.

5. FROM FINE-TUNING TO VALORIZATION

Further to the abovementioned adjustments that will contribute to ensure the effectiveness of project outcomes, several recommendations and valorisation actions were proposed by stakeholders.

On the one hand, stakeholders highlighted the **limited recognition of the ENACT training programme at European level**, considering that, at the current stage, it is recognised by the ENACT Consortium members, which include 6 institutions from 4 EU countries (Italy, Poland, Portugal and Spain) and relevant actors expressed the importance of recognition in other countries.

Indeed, increasing the recognition of the ENACT training programme would contribute to create more opportunities for beneficiaries, thus making ENACT more attractive. This could be achieved

by **generating synergies with other institutions and also by transferring the ENACT course to other European countries.**

On the other hand, the **existing current demand for different professional profiles from the energy sector** (such as the figure of the energy manager in Spain) may constitute a potential valorisation for ENACT. Indeed, ENACT can be valorised by **adapting the ENACT profile and training programme** to be suitable to other relevant professional profiles from the energy sector, considering that some of the knowledge, skills and competences of the various profiles are common.

Furthermore, it is also important to highlight the clear need to **expand the ENACT profile and training programme to other sectors, such as the industry sector.** Indeed, this aspect would also constitute a potential valorisation of the ENACT project by capitalising on the profile and training defined and on the synergies generated during the project lifecycle.

It is also relevant to add that, as explained, the ENACT training was delivered in Italy as part of the pilot activities. However, this was not the case for the remaining partner countries (Poland, Portugal and Spain). Still, during the realisation of the national validation activity in Spain, some stakeholders, namely students and potential beneficiaries of the ENACT training, expressed their interest in completing the course and requested more information about this possibility. Indeed, the debate among attendees resulted in the **proposition to carry out another testing and validate the ENACT course in Spain with a group of professionals** (and future professionals), some of them currently completing the Specialist Diploma in Energy Management at the Faculty of Building Engineering.

Finally, one of the aspects that should be addressed by the Consortium is the possibility of **recognising beneficiaries' previous knowledge and/or experience.** This would allow the institutions recognising the ENACT training programme to validate knowledge and competences demonstrated by students, allowing them to complete the unit/module examination directly.

Should this be implemented, it would require the revision of one important aspect of the platform: the fact that units and related materials may only be accessed once the previous units are completed. This is especially relevant for learners whose previous knowledge is recognised and validated and, therefore, will only need to access random materials.

6. CONCLUSION

The present report has described the activities aimed at implementing the ENACT programme and system validation in Poland, Portugal and Spain, as integrated with the main evidences of the pilot testing carried out in Italy. A total of 267 participants has been involved: 144 in Italy, mostly professionals, attending the overall ENACT program and accessing all ENACT system areas, tools and resources; 123 representatives from relevant institutions were involved in ES, PT and PL national validation activities, the majority of which (94) through face-to-face meetings. At distance

communication (e-mail) was used mostly to complement onsite meetings. Stakeholders involved in validation activities encompassed: educational actors (HEI and VET), students (HEI), entrepreneurs and professionals working in the energy sector, as well as representatives of public institutions, regional administrations and companies working in the sector.

In terms of results and evidences collected, participants and stakeholders positively assessed the ENACT profile and agreed that it is an important source of market homogenisation and regulation to what is an essentially unregulated sector. Evidences and feedbacks have been collected, analysed and compared, to support the definition of both fine tuning (as just described) and valorisation (as reported within the ENACT Recommendations document) strategy and actions.

ENACT training and employment relevance has been validated within pilot action; however, labour market demand varies in the different countries, which is related to the different levels of state or government incentives and actions to promote energy efficiency and the green sector. Therefore, even though these professional profiles (and the ENACT profile in particular) may be considered as relevant and upcoming, the need for incentives and even marketing should not be underestimated, especially considering the European and National policies on energy efficiency and the potential of this occupation. This call for a balanced and integrated consideration of supply (training and education) and demand (companies, job market) factors influencing the ENACT potentials, as it will be developed within ENACT Recommendations.

On the other hand, it was suggested that the Consortium addresses the recognition of the ENACT profile (and ultimately the ENACT training) in other countries. However, existing market demand calls for other professional figures related to the energy efficiency sector (such as the energy manager in Spain) and for a professional figure that focuses on sectors other than the residential (such as industry). As already stated, these themes, have represented the ENACT profile main scenario (as in the first project outputs) and, at the same time, represent the main valorization frame, as further deepen in the ENACT Recommendations (available in project website and European dissemination platform).

Furthermore, stakeholders also highlighted the need to broaden the recognition of ENACT to other countries (through synergies with other institutions or transferring its results).

Another aspect that should be addressed by the Consortium is the possible customisation of the ENACT training according to the students' profiles, through the recognition of previous knowledge and experience. This would open the possibility to create differentiated courses in terms of training hours and also employ a more practical approach.

All these aspects could be a potential valorisation of ENACT that should be addressed by the Consortium.

Additionally, stakeholders in Spain expressed their interest in completing the course and suggested the possibility of carrying out another testing and validate the ENACT course in Spain with a group

of professionals (and future professionals), some of them currently completing the Specialist Diploma in Energy Management at the Faculty of Building Engineering.

The ENACT system was also positively received and some fine-tuning suggestions were received. According to stakeholders' feedback, the system should be more responsive, user-friendly and adapted to the different browsers and mobile devices. Some stakeholders were discouraged by the fact that the platform interface is available in English only, which might have led to some navigation difficulties. Stakeholders in all countries stressed the importance of downloading materials to access offline.

Therefore, despite the national/regional differences among partner countries, **a considerable degree of agreement was observed in terms of stakeholders' feedback**. Apart from some recommendations for fine-tuning of project outputs, **several potential valorisation actions were laid down** and have been addressed by the Consortium.

The evidences collected during the piloting action from trainers and participants confirm the relevance and compliance of the ENACT profile. These evidence has been further deepen (and confirmed) within the activities carried out to develop the ENACT Recommendations by significant group of stakeholders, Energy auditor professionals and sectorial experts.

ENACT recommendations (available in the project website and in the EU dissemination platform) are aimed to further deepening these potentials within enlarged scenarios, taking into account policy and programs frame (and related positive/negative incentives to the ENACT professional profiles) ad well as job demand and supply dynamics.